

Washington State Commercial Salmon Fishery Buyback Programs, 1995-1998

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Abstract

Between 1995 and 1998 the State of Washington ran three buyback programs in its salmon fisheries. Funding for these programs was provided by the federal government under the Interjurisdictional Fisheries Act and the Magnuson-Stevens Fisheries Act. These programs bought and retired commercial salmon fishery limited entry licenses, but not salmon vessels. This paper describes and discusses these programs. Details are provided on the reasons for the buyback programs, the way programs identified the licenses to buy and the prices to pay for them, and the numbers of licenses removed from the fishery.

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Executive Summary

In the early 1990s Washington's coastal salmon fisheries, which depended heavily on coho and chinook salmon, were in a state of crisis. Over the years these fisheries had become overcapitalized and the fresh water spawning and rearing habitat had been damaged. In the early 1990s the Endangered Species Act began to force harvest cutbacks. The coastal fisheries were also hurt in the early 1990s by unusual weather events, including an El Nino and droughts.

In response to these events Washington State ran a buyback program in its troll, charter and Columbia River gillnet fisheries in 1995. The money for this program came from the federal government as part of a disaster relief program under the Interjurisdictional Fisheries Act. The program was a simple one. License holders were asked to submit offers to sell licenses to the state, these were ranked in ascending order from the lowest to the highest bid price, and purchased by the state starting with the lowest bid price and continuing until the money allocated for buyback in the fishery was used up. No vessels were purchased, and no conditions were put on future activities by the license holder or the vessel. During this program the state bought 190 troll licenses for an average price of \$9,136, 83 Columbia River gillnet licenses for an average of \$21,998, and 23 sport charter licenses for an average of \$13,896.

In 1996 and 1997 the State ran a second buyback program in the same fisheries using federal funds provided under the Interjurisdictional Fisheries Act. Under this program, license holders were asked to calculate their "salmon decline impact" (SDI) between the relatively good years of the late 1980s to the poor fishing conditions of the early 1990s. The SDI was a rough measure of the decline in gross earnings suffered by the license holder. License holders were again asked to submit offers to sell. The offers were ranked by the ratio of the bid price to the SDI. The state bought the offers with the lowest ratios so long as the money lasted. Essentially, the state bought up the license holders' losses at the lowest price. During this program the state bought 72 troll licenses for an average of \$31,740 per license, 52 Columbia River gillnet licenses for an average of \$45,145, and 18 charter licenses for an average of \$24,619.

In 1998 the state ran a third program using money provided under the Magnuson-Stevens Act. The purpose of this disaster assistance was different; this was a response to winter flooding in Washington which damaged the salmon fishery. With the change in the nature of the disaster, the scope of the program was expanded to include the seine, gill net, and reef net fishermen in Puget Sound. This program was conducted in two phases. In the first, the state quoted prices above market prices and fishermen submitted offers to sell at those prices. Offers were accepted on a first-come first-serve basis, or by lottery in the case of multiple offers with an equal claim to acceptance. Any money left over from this first phase was to be spent in a second phase, run using the methods of the 1996-97 program. For most fisheries all the money was used in the first phase. In this first phase

100 troll licenses were purchased for \$7,500 each, 61 Columbia River gillnet licenses were purchased at \$10,000 each, 20 charter licenses were purchased for \$10,000 each, 172 Puget Sound gillnet licenses were purchased for \$12,000 each, 22 Puget Sound seine licenses were purchased for \$30,000 each, and 7 reef net licenses were purchased for \$15,000. In the second phase 9 Columbia River gillnet licenses were purchased for an average of \$27,378 each.

A review of these programs suggests that:

- ▶ These programs removed a significant number of licenses. When compared to the number of licenses existing in 1994, these programs removed 41% of the Columbia River gillnet licenses, 54% of the troll licenses, 23% of the charter licenses, 7% of the Puget Sound reef net licenses, 16% of the Puget Sound gillnet licenses, and 14% of the Puget Sound seine licenses.
- ▶ Market prices have been low compared to license renewal and transfer fees and, possibly as a consequence, large numbers of license holders have allowed their licenses to expire without compensation. In the Puget sound seine and gillnet fisheries uncompensated expirations took more licenses out of the fisheries than buyback.
- ▶ The 1995 buyback program was the only program that tried to maximize the number of licenses removed per dollar spent. Even in this program there were probably things that could have been done to encourage license holders to submit offers to sell at prices closer to the minimum amounts they would have been willing to accept.
- ▶ The programs probably did not make a significant inroad into current fishing capacity.
- ▶ The administrative costs of implementation are only part of the costs of a buyback program. Other costs, such as those incurred by license holders participating in the program, can also be significant.
- ▶ Viewed simply as an income transfer program, the program was probably successful in transferring income to fishermen at moderate administrative cost. Viewed in this light, the removal of limited entry permits from the fishery is a by-product with positive benefits that can be set against the costs of the program.
- ▶ The fisheries are still common property. That means that if the program is successful in increasing the profits and viability of the license holders, competitive pressures will lead to at least some reduction in these benefits through time.

ABSTRACT.....	iii
EXECUTIVE SUMMARY	v
1. INTRODUCTION.....	1
2. BACKGROUND TO BUYBACK.....	2
2.1 COMMON PROPERTY AND EXCESS CAPACITY	2
2.2 LIMITED ENTRY IN WASHINGTON STATE	3
2.3 MARKET AND RESOURCE CRISES OF THE 1990s.....	5
3. THE 1995 BUYBACK PROGRAM	7
3.1 ORIGINS OF THE PROGRAM	7
3.2 PROGRAM RULES	8
3.3 RELATION TO EARLIER PROGRAMS.....	10
3.4 PROGRAM PURCHASES	10
4. THE 1996-1997 BUYBACK PROGRAM	11
4.1 PROGRAM RULES	11
4.2 PROGRAM PURCHASES	13
5. THE 1998 BUYBACK PROGRAM	14
5.1 ORIGINS OF THE PROGRAM.....	14
5.2 PROGRAM RULES	15
5.3 PROGRAM PURCHASES	16
6. DISCUSSION	17
6.1 HOW MANY LICENSES WERE ELIMINATED?	17
6.2 DID THE PROGRAMS RETIRE AS MANY LICENSES AS POSSIBLE?	19
6.3 DID THE PROGRAMS REDUCE FISHING EFFORT IN THE SHORT RUN?	26
6.4 FULL ACCOUNTING FOR PROGRAM COSTS	27
6.5 COST-EFFECTIVE INCOME TRANSFER?	29
6.6 THESE ARE STILL COMMON PROPERTY FISHERIES	30
8. SOURCES	31

1. Introduction¹

From 1995 to 1998, the State of Washington ran three separate buyback programs in its commercial salmon fisheries. These programs started after extremely poor commercial harvests in certain fisheries in the early 1990s. Washington spent about \$8.7 million dollars in disaster relief funds on these programs and bought out about

41% of its Columbia River gillnet licenses,²
54% of its troll licenses,
23% of its charter licenses,
7% of its Puget Sound seine licenses,
16% of its Puget Sound gillnet licenses, and
14% of its Puget Sound reef net licenses.³

This paper describes the three Washington buyback programs. It describes the events leading to buyback, program design, and program results in terms of limited entry licenses taken out of the fisheries.

The focus in this paper is on fleet reduction. However maximum fleet reduction per dollar spent was not the only goal of these programs. These programs also sought to put money into the hands of license holders who had been hurt by resource disasters. Although the focus of this paper is on fleet reduction through buyback the overall goals of these programs should be kept in mind. It is not, in itself, a criticism of these programs to say that they did not remove more salmon licenses than they did. A full evaluation must take all of their goals into account.

¹ Kurt Schelle of the Alaska Commercial Fisheries Entry Commission, had many helpful comments on two earlier drafts of this report. Steve Freese of the National Marine Fisheries Service and Debbie Fagerness of the Washington Department of Fish and Wildlife each read and commented on large parts of this report. They are not, however, responsible for any errors remaining in this paper.

² Columbia River gillnet licenses include two classes of limited licenses. One is a “Willapa Bay - Columbia River” gillnet license, allowing a license holder to gillnet in both areas. The other is a “Gray’s Harbor - Columbia River” gillnet license. The buyback programs did not distinguish between these two licenses, and in general they will be called “Columbia River gillnet” licenses in this report.

