

Buyback Of Fishing Rights In The
U. S. And Canada: Implications For Alaska

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Alaska

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Alaska's limited entry law contains provisions for the purchase and retirement of entry permits using funds collected by a tax on permit holders' fishing revenues. British Columbia, Washington State, and Oregon all have experience with permit or vessel buyback programs. The successes and failures of these programs are reviewed in light of existing questions about the Alaska buyback law. There are good reasons to doubt the workability and even the theoretical usefulness of Alaska's buyback law. Reforms of the buyback finance and permit and vessel purchase provisions are proposed.



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I. Introduction

Since the late 1960's a variety of license limitation programs have been implemented in salmon fisheries on the west coast of North America. None of these programs achieved fleet reductions at the time of limitation since the politics of limited entry, in all cases, required generous grandfathering rules to coopt potential opposition. As a result, the main achievement of initial limitation was to inhibit the growth of numbers of vessels and/or participants. Nevertheless, stock recoveries and/or improved salmon prices have resulted in significant, and in some cases, substantial permit or license values in these fisheries.

Many have expressed concerns that any new net benefits created through a license type program would be short lived since such programs do not solve the common property problem. Limiting the number of participants or fishing platforms does not contain each participant's ability to invest in greater fishing capacity. Under such programs, the appearance of new economic rents in the form of above normal profits, creates incentives for more intensive use of capital and labor inputs on each fishing operation. Thus the fleet's total fishing power has not been contained.

Fraser has documented the extensive upgrading of vessels and gear which has occurred under British Columbia's salmon limited entry program.^{1/} Many of these changes occurred despite "net ton for net ton" restrictions on replacement vessels. Pearse^{2/} and the report of the 1982 Fleet Rationalization Committee^{3/} echo Fraser's findings. A report by

the Alaska Commercial Fisheries Entry Commission (CFEC) provides data supporting the contention that more intensive use of capital inputs is a phenomena also occurring under Alaska's limited entry program.^{4/}

Whether or not economic rents generated under a license type limited entry program will eventually be totally dissipated is an important theoretical and empirical question. Some feel that a few constraints on important margins will prevent the complete erosion of benefits, while others aren't so certain.

Pearse and Wilen examined data for the 1957 through 1977 British Columbia salmon fisheries and concluded that the license program had significantly slowed the rate of capital growth.^{5/} These authors weren't, however, particularly optimistic about preservation of benefits over the longer term. Despite this, Pearse has recently recommended buyback in the British Columbia salmon fisheries in conjunction with many other program changes.^{6/}

Indirect evidence provided by permit or license values, suggests that at least for the programs considered, expectations of future net earnings streams aren't falling rapidly. Alaska's salmon fisheries experienced dramatic increases in harvests and gross returns after the limited entry program was implemented. This was chiefly due to stock recoveries, continuing mild winters, and reductions in foreign interceptions after the FCMA was implemented. These large harvests were quickly reflected in the prices of limited permits.

Wilen has noted that permit values don't necessarily imply that rents are being captured or ever have been captured by permit holders.^{7/} Nevertheless, it is difficult to believe that such substantial permit values could be sustained over time if net earnings expectations were

never being realized. Karpoff has provided empirical evidence that Alaska's permit values are directly related to the expected present value of future net earnings streams.^{8/}

To the extent that permanent rents can be created or quasi-rents induced and sustained for a long period of time, fleet reductions may result in efficiency gains. Redundant inputs could be released to their next best alternative raising the catch per unit effort of remaining units. Initially, at least, average cost per pound harvested should fall. Other cost reductions might result from reductions in congestion externalities, and savings could be realized in the areas of management and enforcement. For these reasons, many economists believe that the efficiency gains from fleet reductions under license-type limited entry programs could be substantial if capital intensification processes were adequately inhibited.

Fleet reductions could, of course, be achieved through a variety of taxation policies. Indeed, as long as private property rights cannot be assigned [such as individual fishermen quota proposals], taxes might be the preferred means to regulate common property fisheries. However, political processes have generally precluded the use of taxation as the primary means to achieve reductions in redundant inputs.^{9/}

Buyback is a fleet reduction method frequently favored by fishermen, when the general tax payer is paying the bill. Since initial limitation, buyback programs have been attempted in British Columbia, Washington, and Oregon. Alaska's limited entry statute provides for fleet reductions, but to date a buyback program has not been implemented.