³ These are the numbers of licenses bought as percentages of the number of 1994 licenses. The buyback programs began in 1995. The numbers of licenses also dropped after 1994 because some persons failed to renew their licenses even though their licenses were not purchased by the state.

2. Background to Buyback

2.1 *Common Property and Excess Capacity*

Salmon in the water, before harvest, are generally treated as a regulated common property resource. The costs of defining property rights over salmon in the water are generally too high to make it possible economically to make them private property.⁴

As an common property resource, the salmon belong to the person who harvests them first. This leads fishermen to overinvest in their fishing operations, and to spend more than necessary to simply catch the fish, in a race to capture the salmon before the other operators in the fishery. This is the root cause of the high cost of salmon harvest.

In a common property fishery, this competition may also lead to an overharvest of the spawning stock and ultimately to lower annual salmon returns and harvests. Managers work to protect the stocks from overharvest by restricting fishing capacity and effort, but powerful fleets of competitive vessels make their job harder.

Common property isn't eliminated when a fishery is limited. Although the number of separate operations is restricted and cannot grow, the effort expended by an individual operation may grow.⁵ Subject to regulations governing the fishery, fishermen might be able to increase the length, width, and engine power of their vessels. They may be able to use more elaborate electronics or work with spotter airplanes. They may invest in larger nets made from more sophisticated fibers. Mesh size or other gear characteristics may be modified. Fishermen may invest in more powerful and sophisticated machines for setting and retrieving gear. They may increase their crew sizes and fish longer hours.

⁴ In the last 25 years other species of fish have been converted from common property to something closer to private property through the implementation of different types of individual quotas. It seems less likely that this move from common property towards the private property end of the rights "spectrum" will take place for salmon, unless the fishery is fundamentally restructured - perhaps through the reintroduction of fish traps. Note that this generalization doesn't apply to the treatment of farmed fish or of private or semi-private hatchery returns.

⁵ Although not discussed in the text, limited entry programs in the Pacific Northwest salmon fisheries have not typically led to reductions in numbers of operations at the time of initial limitation. License or license eligibility rules are often generous and the numbers of operations allowed under limited entry can be similar to (or greater than) those seen in the preceding unlimited fishery.

Managers can restrict fishing effort by regulating the times and places for fishing and the gear or methods used for fishing. But regulation is a crude tool. Many regulations may increase fishing costs. Further, and perhaps more important, fishermen can bypass the regulations and find alternative ways of increasing their fishing effort. As one observer has pointed out, even under limited entry:

...the fundamental incentives to employ extra measures to compete are latent, strong, quickly triggered, and basically unaffected by limited entry. Fishermen are quick to adopt any measures possible to gain a small, short-lived edge, even when it is understood that when everyone adopts in the face of fixed total harvests, costs simply rise.⁶

Overcapacity and higher fishing costs can also be promoted by government policies that subsidize investment in fishing operations.

2.2 Limited Entry in Washington State

Washington began to limit entry into its salmon fisheries in 1974. As the program evolved, licenses were issued for salmon troll⁷ and sport charter vessels operating along the outer coast, for Puget Sound seine, gill net, and reef net gear,⁸ and for gillnet vessels operating in Gray's Harbor and the Columbia River and for gillnet vessels operating in Willapa Bay and the Columbia River.⁹ These licenses were homogenous; each give its owner the same rights enjoyed by other persons holding the same type of license.¹⁰

The licenses generally had to be renewed in one year to be eligible for issuance in the following year. During the period examined in this report, license renewal fees for seine licenses in Puget Sound were \$630 for residents and \$1,085 for nonresidents. During the period, renewal fees for other salmon licenses were \$480 for residents and \$785 for nonresidents. However, effective in 1997 fishermen were given the option of renewing their license for the standard fee and fishing with it, or renewing it for \$115 and not fishing with

⁶ Wilen, pages 316-317.

⁷ A separate "vessel delivery license" was also issued for delivering salmon caught in federal waters. In practice a delivery license was issued with every troll license, but some trollers who only fished in federal waters only had delivery licenses.

⁸ Reef nets are operated from fixed sites. A net is hung horizontally, parallel to the surface, between two barges. Nets hung vertically as leads direct the fish onto the reef net. At the appropriate time a person in one of the barges causes the reef net to turn and move the fish into a live pen. Boessow, pers. comm.

⁹ As noted in an earlier footnote, the buyback programs did not distinguish between the Gray's Harbor or Willapa Bay gillnet licenses. In many cases this report will not do so either, and will refer to both as "Columbia River gillnet licenses."

¹⁰ Schelle and Muse, pages 30-31.

it. There was considerable natural attrition in license holders over the years as many license holders failed to renew their licenses.¹¹

These licenses were also freely transferable. Over the period considered in this report, 1994 to 1998, license holders were charged a \$50 transfer fee to transfer a license from a Washington resident to another resident or from a nonresident to a resident. A fee equal to the difference in the annual license renewal fees, plus \$50, was required if a license was transferred from a resident to a nonresident.¹² The Department did not collect data on license transfer prices and did not maintain listings of persons who were interested in transferring their licenses.¹³

During the 1970s and early 1980s there were four separate buy back programs on Washington salmon licenses. The impetus for these programs was the Boldt court decision of 1974, in which Federal Judge George Boldt held that treaties between the United States and local Indian tribes entitled those tribes to over 50% of the salmon and trout caught in the Puget Sound area. This controversial decision substantially reduced the salmon available to the non-Indian commercial fisheries.¹⁴

The four programs were entirely funded by the Federal government. In some instances the programs bought vessels as well as licenses, in others they simply bought licenses, and in others they bought licenses and commitments not to use vessels again in Washington State fisheries.¹⁵

Despite limited entry and the buyback programs, a 1991 study determined that the actual number of licenses in each fishery generally exceeded the “optimum” number of licenses for the fishery. The optimum number emerged in large part through meetings with industry and was meant to be a number that could handle recent runs and that was economically viable. These optimum numbers were estimated before the fisheries production declines of the early 1990s. By 1994 a similar study would probably have produced lower estimates of optimum numbers. Table 1 compares the optimum numbers from 1991 with the actual numbers of licenses in 1994, on the eve of the buyback programs.¹⁶

¹¹ Fagerness, pers. comm.; Judkins, pers. comm.

¹² Fagerness, pers. comm.; Judkins, pers. comm.

¹³ Fagerness, pers. comm.; Mitchell, pers. comm.

¹⁴ Schelle and Muse, page 32.

¹⁵ Schelle and Muse, pages 32-44.

¹⁶ Long, *et al.*, page 2-3.; Stern, pers. comm.

Table 1. Actual and optimum numbers of Washington commercial salmon licenses in the early 1990s.

Fishery	Number of licenses (1994)¹⁷	Optimum number of licenses (1991)¹⁸
Troll	669	150
Charter	260	200
Puget Sound seine	306	150
Puget Sound gill net	1,043	550
Puget Sound reef	50	50
Grays Harbor - Columbia River gill net	146	Jointly
Willapa Bay-Columbia River gill net	360	250

2.3 Market and resource crises of the 1990s

In the early 1990s overcapacity in salmon fisheries from California to Alaska reacted violently with resource and market price declines to produce crisis. During the 1980s a competitive product, farmed salmon, came on the market. In the late 1980s, farmed salmon production exploded. Farmed salmon from places like Norway and Chile had many attractive qualities that made it highly competitive with West Coast products.

Additionally, during the 1990s the Japanese economy experienced recurrent recession and financial crisis. Japan is an important world salmon market and its buoyant economy during the 1980s had been a significant factor in the health of the salmon fisheries during that time.

While markets were being hurt by increased competition from new products and by the weakening Japanese economy, West Coast salmon stocks were being hit by resource problems that led to large curtailments in salmon production. For many years habitat modifications to rivers up and down the coast had been reducing the fresh water salmon carrying capacity. Dams, hydroelectric plants, stream flow changes, irrigation water diversions, urbanization, and other developments, had all reduced the capacity of the Columbia River, and of other West Coast rivers to support salmon populations. In the later 1980s and early 1990s these problems were exacerbated by a prolonged drought in California, drought in Washington in 1992, and an “El Nino” episode in 1992-93.

Some salmon stocks on the West Coast began to become subject to Endangered Species Act (ESA) designations in the early 1990s. These designations led to large cutbacks in

¹⁷ Fagerness, pers. comm.

¹⁸ Washington Department of Fish and Wildlife, Application for Federal Assistance.

harvests of the endangered stocks. Since these fisheries tended to fish salmon stocks that were intermingled in the water, cutbacks to protect endangered species led to cutbacks of harvests on other stocks as well.¹⁹

Coho and chinook stocks were particularly hard hit by these events, and Washington's coastal salmon fisheries, which depended heavily on these species, were also hard hit. The troll fishery, which had grossed a million dollars or more between 1985 and 1992, did not produce revenues anywhere close to a million dollars from 1993 on. The troll fishery was completely closed in 1994 and only grossed \$91,000 in 1995. Ocean charter angler trips had ranged between 29.9 and 65 thousand from 1984 to 1993. They fell to zero in 1994 and were 17.9 thousand in 1995. The Columbia River gillnet fishery chinook landings plummeted from 7.2 million pounds in 1988 to 0.06 million pounds in 1994 and to 0.011 million in 1995. Commercial Columbia River coho landings dropped from 2.7 million pounds in 1991 to between 0.2 and 0.5 million from 1992 to 1995.²⁰

The fisheries inside Puget Sound (seine, gillnet, and reef net) were not impacted as severely in the early 1990s. These fisheries harvested a more diversified "portfolio" of species, including pink and red salmon, and were not hurt as much by the problems with coho and chinook stocks.

License prices provide a measure of the value of the limited entry permits to the persons who just find it worth their while to remain in the fishery.²¹ In equilibrium, these prices should be equal to the present value of the future benefits that these persons hoped to enjoy with the license.

The State of Washington does not systematically collect and publish data on prices in license markets. What information is available is anecdotal, and has to be gleaned from conversations with license holders and brokers. These sources frequently mentioned their uncertainty and how rough their estimates were.

License price information from these sources suggests that salmon licenses had low prices in the early to mid 1990s. In 1993-1994 the price for troll licenses may have been close to zero, although today prices might be \$2,000 to \$3,000. The Columbia River gillnet and the charter markets have been described as "dead" during the early 1990s. Before buyback Puget Sound seine licenses may have been selling from \$2,000 to \$5,000; since buyback they may have sold for \$5,000 to \$6,000. Before buyback Puget Sound gillnet licenses

¹⁹ LeFleur, pers. comm.

²⁰ PFMC (1998), Table D-6, page D-9.; PFMC (1998), Table IV-14, page IV-27; LeFleur, pers. comm..

²¹ That is, to the marginal fisherman.

may have sold for \$500 to \$2,000; since buyback they may be selling in a similar or somewhat higher range.²²

No strong confidence can be put in any of these specific estimates. They do suggest, however, that while these buyback programs were taking place, prices for these licenses were very low. In many cases they were not much higher than annual renewal fees or license transfer fees. As noted later in this report, many licenses were allowed to expire without compensation during these years; the low prices and high fees may account for this. For such persons the expected present value of the net benefits from holding the license was less than the present value of the annual renewal fees. Subsequent sections of this report will show that prices paid in the buyback programs appear to have been much higher than market prices.

3. The 1995 Buyback Program

3.1 Origins of the program

The declines in production due to the El Nino and the drought led to the buyback programs. In 1995 the State of Washington ran a buyback program using money obtained under the federal Interjurisdictional Fisheries Act.

The funds were provided under section 4107(d) of the act, which allows the Secretary of Commerce to provide funds to “alleviate harm” to “persons engaged in commercial fisheries” that has been “incurred as a direct result of a fishery resource disaster arising from...any other natural disaster.” Money from this act can be passed to fishermen indirectly through states and local governments for capacity reduction or other programs if “adequate conservation and management measures are in place” in the affected fishery, and if vessels are directed out of future use in fisheries.²³ The program, and later programs in 1996-97 and 1998 were run by Washington’s Department of Fish and Wildlife.

The “harm” was primarily a reduction in coho and chinook runs and harvests. Because of this the program was directed towards the troll fishery, the Columbia River gillnet fisheries, and the sport charter fishery. These were the fisheries believed to have been most impacted by the failure of the coho and the chinook salmon runs. The Puget Sound seine, gillnet and reef net fisheries weren’t included in a buyback program until the third program

²² Although one source suggested \$6,000 to \$8,000.

²³ Interjurisdictional Fisheries. 16 CFR 4107(d).

in 1998. This third program was a response to a different disaster that included Puget Sound as an impact area.²⁴

The buyback program was a part of a \$15.7 million program of federal emergency disaster assistance aid for Washington, Oregon and Northern California. Twelve million dollars of this were made available under the Interjurisdictional Fisheries Act for what was called the Northwest Emergency Assistance Plan (NEAP). This \$12 million was to be used for the license buyback program run by the State of Washington, habitat restoration run by the U.S. Soil Conservation Service²⁵, and a data collection program run by the Pacific States Marine Fisheries Commission. The habitat and data collection programs were to provide jobs for fishermen. Four million of the NEAP money went to the buyback program in Washington.²⁶

The buyback program sought to provide disaster relief to the salmon industry in the form of money to provide "...short-term relief to fishermen who wanted to voluntarily transition out of the industry but needed financial resources to do so." The program also sought to take current and potential participation out of the fishery. Finally, the program sought to do so with relatively small administrative costs.²⁷

3.2 Program rules

The allocation of the available money was based on a rough balance of several criteria. These included the optimum number estimates, the numbers of licenses of each type, information about license values, and public input. The Gray's Harbor and Willapa Bay Columbia River gillnet licenses were lumped together into one group to be bought back together. As the program started, \$1.7 million (or about 46% of the license expenditures) was allocated to buyback of troll licenses, \$1.7 million (or 46%) to the buyback of the two Columbia River licenses, and \$300,000 (or 8%) was allocated to the buyback of the charter licenses.²⁸

Persons were eligible for the program if they met a number of criteria:²⁹

²⁴ Edie, pers. comm.

²⁵ Not the Department of Agriculture's Natural Resource Conservation Service. Freese, pers. comm.

²⁶ Long, *et al.*, pages 1-2.

²⁷ Long, *et al.*, pages 2-3.

²⁸ Freese, pers. comm.; Long *et al.*, page 5. Some of the money originally set aside for program administration was reallocated to license purchase. The numbers quoted in this paragraph represent the initial allocation, not the final expenditure.

²⁹ Washington, State of. WAC 220-95-018. In the Appendix to Long, *et al.*

The person had to have earned income in the troll, charter, Gray's Harbor-Columbia River, or Willapa Bay-Columbia River salmon fisheries in at least one year from 1986 to 1991, and not have participated, or not plan to participate in future, in other elements of the Northwest Emergency Assistance Plan (NEAP) job program.

The person had to have possessed, or been eligible to possess one of the affected limited salmon licenses in 1994.

The person had to have incurred an uninsured loss.

The uninsured loss was equal to the difference between the person's highest gross income from salmon in the one of the years from 1986 to 1991 and the person's lowest gross income from salmon in one of the years from 1992 to 1994 (plus federal unemployment compensation or the value of federally funded job training received during the same year).

³⁰ The uninsured loss provision was basically a "means test" required under the Interjurisdictional Fisheries Act because of the program's rationale as disaster assistance.³¹

Eligible persons were asked to submit offers to sell during an application period that ran from March 29 to May 12, 1995. The program purchased licenses, but not vessels or fishing gear. No restrictions were placed on further uses of vessels and gear.³²

Persons could offer to sell for any amount up to 2.25 times the uninsured loss, or \$100,000, whichever was lower. Offers were ranked from lowest to highest within each of three fleet categories (salmon troll, Willapa Bay-Columbia River or Grays Harbor-Columbia River, or salmon charter). Each offer that was accepted was paid the bid price. The offers were accepted starting with the lowest offer, so long as money budgeted for the fleet category lasted.³³

This formula was designed to buy out the largest number of separate licenses possible, subject to a limit on the amount that could be spent. No attention was paid to the current ability of the license holder to exert effort in the fishery. As licenses were freely transferable each license had the same potential effort. The program maximized the effort taken out of the fishery to the extent that effort was related to the number of separate licenses.