Buyback programs have been readily justified on a benefit-cost basis since administrative costs are considered the only real cost of the program.^{10/} The bulk of the monies expended on buyback are considered transfer payments and do not enter the analysis. In contrast monetary expenditures as opposed to real costs may vastly exceed benefits.

Nevertheless, those concerned with buyback as a policy option must also be interested in the question of how to achieve maximum reductions in fleet capacity for any given expenditure. Programs competing for government funding must maintain the aura that the program and the transfers are worthwhile. Funding could evaporate, if fishermen are perceived to be excessively overcompensated or if administrative costs are perceived to be wasteful.

Programs entirely funded by fishermen make the goal of achieving maximum fleet capacity reductions for any given expenditure even more poignant. The buyback program currently described in Alaska's limited entry statute would be entirely funded by fishermen. In theory, net benefits would be created by fleet reductions, and both those exiting the fishery and those remaining in the fishery could split the largess. In practice, all fishermen whether they remain in the fishery or sell their privileges will be competing for those eventual net benefits within the ground rules of the program. A fisher funded buyback program will lack sufficient support, unless it is widely perceived that monetary expenditures will not exceed the new net benefits generated by the program.

Alaska's limited entry statute outlines the ground rules for a buyback program. It has never been implemented, and many have doubts about the program's workability.

Sundry buyback programs have been implemented in salmon fisheries in British Columbia, Washington, and Oregon. These programs represent pioneering efforts and considerable diversity with respect to objectives, ground rules, and decision criteria. Major goals varied from helping old-timers exit the fishery to achieving maximum reductions in fleet capacity at least cost.

This paper examines each of these programs in detail, paying particular attention to the effects of different decision criteria and program procedures on fleet capacity, real administrative costs, and net monetary outlays. In light of these real world buyback experiences, Alaska's proposed program is reviewed and some tentative suggestions for improving its workability are offered.

Introduction Footnotes

1. Fraser, G. Alex. "License Limitation in the British Columbia Salmon Fishery." J. FISH. RES. Board Canada. July, 79, Volume 36, pages 754-763.
2. Pearse, Peter H. "Turning The Tide," pages 83-84.
3. "Fleet Rationalization Committee Report," Chapter IV.
4. Alaska Commercial Fisheries Entry Commission, "Alaska's Fishing Fleets."
5. Pearse, Peter H. and J. E. Wilen. "Impact of Canada's Pacific Salmon Fleet Control Program," J. FISH. RES. Board Canada. July, 1979, Volume 36, pages 764-769.
6. Pearse, Peter H. "Turning The Tide," Chapter 9.
7. Wilen, James E. "Fishermen Behavior and the Design of Efficient Fisheries Regulation Programs," J. FISH. RES. Board Canada. July, 1979, Volume 36, pages 855-858.
8. Karpoff, Jonathan M. "Limited Entry Permit Prices," CFEC REPORT NUMBER 83-6.
9. This doesn't imply that professional fishermen universally oppose taxes as a means to achieve fleet reductions. See, for example, the comments of Martin Erickson in "Limited Entry Into The Commercial Fisheries," J. Carl Mundt, Editor, pages 43-44.
10. Canada. Department of Fisheries and Oceans. "Program Approval. Reinstitution of a Salmon Vessel Buyback Program."

II. British Columbia Salmon Limited Entry Program

A. Phase 1. and Subsequent Developments

The British Columbia salmon limited entry program was launched in 1969 with the creation of a specific salmon license instead of a general fishing license. The goal of this phase was to place a moratorium on the entry of new vessels. Only vessels that had made commercial salmon landings in 1967 or 1968 were eligible for the new license and license retention was dependent upon payment of annual renewal fees and at least biennial landings.

Two classes of licenses were issued. An "A", or ordinary, license originally went to persons who had landed more than 10,000 pounds of pink or chum salmon (or the monetary equivalent in other salmon species) while vessels with smaller landings were given type "B" licenses.