³⁰ Washington, State of. WAC 220-95-018. In the Appendix to Long, *et al.*

³¹ Stern, pers. comm.

³² Stern, pers. comm.

³³ Washington, State of. WAC 220-95-018, WAC 220-95-022, WAC 220-95-027. In the Appendix to Long, *et al.*

3.3 Relation to earlier programs

Washington and Oregon both ran buyback programs in the 1980s. The people who designed the 1995 Washington program drew on these earlier experiences.³⁴

This formula had more in common with the approach that had been used on the Columbia River by Oregon in the early 1980s than with that used by Washington itself in the 1980s. In its program Oregon solicited offers to sell for licenses only, not for vessels. Oregon did not prohibit license holders who sold their licenses to the program from re-entering the fishery. Oregon selected licenses for buyback by ranking offers to sell in ascending order from lowest to highest and buying back all licenses offered for less than a cutoff point set by the state after a review of the offers. Oregon was willing to go through multiple “rounds” of buyback and so did not have to spend all of its buyback money in any one round. Oregon also engaged in strategic maneuvering from round to round by adjusting its cutoff level.³⁵

The 1995 Washington program did differ from Oregon’s in two important respects. In Washington the cutoff point above which offers to sell would not be accepted could be very high and did not limit the numbers of licenses it was willing to buy, while the Oregon limits restricted the number that could be bought back at any time. The Washington program did not anticipate more than one round while the Oregon program was willing to run several.

3.4 Program purchases

The program received and ranked 252 offers to sell salmon troll licenses. These ranged from a low offer of \$552.71, up to eight high offers of \$100,000, the program maximum. The program purchased 190 salmon troll licenses for \$1,735,756. This was an average of \$9,136 per license. The largest offer accepted was \$24,984.36.³⁶

The program received and ranked 160 offers to sell Columbia River gill net licenses. The program did not distinguish between the Gray’s Harbor and Willapa Bay licenses. Both types were entered into the same “pool.” These offers to sell ranged from a low offer of \$2,108.93, up to six high offers of \$100,000, the program maximum. The program

³⁴ Freese, pers. comm.; Stern, pers. comm.

³⁵ Schelle and Muse, page 50-53.

³⁶ Long, *et al.*, pages 3, 5, 6, “Report D” titled “NEAP Compensated Licenses Troll Licenses By Offer Amount” and “Report H” titled “NEAP Buy Out Ranking Troll Licenses By Offer Amount.”

purchased 83 of these gill net licenses for \$1,825,820. This was an average of \$21,998 per license. The largest offer accepted was \$38,000.³⁷

The program received and ranked 47 offers to sell salmon charter licenses. These ranged from a low offer of \$5,000, up to one high offer of \$100,000. The program purchased 23 salmon charter licenses for \$319,610. This was an average of \$13,896 per license. The largest offer accepted was \$21,300.³⁸

In total, the program spent \$3,999,960. Administrative costs were \$118,774 or 3% of the total. The program spent \$75,129 on salaries and benefits, \$12,462 on goods and services, \$1,869 on travel, \$11,425 on computer hardware and software, and \$17,889 on indirect costs. A total of \$300,000 had originally been budgeted for administration. The unexpended part of the administrative budget was spent on license purchases.³⁹

4. The 1996-1997 Buyback program

The next buyback program took place in 1996, again under the provisions of the Interjurisdictional Fisheries Act. The listed goals for this program were the same as those for the program in 1995.⁴⁰ However, as will become apparent below, this program was willing to remove fewer licenses in order to obtain a different distribution of buyback funds among license holders.

4.1 Program rules

Program money was distributed among gear groups in about the same proportions as in 1995. The troll license holders were to receive \$2.25 million or about 45%, holders of the two Columbia River gillnet licenses were to receive \$2.3 million or about 46%, and holders of charter licenses were to receive \$0.4 million or about 8%.⁴¹ Eventually somewhat more than these amounts would be spent since not all the money budgeted for buyback administration was spent and some was reallocated to license purchases.

³⁷ Long, *et al.*, pages 3, 5, 6, “Report E” titled “NEAP Compensated Licenses Gill Net Licenses By Offer Amount” and “Report I” titled “NEAP Buy Out Ranking Gill Net Licenses By Offer Amount.”

³⁸ Long, *et al.*, pages 3, 5, 6, “Report F” titled “NEAP Compensated Licenses Charter Licenses By Offer Amount” and “Report J” titled “NEAP Buy Out Ranking Charter Licenses By Offer Amount.”

³⁹ Long, *et al.*, page 5 and “Report B” titled “NEAP Buy Out License Number Impact” Expenditure reports are through July 31.

⁴⁰ Breeden, pages 4-5.

⁴¹ Breeden, page 7. Some of the money originally set aside for program administration was reallocated to license purchase. The numbers quoted in this paragraph represent the initial allocation, not the final expenditure.

The eligibility criteria for the program were very similar to those in 1995 and included the following four conditions:⁴²

the license holder had to have participated in, and earned income from the coastal, Gray's Harbor-Columbia River, or Willapa Bay-Columbia River fisheries during the years 1986 to 1991, and

the person had to have had (or have been eligible to have) a troll, charter, Gray's Harbor-Columbia River, or Willapa Bay-Columbia River license in 1994, and to have had the same license in 1995, and

the license holder had to have had a positive "salmon decline impact" (SDI).⁴³ The SDI was similar to the "insured loss" concept used in the 1995 program. The SDI equaled the product of (a) the difference between the highest salmon income in any year from 1986 to 1991 and the least amount of gross income from the years 1991 to 1995, and (b) the multiplier "2.5," and

finally, the person could not have earned more than \$2 million in net revenues from commercial fishing (in any combination of fisheries) in any year from 1991 to 1994, inclusive.

Eligible persons were asked to submit offers to sell during an application period that ran until December 31, 1996. Persons could offer to sell for any amount up to the SDI or \$75,000, whichever was lower.⁴⁴

Offers were ranked by "offer ratio" within each of the three classes of licenses used in 1995 - troll, Columbia River gill net, and charter. The offer ratio was the ratio of the offer amount to the SDI.⁴⁵

This selection method weighted the bid prices by a measure of losses that were to be compensated. Larger losses reduced the offer ratio and made it more likely that a given bid would be accepted. This approach was introduced explicitly to give highliners a better chance at participating in the program.⁴⁶

⁴² Breeden, pages 5-6.

⁴³ The SDI is very similar to the concept of "uninsured loss" used in the first buyback program. The change in terms reflects changes in the language of the Interjurisdictional Fisheries Act since the first program. Freese, pers. comm.

⁴⁴ Breeden, page 6.

⁴⁵ Breeden, page 6.

⁴⁶ Freese, pers. comm; Stern, pers. comm.

In 1995 persons who sold licenses to the state could buy a new license and re-enter the fishery. This changed in the 1996-97 program. This time, persons who sold licenses to the state could not hold licenses for ten years from January 1, 1997 (although licenses owned or operated by the license holder in 1995 were exempted).⁴⁷

4.2 Program purchases

The program received and ranked 117 offers to sell salmon troll licenses. These ranged from a low offer to sell for \$800, up to three high offers to sell of \$75,000. The program purchased 72 salmon troll licenses for \$2,285,271. This was an average of \$31,740 per license. This was almost 3.5 times the average price of \$9,136 the state paid in 1995. The lowest price accepted was \$700 and the highest were two offers of \$75,000. The offer ratios ranged from a low of 0.169, when a license with a gross SDI of \$58,830.75 was offered for \$9,985, to a high of 0.642, when a license with a gross SDI of \$12,657.75 was offered for \$8,132.75.⁴⁸

The program received and ranked 193 offers to sell Columbia River gill net licenses. These ranged from a low offer to sell for \$10,000, up to 26 high offers to sell of \$75,000. The program purchased 52 gill net licenses for \$2,347,561. This was an average of \$45,145 per license. This was about twice the average price of \$21,998 the state paid in 1995. The lowest price accepted was \$11,368 and the four highest were \$75,000. The offer ratios ranged from a low of 0.178, when a license with a gross SDI impact of \$252,036 was offered for \$45,000, to a high of 0.378, when a license with a gross SDI of \$81,905 was offered for \$31,042.⁴⁹

The program received and ranked 47 offers to sell salmon charter licenses. These ranged from a low offer to sell of \$125, up to two high offers to sell of \$75,000. The program purchased 18 salmon charter licenses for \$443,138. This was an average of \$24,619 a license. This was about 1.8 times the average price of \$13,896 the state paid in 1995. The lowest price accepted was \$9,264 and the highest was \$45,860. The offer ratios ranged from 0.081, when a license with a gross SDI of \$307,061 was offered for \$25,000, up to a

⁴⁷ Breeden, page 6.

⁴⁸ Breeden, page 8, "Report A" titled "Summary of 1995 and 1996 Buy-out Programs," "Report B" titled "NEAP Compensated Licenses by Offer Ratio," and "Report D" titled "NEAP Buy-out Ranking By Offer Ratio."

⁴⁹ Breeden, page 8, "Report A" titled "Summary of 1995 and 1996 Buy-out Programs," "Report B" titled "NEAP Compensated Licenses by Offer Ratio," and "Report D" titled "NEAP Buy-out Ranking By Offer Ratio."

high of 0.279, when a license with a gross SDI of \$73,820 was offered for \$20,649.⁵⁰

In total, the program spent about \$5.2 million dollars. Administrative costs were \$123,217, or 2.3% of the total program costs.⁵¹

5. The 1998 Buyback program

5.1 Origins of the Program

The third buyback program was carried out using funds supplied under section 312(a) of the Magnuson-Stevens Fishery Conservation and Management Act. This section, titled “Fisheries Disaster Relief,” allowed the U.S. Secretary of Commerce to make funds available to Washington State “...for any activity that the Secretary determines is appropriate to restore the fishery or prevent a similar failure in the future and to assist a fishery community affected by such a failure.”⁵²

The U.S. Congress appropriated \$3.5 million for this third buyback program in June, 1997. Section 312(a) requires a 25% state participation, and the Washington State Legislature duly appropriated \$1.17 million for the program.

In April 1998, following the appropriation, the Governor of Washington asked the U.S. Secretary of Commerce to declare a disaster under section 312(a). The Governor noted that salmon runs had been small for several years because of ocean conditions and that problems had been made worse by winter flooding in 1995-96 and 1996-97. He said that fresh water spawning habitat throughout Puget Sound had been “particularly hard hit” by the flooding. Through this focus on the continuing problems with ocean conditions and the concern with the winter flooding, buyback was justified for the Puget Sound salmon fisheries as well as for the ocean fisheries that had been covered in the preceding two programs.⁵³

⁵⁰ Breeden, page 8, “Report A” titled “Summary of 1995 and 1996 Buy-out Programs,” “Report B” titled “NEAP Compensated Licenses by Offer Ratio,” and “Report D” titled “NEAP Buy-out Ranking By Offer Ratio.”

⁵¹ Breeden, page 7.

⁵² 16 U.S.C. 1861a. Note that the National Marine Fisheries Service has recently (Feb. 11, 1999) proposed a rule for framework regulations to buyback licenses under sections 312(b)-(e) of the Magnuson-Stevens Act. The program in Washington was based on a different section of the Act.

⁵³ Washington. State of. “Application for Federal Assistance.”

The goals for this program were similar to those for the preceding two programs: to provide short-term financial relief that would help some license holders make the transition out of the salmon fisheries, and to provide long term relief to the fishery through the reduction in the number of salmon fishing licenses.⁵⁴

5.2 Program rules

Because of the geographical extent of the floods, this program was directed at the fisheries covered by the first two buyback programs, plus the Puget Sound salmon seine, gillnet and reef net fisheries. The available funding was divided among the fleets roughly in proportion to the number of licenses issued for each fishery.⁵⁵

Washington had \$4.67 million available under this program, and allocated \$152,000 to charter licenses, \$750,000 to troll licenses, \$840,000 to Columbia River gillnet licenses, \$660,000 to Puget Sound seine licenses, \$2,040,000 to Puget Sound salmon gill net licenses, and \$105,000 to Puget Sound reef net licenses.⁵⁶

The program was run in two phases. In Phase One, each license holder could offer to sell his license at a price quoted by the state. This quoted price was the same for all licenses of a given type. Phase Two would only occur if there was money left in the accounts from Phase One. Phase Two was much like the 1996-97 program: license holders would submit bids with their offers to sell, and the bids would be ranked by the ratio of the bid to the license holder's "salmon loss."

The applications for Phase One were mailed to license holders on October 2 and were due back on October 30.⁵⁷ In Phase One, license holders offered to sell at prices published by the state. Salmon troll and salmon delivery licenses could be sold for \$7,500, Columbia River gill net licenses could be sold for \$10,000, Puget Sound gill net licenses could be sold for \$12,000, reef net licenses for \$15,000, and purse seine licenses for \$30,000. Salmon charter licenses could be sold for \$1,000 for each angler license attached to the license, up to a maximum of \$10,000.⁵⁸ These prices reflected bid price information obtained in the 1996-97 buyback, a desire to pay a premium over market prices, and industry input and jockeying over relative prices.⁵⁹

⁵⁴ Washington, State of. "Application for Federal Assistance."

⁵⁵ Edie, pers. comm.

⁵⁶ Washington. WAC 220-95-013.

⁵⁷ Peck, application letter, October 2, 1998.

⁵⁸ Washington. WAC 220-95-022.

⁵⁹ Edie, pers. comm.

Offers to sell at the quoted prices would be accepted on a “first-come, first-serve” basis until the funds for each fishery had been exhausted. Random drawings were to be used to choose between offers received on the same day if there were insufficient funds to purchase them all.⁶⁰

Persons who sold their licenses to the program during Phase One were not restricted from re-entering the fishery in the future but persons who sold during Phase Two were.⁶¹

5.3 Program purchases

In all the fisheries except for the Columbia River gillnet fisheries there were more offers to sell than could be bought with the available budgets. The random drawing had to be used to choose which of the offers to accept. Columbia River gillnetters submitted 64 applications of which 61 were purchased, 146 were received from trollers and 100 were purchased, 58 were received from charter license holders and 20 were purchased, 568 were received from Puget Sound gillnet license holders and 172 were purchased, 29 were received from Puget Sound reef net license holders and 7 were purchased, and 144 were received from Puget Sound seine license holders and 22 were purchased.⁶²

Phase Two started on November 10 when applications were mailed to Columbia River gill net license holders. Completed applications were due on November 30.⁶³ In Phase Two fishermen were asked to submit bids with their offers to sell. License holders could offer to sell the license for the amount of their salmon loss (computed as in the 1996-97 program) or \$75,000, whichever was less.⁶⁴ Licenses in each category were then ranked by “offer amount” which was the bid divided by the amount of their salmon loss. Persons selling a license under Phase Two could not own or operate a commercial salmon license (including a charter license) from the start of 1999 to the end of 2008, unless they owned or operated the license in 1997.⁶⁵

The program received and ranked 75 Phase Two applications. These ranged from a low offer to sell of \$11,224, up to seven high offers to sell of \$75,000. The program purchased 9 gillnet licenses for \$246,400. This was an average of \$27,378 a license and was about 61% of the price paid for similar licenses in 1996-97, but about 274% of the price paid for similar licenses in Phase One. The lowest price accepted was \$15,000 and the highest was

⁶⁰ Washington. WAC 220-95-032.

⁶¹ Washington. State of. “Application for Federal Assistance.”

⁶² Edie, pers. comm.; Fagerness, pers. comm.

⁶³ Fagerness, application letter, November 9, 1998.

⁶⁴ Washington. WAC 220-95-022.

⁶⁵ Washington. WAC 220-95-032.