Both types of licenses were transferable with the vessel. "A" vessels could be retired and replaced by the owner, while "B" vessels could not be replaced. Some natural attrition of the "B" fleet was anticipated. A key feature of the program was that all vessels fishing for salmon were treated as a single fleet, irrespective of the gear or combinations of gear which they utilized or the areas in which they fished.^{1/}

Political pressure from vessel owners who fished salmon in peak years but chiefly targeted other species led to a relaxation of the original moratorium rules. Thereafter, landings of any species during the base years was counted for license eligibility.

This change seriously undermined the moratorium. Fraser indicates that 160 vessels were added by the rule change, many of which were large groundfish trawlers or halibut schooners.^{2/} Over time, this latent capacity of non-salmon vessels has been retired and replaced by full time salmon vessels. The retired vessels then continue to fish the species which they primarily targeted.

Prior to implementation of a buyback program (phase 2) a substantial revision of the vessel license program was implemented. Experience in 1969 and 1970 indicated that class "A" vessels were being retired and replaced with vessels of much greater capacity. Trollers and gillnetters were being replaced by seiners. In July of 1970 a "net ton for net ton" replacement rule was invoked, after which class A vessel licenses presumably became less homogeneous.

Prior to the rule change licenses were very close substitutes. Each conveyed the right to fish with any gear and in any area, and none constrained the amount of capital which an owner could bring to bear on the fishery. The licenses probably always varied somewhat in value depending on the vessel to which they were currently attached. With the "net ton for net ton" replacement rule, license values would also vary with respect to the assigned net tonnage. Thus with the rule, licenses became more heterogeneous.

Some administrative problems existed with the new regulation, since only vessels greater than 15 net tons needed to be registered and carefully measured by the Ministry of Transport. Calculation of net tonnage requires numerous measurements. The only net

tonnage information on many smaller unregistered vessels, were estimates which fishermen themselves provided the Department of Fisheries and Oceans. Thus, they would have a natural incentive to overestimate net tonnage for retirement and replacement purposes.^{3/}

To cope with this problem, standardized length to net tonnage conversion tables were created. Upon retirement, unregistered vessels were measured by the authorities for overall length, and net tonnage was assigned on the basis of such conversion tables.^{4/}

For unregistered vessels, this effectively became a length restriction, since a given overall length always resulted in a specified net tonnage. After the rule change, upgrading of unregistered vessels upon replacement apparently took the form of equal overall length but greater (actual) net tonnage and gross tonnage.^{5/}

In later years, a formal "foot for foot" and "net ton for net ton" replacement rule was passed which made it somewhat more difficult to increase the fishing capacity of registered vessels (15 net tons or more). Good examples of the growth in the size of registered vessels, despite net tonnage replacement restrictions can be found in the Fleet Rationalization Committee Report.^{6/}

Another feature of the British Columbia license program, which at least partially was attributable to a single license irrespective of gear type, was the practice of "pyramiding". Vessels did not have to be retired on a boat for boat basis. More than one boat could be retired and the combined assigned net tonnage became the limiting constraint on the replacement vessels.

Hence, small gillnetters and trollers could be combined to become a large troller, seiner, or seine combination vessel. The growth of the seine fleet, and the combination vessels under the British Columbia program is also documented in Fraser.^{7/} The practice of pyramiding became more pronounced in the mid-seventies, hence restrictions were placed on the practice in the late seventies.

In 1978, a limit was placed on the number of seiners or combination seiners. In 1980, the practice of pyramiding was completely outlawed.

B. Phase 2 - Buyback 1 Description

The purpose of Phase 2 was to reduce the overall fleet size. The funding for the buyback program was to come from salmon license fees. In 1970, license fees for "A" vessels under 15 net tons were increased from \$10 to \$100, and fees for larger "A" vessels were raised from \$10 to \$200.^{8/} In 1971, the fees for these vessel classes were raised again to \$200 and \$400 respectively. Licenses for "B" vessels were left at \$10, but the licenses were made "temporary" with a ten year expiration date. It was hoped that the fee differential would induce some to downgrade to "B" licenses and the eventual automatic retirement from the fishery.^{9/} Other changes in the program also occurred.