\$50,000. The offer ratios ranged from 0.151, when a license with a gross salmon income loss of \$161,827 was offered for \$24,500, up to a high of 1.0 when a license with a gross salmon income loss of \$59,733 was offered for the same amount. The highest offer ratio accepted by the program was 0.2666, when a license with a gross salmon income loss of \$150,043 was offered for \$40,000.⁶⁶

6. Discussion

6.1 How many licenses were eliminated?

The three buyback programs purchased:

- 205 or 41% of the 1994 Gray’s Harbor-Columbia River gillnet licenses and Willapa Bay-Columbia River gillnet licenses
- 362 or 54% of the 1994 troll licenses
- 61 or 23% of the 1994 charter licenses
- 22 or 7% of the 1994 Puget Sound seine licenses
- 172 or 16% of the 1994 Puget Sound gillnet licenses
- 7 or 14% of the 1994 Puget Sound reef net licenses

The purchases are summarized by year and fishery in Table 2.

Table 2. Washington Salmon Licenses Bought Back by Year and Type

Year	Troll	Charter	Columbia River gillnet	PS seine	PS gillnet	PS reef
1995	190	23	83	0	0	0
1996-97	72	18	52	0	0	0
1998	100	20	70	22	172	7
Total	362	61	205	22	172	7

⁶⁶Fagerness, pers. comm.

Table 3 shows the numbers of licenses issued by type and year from 1993 to 1998.

Table 3. Washington Salmon Licenses by Year and Type⁶⁷

Year	Troll	Charter	GH gillnet	W gillnet	PS seine	PS gillnet	PS reef
1993	668	265	147	365	316	1,075	50
1994	669	260	146	360	306	1,043	50
1995	422	231	117	300	297	966	50
1996	323	210	102	264	292	887	50
1997	315	209	95	256	285	854	48
1998 ⁶⁸	292	198	78	219	265	766	42

Table 3 has to be used with care. It only shows licenses with paid renewal fees in any given year. License holders did not have to have a current license with a paid renewal fee in order to sell to the buyback program in a given year. Since the state licensing office did not refund paid license fees when a license was bought back, a fisherman may not have licensed his vessel in the year he sold to the buyback program. He would actually have an incentive not to license until he knew if he would sell or not.

This creates problems of interpretation. If a license was bought back in 1998, the reduction in the total number of licenses may show up between 1997 and 1998 (if the license holder did not pay the renewal fee in 1998) or it may show up between 1998 and 1999 (if the license holder paid the fee in 1998 but did not in 1999).

Using these data, and bearing in mind the interpretation problems, it is possible to make rough estimates of the total decline in the size of the each fleet and the relative importance for each fleet of buyback and uncompensated license expiration. This has been done by subtracting the numbers of licenses bought back in 1998 from the numbers outstanding in 1997. The estimates of the changes thus actually cover for the period 1993 to 1999. They are made on the basis of two assumptions. First, it is assumed that the change in numbers of licenses from 1997 to 1998 reflects part of the 1998 buyback and that the remainder of the 1998 buyback will show up in changes in numbers of licenses from 1998 to 1999. Second, it assumes no uncompensated expirations between 1998 and 1999. These numbers are meant to provide a rough approximation to program impacts.

⁶⁷ This table shows the number of paid license renewals in each year for each license type. If refunds were given the licenses are not included in these counts. Licenses may or may not have been renewed in the year in which they were bought back. Ownership of a current license was not a buyback requirement and Washington did not refund renewal fees if a license was bought back. Washington required a person to renew their license each year in order to be able to renew it in the following year, but fishermen often renew as late as late December. Some license holders might have held off renewing their licenses until they learned whether or not their license would be bought back. Judkins, pers. comm.

⁶⁸ 1998 data is provision and is subject to change.

Table 4 provides information on license reduction and its causes for this period:

Table 4. Analysis of Changes in Numbers of Washington Salmon Licenses

Fleet	Licenses in 1993	Licenses in 1999 (est.)	Change in licenses, 1993-1999(est.)	Percentage change (est.)	Percent of change due to buyback (est.)	Percent due to uncomp. expiration (est.)
Troll	668	215	453	67.8	79.9	20.1
Charter	265	189	76	28.7	80.3	19.7
Col. R. gill.	512	281	231	45.1	88.7	11.3
P.S. seine	316	263	53	16.8	41.5	58.5
P.S. gill.	1,075	682	393	36.6	43.8	56.2
P.S. reef	50	41	9	18.0	77.8	22.2

Over the time period studied, large proportions of the licenses were removed from each of these fleets. The percentages ranged from an estimated 16.8% of the Puget Sound seine fleet up to an estimated 67.8% of the troll fleet. The troll, Columbia River gillnet, and Puget Sound gillnet fleets had the largest declines in the numbers of licenses, but the reasons in these cases appear to be different. Approximately 80% to 89% of the license reduction in the troll and Columbia River gillnet fisheries were due to buyback; in contrast, approximately 56% of the reduction in the Puget Sound gillnet licenses was due to uncompensated expirations. Uncompensated expirations were also very high in the Puget Sound seine fishery. The Puget Sound reef net fishery was the only Puget Sound fishery where a large majority of the license reduction was attributable to buyback.

6.2 Did the programs retire as many licenses as possible?

Only the first buyback program, in 1995, was meant to remove as many licenses as possible. Although this first program had a distribution objective as well - spreading the available disaster relief money among as many persons as possible.⁶⁹ The 1996-97 and 1998 programs were less concerned with maximizing the reduction in the numbers of licenses.

⁶⁹ Stern, pers. comm. suggested that this was considered a goal of the program at the time.

Some economics

The market price for a license should represent the value placed on the license by the person who just finds it worth their while to continue to hold the license. This will be equal to the present value of the future net benefits (after fees) that this person expects to get because of holding the license. If the present value of benefits a person expects to get is less than the license value, they would have sold the license. In general, the people who hold licenses probably have a present value of net benefits equal to or greater than the value of the license.

A person's "reservation price" for license ownership is the price at which they would switch from wanting to hold the license to wanting to sell the license. Each license holder would have a different reservation price and it would be possible to rank these from the lowest to the highest.

Reservation prices are important because a buyback program trying to minimize the cost of buying back homogenous licenses would want to get bids from license holders that were equal to their reservation prices. The program could then buy licenses from persons with the lowest reservation prices in order to buy the most licenses possible.

The average price paid for licenses in a significant buyback program paid for by general funds may well be as high as or higher than what the market price would have been in the absence of the program, even if the program buys the least expensive licenses possible. A buyback program will increase the number of licenses demanded at any given price. To some extent it will attract persons who were already going to sell in a given year (and whose reservation prices were below the market price) but it will also likely have to attract some persons who would not have sold at the market price and who will have to be paid more.

Moreover, if the buyback program is of any size, the market price will actually become a misleading guide. The market price should begin to rise soon after it becomes known that a buyback program will be starting. License holders will recognize that the buyback program has shifted the demand curve for licenses out and they will have to be paid more to part with their licenses. A large scale buyback program may completely dwarf a thin market.

Reservation Prices and Actual Bids Under Washington's Programs

Most persons will probably submit bids that are above their reservation prices. The first reason for this is that no license holder would have an incentive to submit a bid below his reservation price. That would lead the license holder to sell the license for less than it is worth to him, and no one would do that voluntarily. The second reason is that most license holders would probably be indifferent between keeping their license and getting

something about equal to their reservation price for it. This is not a strong motivation for offering a license.⁷⁰

The third reason is that many license holders may speculate against the program and submit bids higher than their reservation prices in hopes of getting a windfall. A person deciding whether or not to submit a bid can bid their true reservation price or can bid above it. If they submit their true price they are about as well off if their bid is accepted as they are if it is not, although they would have incurred the transactions cost of application. If they submit a bid above their reservation price they have a significant chance of being better off if their bid is accepted (although if their bid is not accepted they still get no benefit).⁷¹

There is no independent information on the true reservation prices for the bidders in these buyback programs. Because of this it is impossible to say whether or not a program bought the most licenses for the available budget. For the reasons listed above, the market price for the licenses will not be a good tool to use to evaluate program purchases.

It is possible to look at the rules for the different programs and say something about how these might have affected the incentives to submit bids that approximated the reservation price. A look at the rules will also indicate whether or not a specific program bought the lowest bids submitted.

Before going further, it is clear that the decision not to buy vessels helped keep the administrative costs of the program down, and allowed it to buy more licenses. The tendency of vessels to depreciate in value between buyback and resale, and the real costs of buying, storing, maintaining, and re-selling, were major drains on program funds in earlier Washington buyback.⁷² Program designers appear to have had this experience in mind during the design of the most recent buyback programs.⁷³

⁷⁰ Dixit and Nalebuff, page 320.

⁷¹ Dixit and Nalebuff, page 320.

⁷² Schelle and Muse, page 64.

⁷³ Freese, pers. comm.; Stern, pers. comm.

Key elements of each of the buyback programs are summarized in Table 5.

Table 5. Comparison of Methods Used to Retire Licenses

Program	Method used
1995 Buyback	Solicit offers to sell; rank bids in ascending order, buy from the bottom so long as funds last; pay bid price for each license.
1996-1997 Buyback	Solicit offers to sell; rank bids in ascending order of ratios of bid price to measure of losses; buy from the bottom so long as funds last; pay bid price for each license
1998 Buyback; Phase 1	Publish prices at which licenses will be bought; solicit offers to sell; buy so long as funds last
1998 Buyback; Phase 2	Solicit offers to sell; rank bids in ascending order of ratios of bid price to measure of losses; buy from the bottom so long as funds last; pay bid price for each license

The 1995 Program

The 1995 buyback program purchased the lowest bids submitted to it in an effort to remove as many licenses as possible. There were several factors, however, which may have encouraged license holders to submit bids above their reservation prices.

The program called out a budget and a timetable. No suggestion was made that the program would not spend all of the money if the bids were too high. Actual targets for license purchases were not called out. However, the budget, the timetable, and the fact that this was to be conducted in one round, probably encouraged some license holders to submit bids above their reservation prices in hopes the program would buy what it had to in order to meet its self-imposed deadlines.

The program rules called out a high bidding limit (\$100,000) and a number of bids were submitted at that limit. None of the bids accepted came close to this limit, but the existence of the limit itself may have contributed to higher bids. Some psychologists argue that people often make estimates of numbers by seizing on a reference point and making adjustments from that point. Reference points may not be closely related to the number that is to be estimated.⁷⁴

⁷⁴ Frank, page 243.

This can be a problem, for example, in survey research. A researcher trying to find how much a person values something, may ask “Is it worth more or less to you..” than a given amount. The person’s response may depend on the amount supplied by the researcher in the question.

The bidding limit announced in the program rules, \$100,000, was high above any realistic price that may have acted as a similar reference point for bidders. This may have biased bidder estimates of their own reservation prices, their estimates of the reservation prices of other individuals, and their estimates of potential bids, upwards.⁷⁵

This program did not place a limit on the ability of a license holder to sell to the program and then re-enter the fishery. If the goal is to remove the largest number of licenses possible, this was probably a reasonable move. It would reduce the future administrative costs of enforcing a contract to leave the fishery. Further, it would increase the pool of potential sellers to the program. Highliners, who might not otherwise have submitted a bid or who might have submitted very high bids would have been enabled to bid considerably less than their reservation prices. They could then have entered the license market where prices were probably below those paid by the buyback program (for reasons discussed earlier) and acquired a new license.

It may be that, even without these changes, the rules for choosing how much to pay bids that were accepted could be changed to make it more likely that bidders would submit bids closer to their reservation prices. One alternative would be to accept bids on the basis of the same criteria, but to pay bidders the bid submitted by the person next highest in the ranking.⁷⁶ Thus if two bidders submitted bids of \$10,000 and \$12,000, and no bids were submitted between these two, the low bidder would win, but would be paid \$12,000.

This would increase the benefits of submitting a bid reflecting reservation price and reduce the potential benefits of submitting a bid above it. Earlier it was noted that the third reason average offer prices would be above average reservation prices is that it would pay license holders to speculate against the program. A license holder who submitted a bid reflecting the true reservation price would not really be better off if the bid was accepted. However, under the rule described above, the person would be better off if the bid were accepted since he would receive the next highest bid.

Bids above reservation prices would be enhanced as well, since bidders could expect to get the difference between their bid and their reservation price, as before, but also the difference between their bid and the next bid up. However, if the satisfaction from

⁷⁵ The known budget may also have had a reference effect, but it is not clear if this would have increased or reduced bids.

⁷⁶ This proposal is based on a discussion on a related topic in Dixit and Nalebuff, page 321.

additional income gets smaller as income itself gets larger, the relative attractiveness of this additional “premium” should get smaller as the total return gets larger. Given the increased risk of losing with a higher bid, bidding incentives may be shifted to encourage bids relatively closer to the reservation price.

Whether or not this specific approach would be an improvement, there may well be a pay-off to investigating payment mechanisms other than paying the bid price for accepted bids. It is interesting that the potential benefits from this alternative scheme do not lie in the procedure for ranking bids itself, but in the changed incentives it might create for offering bids that reflect the bidder’s true reservation price.

The 1996-1997 Program

From the evidence of the prices paid, the second program probably removed the smallest number of licenses per dollar spent. The average prices paid for licenses in the second program were higher than in the first program or in phases 1 or 2 of the third program. The average prices paid in each program are summarized in Table 6:

Table 6. Average Buyback Prices Paid for Washington Salmon Licenses

Year	Troll	Charter	Columbia River gillnet	PS seine	PS gillnet	PS reef
1995	\$9,136	\$13,896	\$21,998	n.a.	n.a.	n.a.
1996-97	\$31,740	\$24,619	\$45,145	n.a.	n.a.	n.a.
1998 (1)	\$7,500	\$10,000	\$10,000	\$30,000	\$12,000	\$15,000
1998 (2)	n.a.	n.a.	\$27,378	n.a.	n.a.	n.a.

Unlike the first program, the second program did not rank offers in ascending order by bid. This program was not buying the lowest bids. The license holders knew this before they submitted their offers. The bid was important because it determined what a license holder would receive if the bid was accepted.

This program ranked bids by the ratio of the bid to the uninsured revenue losses incurred because of the decline in harvests. Persons with low reservation prices would be at an advantage because they would have more room to submit a lower bid and reduce the size of the ratio that way. Persons who had large losses would be at an advantage since they would have a larger loss and therefore a relatively larger numerator. This would allow them to submit a relatively higher bid while preserving a relatively low bid ratio.

Persons with low reservation prices would be those whose future benefits from holding the license had a low present value. This would include persons with relatively high

opportunity costs or relatively low fishery productivity. It would also include those who were nearing the end of their fishing career.

Persons with large losses would be persons who were relatively productive in the late 1980s. Their fishery revenues would have dropped the most with the decline in fishery production. Thus, this program would have given highliners an advantage over other fishermen. A large loss would have allowed a license holder to submit a higher bid than otherwise with a reasonable probability of seeing it accepted.

This program introduced provisions to prevent license holders who sold their licenses from reentering the fishery. This may have led to higher reservation prices since persons with very high reservation prices were now precluded from bidding under their reservation price but above the market price and then acquiring a new license in the market. However, given the high sums paid for many licenses, this provision may have been politically necessary.

The 1998 Program

In the first phase of the third program, in 1998, fishermen were offered a price on a take it or leave it basis. If a license holder's reservation price was below the price offered by the state he would submit an offer to sell, and if the license holder's reservation price was above it, he would not. In every fishery except the Columbia River gillnet fishery, there were more license holders offering to sell their licenses than could be bought with the available buyback funds.

This program did not ask license holders to submit bid prices. The prices paid were not equal to bids and so there was no incentive in this program to try and elicit bids from fishermen that were equal to their reservation prices. This program, however, paid lower average prices and removed more licenses from the fishery per dollar spent than the 1996-1997 program.

The second phase of the 1998 program only applied to the Columbia River gillnet license holders. These were the only license holders who did not use up the available money in the first round. The program rules for this second phase were similar to those for the 1996-97 program. Offers to sell were ranked on the basis of the ratio of the bid to the uninsured revenue losses incurred because of the decline in harvests.

Interestingly, the average bids accepted in this version of the program were far lower than those in the 1996-97 version. Table 6 shows that the average accepted bid in 1996-97 was about \$45,000, while the average accepted bid in 1998 was about \$27,000. A possible explanation for the change is that bids were changed in response to the tighter budget constraint for the program. In 1996-97 there was \$2.3 million allocated to buyback

Columbia River gillnet licenses; in 1998 only about \$0.25 million was available for license purchase. Another possibility is that bids were related to price “reference points” established in the first phase.