These increases in renewal fees (above \$10) were placed into a fund for buyback. A buyback committee of industry officials was charged with policy development and implementation. The committee hired its own manager and began a buyback program in 1971.

The buyback program applied only to "A" licenses since the "B" licenses would eventually expire by fiat. No buyback targets were established with respect to overall fleet reduction. All "A" license holders were notified about the program and could submit a non-binding application at any time.

The program operated on a "first come - first served" basis. Two appraisals were done on each vessel, and if these appraisals were reasonably close a 5% bonus was added to arrive at an offer price.^{10/}

To the extent that the appraisals were an accurate estimate of the combined market value of the vessel and its salmon license, the "offer" was greater than the market value from a seller's perspective for the following reasons:

- 1) The survey and appraisal costs were absorbed by the program.
- 2) The costs of finding a buyer and selling the boat were absorbed by the program.
- 3) The 5% bonus.

Applying was relatively costless, and if the vessel owner didn't like the offer after receiving two free appraisals, the offer could simply be rejected.

Under the program, vessels purchased were stripped of their licenses and resold with the provision that the vessel could not be used in any fishery on the west coast of Canada.

The ostensible reasons for this restriction were to avoid inundating other overcapitalized fisheries, and to prevent the remaining fleet from upgrading more cheaply by purchasing an auctioned buyback vessel.^{11/ 12/} The restriction should have

helped to maintain the value of vessels remaining in the fleet and probably reduced the opportunity cost and hence resale value of the vessels purchased. As such, the vessel purchase and resale provision represented a considerable drain on buyback funds.

When the program was terminated in 1984, 361 vessels or 6% of the 1970 "A" fleet had been retired. Vessel and license purchases totaled \$5,965,032, of which \$3,419,200 came from license fees and \$2,565,466 came from the auction resale of vessels. Administrative costs, exclusive of commissions came to \$149,716 and commission expenses on the resale of vessels came to \$238,669.^{13/}

The resale value of the vessels (excluding commission) represented approximately 43% of the vessel and license purchase price. The major loss in value was probably due to the loss of the "A" license and the severe restrictions placed on reuse of the vessel. Losses may have also occurred due to deterioration in storage and due to the large number of vessels auctioned each time. Commissions averaged 8.5% of the resale value, and were entirely absorbed by the buyback program. During the 73/74 fiscal year, 55.6% of the administrative costs were resale commissions, and on additional 15.1% were costs directly related to the purchase and resale of vessels. Table 1 provides a complete cost breakdown.^{14/}

Table 1

British Columbia Buyback
Administrative Cost Breakdown for the 1973/74 Fiscal Year

<u>Cost</u>	<u>Amount</u>
1. Program Management (program manager's salary and secretarial services)	\$ 27,310
2. Travel and Communications Costs	1,636
3. Travel and Per Diem for Buy Back Committee	1,944
4. Transportation of Vessels	1,974*
5. Advertising and Printing	1,716
6. Vessel Moorage and Insurance	10,564*
7. Vessel Insurance en route	237*
8. Vessel Appraisal	3,100*
9. Vessel Repair	1,390*
10. Miscellaneous	877
11. Commission Expenses	<u>63,680</u>
TOTAL	\$ 114,428

Source: Canada. Department of Fisheries and Oceans. "Program Approval..." Appendix II, Annex II-3, Table 8, page 20.

* Administrative costs other than the Commissions directly related to the purchase and resale of vessels.

Recovery of the salmon stocks and high prices in 1973 led to increases in the value of licensed vessels. The license fee structure used to fund buyback was bringing in less revenue each year as buyback proceeded. Hence, asking prices were rising and fewer vessels could be purchased. As a result the program was suspended.

Fraser notes that this increase in license values had little to do with fleet reductions, but it does serve as a reminder that, *ceteris paribus*, a buyback program will drive up the price of licenses as it proceeds. Hence, licenses purchased later in the program will be worth more. This raises the possibility that a buyback program in which the goals, objectives, timetable, and other relevant parameters are well known could give rise to considerable speculative activity on the part of fishermen.

C. Buyback 1 - Analysis

The first buyback program which occurred in British Columbia was run on a "first come - first served" basis. Free appraisals, state absorption of all transaction costs with respect to purchase and resale, and a 5% bonus all served to provide "above market" offers which attracted sellers. The restriction placed on the buyback vessels upon resale were severe, thereby further draining the available funds.

Given the constraints placed on the program, what types of units were actually purchased? How successful was the program at removing fishing capacity at least costs?

A review by Blake Campbell, covering the July, 1971 through the October, 1972 period provides some insights into purchases under the program.^{15/} The analysis was performed on 280+ of the 361 vessels which were eventually purchased and resold.

By the end of November, 1972, the department had received 950 applications and had purchased 287 vessels. Appraisals had been made and offers had been rejected by the owners of 340 (35.8%) of these vessels. Fifty-six vessels had been appraised, and offers to fishermen were to be sent out as soon as funding was available. Another 267 vessels were awaiting appraisal.^{16/}

More than half of the vessels which had obtained appraisals and offers rejected those offers. Of the 340 vessels which rejected offers, 175 were later sold on the open market at prices in excess of buyback offers. These data suggest that the appraisal process did not necessarily have an upward bias. The data also demonstrate that when vessels are involved, offers are relatively expensive to make and can easily be rejected.

Campbell notes that the first 281 vessels retired represented 4.5% of the salmon vessels operating in 1970 and 3.9% of the 1970 salmon production. Five and one-tenth percent of the gill net vessels were retired while only 2.8% of seine vessels were retired. Thus "first come - first served" decision rules may have had differential impacts by gear type and may have tended to select below average producers.

It has been suggested that a tradeoff may exist between using buyback to remove maximum potential fishing capacity or using buyback to remove the maximum amount of current production. The

tradeoff may only be relevant when vessels are being purchased and there are restrictions placed upon their reuse in the fishery.^{17/}

If all units will eventually upgrade under a license type program, then removing the maximum potential fishing capacity would entail purchasing the least expensive fishing capacity available. If the least expensive fishing capacity available represents low producing units, then relatively little current production would be released to operations remaining in the fishery. Purchasing a highliner's operation and preventing the capital from reentering the fishery may provide more near term benefits to those remaining in the fleet. However, fewer expensive units can be purchased given the limited budget so that over a longer term less may be accomplished using such a decision rule.^{18/}

With a "net ton for net ton" replacement criterion, the decision rule which would remove the maximum potential capacity from the fishery is not entirely clear. Some have suggested that the rule would be to purchase units which are least costly per "assigned" net ton.^{19/} The lower the cost per assigned net ton, the greater the "potential" net tonnage which can be retired.

For registered boats the assigned net tonnage was the actual measured net tonnage. For unregistered boats (less than 15 net tons) the assigned net tonnage was based on overall length. The rule seems to make some intuitive sense within an assigned net tonnage class. Removing vessels with the lowest value per net ton within a given "assigned tonnage" would then remove, at least cost, the greatest "potential tonnage" within that assigned tonnage class.

The rule does not seem to operate as well across actual net tonnage classes however. For the rule to work, fishing capacity would have to be proportional to net tonnage, and the constant of proportionality would have to be the same across all net tonnage classes.^{20/}

If a vessel's value is a function of its fishing capacity but the relationship between net tons and fishing capacity varied depending on the amount of actual net tonnage, the lowest dollar per net ton rule would not necessarily remove the greatest amount of fishing capacity per dollar expended. As a hypothetical example, consider a 5 net ton boat which has 5 "units of fishing capacity" and a 10 net ton boat which has 15 "units of fishing capacity." If a vessel's value is based on its fishing capacity, the price per unit of fishing capacity might be equal for both vessels, but the smaller vessel would have a lower value per net ton.

Nevertheless, given the nature of licenses which have evolved, the rule has some merit. If the program confined itself to purchasing vessel licenses, a ranking of licenses based upon lowest asking price per net ton would be preferable to ranking licenses based on lowest asking price per license, if the objective were to remove the maximum potential capacity for any given budget.