As noted earlier in this paper. The fact that the programs did not buy as many licenses as they could have is not meant as a criticism of the program. License reduction was only one of the objectives and the programs cannot be judged on that basis alone and out of context.

6.3 Did the Programs Reduce Fishing Effort in the Short Run?

Did the programs buy licenses from persons who were not currently active in the fishery, or did they buy effort from persons who were active in the fishery. If they did the later, was the effort replaced? Was the competition for fish reduced for the license holders who had already been active, so that their costs went down and their average harvests went up? This could take place if, for example, a highliner was taken out of the fishery even if he was replaced with someone, so long as the new person wasn't as effective at harvesting fish.

Anecdotal information from some managers suggests that the programs have not yet made a significant dent in current effort. One familiar with the troll fisheries indicated that the programs may not have cut deeply into current effort in that fishery yet. In the troll fishery the number of licenses each year was much greater than the number actually used to fish. In 1995, 96 trollers made landings, although there were 422 licenses. In 1996, 90 trollers made landings and there were 323 licenses, and in 1997, 51 made landings and there were 315 licenses.⁷⁷

Another manager notes that the Columbia River fisheries (not including activities in Gray's Harbor and Willapa Bay) are so truncated now that it would be hard to know how much of the fleet could be considered active.⁷⁸ In Puget Sound anecdotal information suggests that despite the large numbers of seine and gillnet licenses renewed each year, no more than 150 of each might be actively used.⁷⁹

⁷⁷ Table 2 and PFMC (1998), Table D-6, page D-9.

⁷⁸ Millward, pers. comm.; Boessow, pers. comm.; LeFleur, pers. comm.

⁷⁹ Boessow, pers. comm.

6.4 Full Accounting for Program Costs

The programs were operated with relatively modest administrative costs. The costs in the first program came to about 3% of the funds disbursed, and the costs of the second came to about 2.3% of the funds disbursed. Total expenses for the first two programs were \$442,827. The costs of the program in 1998 are not yet available.

These administrative expenditures, however, were part of the total costs of the whole program. Additional costs, not covered include:

- * costs of obtaining the federal grants
- * costs associated with efforts by license holders to get a share of the money
- * the costs of the taxation required to raise the funds.

Federal grants

The reported administrative expenses start when the grants have been made and the program is underway. The administrative costs are basically implementation costs. They do not cover the costs of program design, consultation with industry, lobbying the federal government for the money, drafting regulations, and making statutory changes.

Efforts to get a share of the money

In a program such as this, with millions of dollars available for distribution, there may be considerable lobbying over the rules that determine how the money will be distributed. In addition, license holders might modify their behavior in an effort to obtain a part of the benefit under the agreed rules. License holders may have continued renewing their license after they might otherwise have stopped, in order to continue to qualify for buyback.⁸⁰ They may have attended informational meetings with costs in time and travel expenses. They had to complete application packages - another activity taking time. Since not all the offers were accepted, these costs would have been incurred by persons whose licenses were not repurchased as well as by those who sold licenses to the program.

⁸⁰ The cost to Washington of processing applications it would not otherwise have had to process is an administrative cost not covered by the administrative budget for buyback. License renewal fees paid by persons renewing licenses solely to qualify for buyback are a transfer payment from license holders to the state, and are not a cost from the view of a cost and benefit accounting framework. However, they should be a deduction from the benefit received by the license holders from the buyback program.

In this program the fleets to which the funds were to be directed had to be identified, the allocation of money among the fleets had to be determined, and the mechanism for determining whose licenses to buy and how much to pay for them had to be determined. The programs went through several methods for determining each of these things. These changes were probably due to political competition among different groups of fishermen to obtain a part of the program benefits.

The costs incurred by the public in submitting applications may have been significant. The final report by the state on the 1995 program notes that the state held:⁸¹

- * informal meetings with about 70 industry leaders
- * made, received, or returned more than 1,200 phone calls
- * held a public hearing for about 140 interested fishers
- * held 20 workshops in an effort to involve industry in planning and implementation

This implies a significant commitment of time by the private sector. Some of these costs would have been incurred by all license holders who spent time considering whether or not to apply for the program.

Costs of taxation

The actual payments for the licenses would not be considered a cost in a cost-benefit analysis. In that context they would represent a transfer of income from one group of persons to another within the U.S. economy. One person's gain would be canceled by another person's loss.

There are, however, costs associated with raising the money that was spent on the program. These include the costs of administering and complying with the tax program, but perhaps more important, these include what economists call the "excess burden" of the taxation. Excess burden is the cost to society when persons change their behavior in response to taxation, in this case the federal taxation required to raise the money for these programs. Income taxation may lead people to work less (or more) than they would have liked. Sales taxes may lead them to buy more of one thing and less of another. The excess burden is the cost to people of these changes in behavior. There is some evidence that the excess burden cost of taxes can be high.

The U.S. Office of Management and the Budget (OMB) suggests that cost and benefit analyses of federal programs using general funds should be supplemented with an analysis of excess burden. OMB recommends the use of an excess burden factor of \$0.25 for each

⁸¹ Long *et al.*, page 3.

dollar spent.⁸² About 8.7 million was spent on these programs. Using the OMB guideline estimate, the excess burden for the program would have been about \$2.175 million.⁸³

This excess burden would be a cost from a U.S. accounting stance, but from the point of view of Washington's decision makers it would not be to any significant extent (except for Washington's own contribution of \$1.17 million). That is because the burden of the taxation required to raise the money would be spread over the whole U.S. and only a small part of it would be borne by Washington.

The grant of money might, or might not be viewed as a benefit by Washington. This would depend on whether or not the grant represented "new" money for Washington, or if it effectively meant that Washington would lose money it might otherwise have received for another purpose. It is probably not possible to know the answer to this.

6.5 Cost-effective income transfer?

The programs were successful in taking out large proportions of Washington's salmon licenses at moderate administrative cost. They might have been changed to take out larger numbers of licenses, but maximum license reduction was not the only goal. The other goal was to transfer disaster relief money from the federal government to the license holders.

Given that a decision was made to transfer income to the distressed license holders, the more relevant question is not, "Were there public and private costs?" Any program to transfer relief money to the license holders would have had these costs. A better question might be "Did the state and federal government choose a program that kept these public and private costs to a reasonable level?" The second question is a hard question to answer without a clearer statement of the program's goals for determining who should get the money. It is easy to imagine much more complicated and expensive procedures for determining how the money should be distributed.

The approach chosen had the benefit of removing excess licenses from the fishery. If income distribution was the primary goal of the program, the removal of licenses could be viewed as a way in which net program costs were reduced. The social savings from effort reduction would have been an offset to other program costs such as excess burden and administrative costs.

⁸² U.S. Office of Management and the Budget, Section 11.a.

⁸³ Washington contributed \$1.17 million. This has been included on the assumption that this came from state general funds and would have an associated excess burden of its own.

6.6 These Are Still Common Property Fisheries

The buyback programs have not changed the fundamental structure of the fishery. Despite limited entry these are still fisheries conducted to a great extent as regulated common property fisheries. The regulations which governed them prior to buyback are still in place. There are good reasons, therefore, to expect that through time competitive fishing pressures will lead fishermen to upgrade and to increase their effort. The increases in operating costs associated with these efforts will probably eat away a large proportion of any benefits the remaining license holders may enjoy now with fewer competitors.

Despite the large reductions in fishing effort, several of these fisheries are still a long way from reaching the optimum numbers estimated in 1991. As noted near the start of this report, those optimum numbers were based on fishery harvests before the severe resource problems of the early 1990s. Because of this, those optimum numbers are probably high now when measured against the goals they were meant to advance. The optimum number for the troll fleet was 150 licenses, but there are still an estimated 215 troll licenses, the optimum number for the Puget Sound seine fleet was 150 licenses, but there are still an estimated 263 seine licenses, the optimum number for Puget Sound gillnet licenses was 550, but there are still an estimated 682 gillnet licenses, and the optimum number for the Columbia River gillnet licenses was 250, but there are still an estimated 281.⁸⁴ Only the estimated numbers of licenses for the charter and the reef net fleets are below the 1991 optimums.

⁸⁴ These license estimates include the full estimated impact of the 1998 buyback program, and are less than the number of licenses reported for 1998 in Table 3.

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