Purchasing vessels as well as licenses considerably complicates attempts to remove maximum potential capacity for a given budget. An appraisal will provide an indication of the dollar per net ton price which would have to be paid for the vessel, but if

restrictions on the reuse of the vessel were in place, it would provide much less information on what the vessel would be worth outside the fishery.

Campbell defined a "net cost of retirement" which was equal to the purchase price plus auctioneer's commissions, wharfage, and moorage costs minus the resale value.^{21/} Other administrative costs were ignored in the definition. It should be noted that resale values, and hence "net costs", could vary for a given vessel type depending upon the restrictions placed upon reuse of the vessel. It is possible that a vessel with the lowest purchase price per net ton could have a relatively high net cost of retirement per net ton depending on how the opportunity costs of the vessel type were affected by the use restrictions placed upon it at the time of resale. Thus, if different vessel types are impacted differently with respect to a use restriction, a decision rule to purchase vessels at the lowest price per net ton would not necessarily lead to the lowest "net cost of retirement" per net ton. Indeed managers may wind up retiring vessels which have few alternative uses outside of the fishery.

Campbell's work provides some further insights into the cost per ton and the production per ton among the first 282 vessels purchased in British Columbia's buyback program. Since the decision rule was "first come - first served," the reader should bear in mind that any relationships which appear in the data, might not be present in a buyback fleet where purchase decisions had been made using a different criterion.

Campbell calculated a "net cost of retiring vessel per ton" for a variety of different vessel categories. The results seem to indicate that the "first come - first served" decision rule retired a variety of vessels but did not lead to the greatest reductions in fleet capacity given the other constraints of the program. This data comes from 282 vessels analyzed by Campbell.

Campbell's data indicate that vessels under 30 feet contributed approximately 5% of the license revenue but only 2.8% of the buyback fleet. Vessels over 30 feet and under 15 net tons represented the bulk of the fleet, contributed 75.6% of the license revenues and comprised 77.2% of the buyback fleet. Vessels over 15 net tons contributed 19.4% of the license revenues and comprised 20% of the (282 vessel) buyback fleet.^{22/}

Vessels under 30 feet had the lowest net cost of retirement per ton (\$686/net ton). However, these vessels on an absolute and percentage basis were purchased the least under the program. Vessels less than 30 feet had a higher ratio of resale value to purchase price than the other two categories, suggesting that the small boats suffered less of a percentage drop in opportunity cost due to the ban on commercial fishing upon resale. This may be due in part to the prohibition on the use of foreign built vessels over five net tons in commercial activity in the United States.

The bulk of the vessels purchased under the program fell into the over 30 feet but under 15 net ton category. These vessels on average had the highest net cost of retirement per ton (\$1048 per net ton) of the three size categories. These facts are demonstrated in the following table adopted from Campbell.

Table 2

Data on first 282 vessels purchased and resold in
British Columbia's first buyback program, by vessel size loss.

	<u>Vessels Under 30'</u>	<u>Vessels Over 30' and Under 15 tons</u>	<u>Vessels Over 15 Tons</u>	<u>Total</u>
Number (NO.)	24	239	19	282
Tonnage (Tons) Assigned	86	1,631	560	2,277
<hr/>				
<u>Value of Vessels</u>				
Fisherman's Estimated Value	153	3,549	1,015	4,717
"Buyback Price - \$'000	120	3,246	838	4,204
Sale Price - \$'000	66	1,661	307	2,034
Net Cost - "Buyback" plus charges - less sale - \$'000	59	1,710	553	2,322
Salmon Production reported in 1970 - \$'000	54	1,437	271	1,762
<hr/>				
Net Cost of Retiring Vessel per ton - \$	686	1,048	987	1,019
Salmon Production Retired per \$1,000 of "Buyback" Money - \$	915	840	490	758
Fisher's Value Related to "Buyback" price - %	127.5	109.3	121.1	112.2
<hr/>				

Source: Blake R. Campbell, page 386

As noted earlier, it has been suggested that a tradeoff may exist between purchasing immediate reductions in production as opposed to eliminating the largest potential increases in fishing capacity (least cost per net ton).^{23/}

Campbell's data indicated that on average for the buyback fleet which developed using a "first come - first served" decision rule the reverse was true, at least for the fleet under 15 net tons. The greatest reduction in salmon production per \$1,000 of buyback money occurred in the under 30 feet vessel class, the same class which had the lowest net cost of retirement per net ton.

Campbell also divided the buyback fleet into six classes defined by purchase price. These data are shown on the following table. As can be seen, the net cost of retirement per ton tended to rise as the purchase price category increased. Vessels valued at less than \$5,000 were retired at \$292 per assigned net ton, while vessels in the \$30,000-\$59,999 price class cost \$1,555 per net ton to retire. The eight vessels purchased in the \$50,000 or over category represented the only break in the relationship between vessel value and net cost of retirement per net ton.

Salmon production per \$1,000 of "buyback" money expended tended to fall as vessel value increased, from \$2,302 of salmon per \$1,000 of buyback expenditures for vessels valued at less than \$5,000, to \$518 of salmon per \$1,000 of buyback expenditure for vessels valued at greater than \$50,000.

Thus for vessels purchased under the "first come - first served decision" rule, salmon production retired per \$1,000 of buyback money tended to be inversely related to the net cost of

Table 3

Data on the First 282 Vessels Purchased and Resold
Under British Columbia's First Buyback Program
Arranged by Purchase Value Category

		Vessel Price Less Than \$5,000	Vessel Price \$5,000- \$9,999	Vessel Price \$10,000- \$19,999	Vessel Price \$20,000- \$29,999	Vessel Price \$30,000- \$39,999	Vessel Price \$50,000 and Over	All Vessel
Number	No.	70	61	80	39	24	8	282
Tonnage (assigned)	Tons	294	257	602	407	349	268	2,277
"Buyback" Price	\$'000	184	498	1,125	960	940	497	4,204
Selling Price	\$'000	106	273	572	441	428	214	2,034
Net Cost - "Buyback" Price Plus Charges Less Selling	\$'000	86	245	596	552	544	299	2,322
Salmon Production	\$'000	198	282	446	336	344	155	1,762
Net cost of Retiring Vessels Per Ton	\$	292	686	988	1,353	1,555	1,115	1,019
Salmon Production Retired Per \$1,000 of "Buyback" Money Expended	\$	2,302	1,151	749	609	633	518	759

Source: Blake R. Campbell, page 387

retiring the vessel per ton. The tradeoff between retiring "future capacity" and current production was not apparent in the data. However, such tradeoffs might be apparent if the non-buyback fleet were examined; or if net cost of retiring per ton and production were known for all vessels in the fleet.

As a sidelight, Campbell reported the results of a survey on the future plans of 240 fishermen who had sold to the buyback program. Of these, 25.8% were upgrading and acquiring a larger salmon vessel, 12.5% were acquiring a smaller salmon vessel, and 3.3% had merely sold one of two salmon vessels owned. In all 50% of the 240 were remaining in the fishing industry. Thus many had used the program to sell at a premium and move to a preferred position in the industry.

D. Second Buyback Program

In the winter and spring of 1981 a second and smaller buyback program was run in the British Columbia salmon fisheries. An industry committee with some government representation ran the program through a manager who was a government employee.^{28/} This program was not funded by fees collected from fishermen but by \$2,900,000 of Canadian government general revenues which were made available in mid-February and had to be spent before the fiscal year ended at the end of March. In the time period available it was only possible to spend about \$2,500,000. ^{29/}

Applications were solicited in mid-February with a cut-off date of March 1 (the cut-off was a little later for persons from

Table 4

Administrative Cost Breakdown for the Second
British Columbia Buyback

	<u>COST</u>	<u>AMOUNT</u>
1.	Program Management (program manager's secretarial services, and other costs	\$ 53,763
2.	Travel and communications costs	1,289
3.	Travel, per diem, and other expenses for the Buyback Committee	7,066
4.	Advertising and Printing	2,300
5.	Vessel Resale	<u>183,125</u>
	TOTAL	\$247,543

Source: Burlington and Associates, Figure 2, pages 20-21.

outlying areas of British Columbia). Despite an application fee of \$100 a total of 351 applications were received. There was time to complete appraisals for 111 vessels and offers to buy were made to 32 fishermen and accepted by 26. ^{30/} The offer prices were based on vessel appraisals, "the size and age of the vessels and personal knowledge of the vessels by individual Committee members." ^{31/}

Because there were so many applications and funding limited the number of vessels that could be purchased it was necessary for the Buy Back Committee to select the applicants to whom offers to buy were to be made. "Selections were based on the criteria of 'purchasing the maximum fishing capacity with the funds available' and 'purchase a balanced fleet mix (in value terms) at a low cost per ton' and, at the same time, these selections were balanced against the 'equity' considerations of health, age, et cetera." ^{32/}

The total administrative costs came to \$247,543 or \$9,521 per vessel purchased. The bulk of these expenses, \$183,125, were associated with vessel resale. The vessels, which were purchased by the buyback program for a total of \$2,500,000 brought in an estimated \$660,000 when sold at auction. ^{33/} Pearse points out that the vessel resale might have brought in more money but the vessels had deteriorated somewhat during a long period in storage and were sold during a weak market. ^{34/} The money raised in the vessel resale went into the Canadian government's general fund and was not applied to further vessel buyback. ^{35/}

E. The Pearse Report Proposals

In 1981 Dr. Peter Pearse of Vancouver was appointed a Commission of one by the Governor General of Canada to find ways to improve Canada's west coast fisheries. ^{36/} Dr. Pearse's report, published in late 1982, made several controversial recommendations on new directions for effort reduction programs in Canada's salmon and herring fisheries. Although it now appears that many of these proposals are unlikely to be adopted it may be of some interest to describe those that dealt with the salmon fisheries.

The permits themselves were to change quite a bit under Dr. Pearse's proposal. Currently permits apply to the vessel and do not themselves restrict the gear that might be used on a vessel. Likewise the permits are not associated with specific fishing areas of British Columbia but allow the holder to fish in any of the Province's waters. Dr. Pearse recommended that current holders of the "A" type licenses be given new permits that would expire in ten years. ^{37/} These permits would be gear and area specific and instead of being associated with a vessel would be given to persons. ^{38/} With the exception of the ten year limit this new permit system would have been very similar to the one in use in Alaska. In addition to these new permits a royalty system of several cents per fish was to be implemented. ^{38/}

Dr. Pearse recommended that the number of permits be reduced by 50% in the ten year period after these new permits were issued. Each year during this ten year period within each of the new "fisheries" defined by gear type and area licensing the Canadian

government would "allocate by competitive bids new 10-year licenses amounting to one-tenth of the target fleet." ^{40/} The target fleet is half the current fleet. Only fishermen currently holding permits would be entitled to participate in the initial auction of permits. In the year after a person bought a new permit at an auction the old permit would expire and his new permit would be good for ten years. Once the fleet size target was reached "...new 10-year licenses should be issued by competitive bids according to the need for greater or lesser fishing capacity in each zone and sector of the fleet."^{41/}

Dr. Pearse also recommended that the auction program be accompanied by a more traditional buyback program but with the emphasis, where possible, on buying back the permit rather than the vessel. The money from this program was to come from several sources including a grant from the Canadian government, a tax on fishermen' landings, the money raised in the permit auctions, and borrowing against future revenues from taxes. ^{42/}

Thus in this program fishermen would be in possession of a permit to use a vessel to fish a particular gear type in a particular area for a period of ten years. During each of those ten years he would have to choose among three options: (1) doing nothing, (2) buying a permit good for another ten years in an auction and giving up his current permit, or (3) selling his permit to the buyback program. If he chose the first option and did nothing in each year at the end of ten years he would lose his right to fish without compensation.

British Columbia Footnotes

1. Fraser, G. Alex, "License Limitation in the British Columbia Salmon Fishery," Economics and Special Industry Services Directorate version, Chapter II.
2. *ibid*, pages 27-28.
3. *ibid*, pages 31-32.
4. Hereafter in this paper, the vessel tonnage assigned to a vessel upon retirement will be referred to as assigned net tonnage to differentiate it from actual net tonnage.
5. Personal communication from Russell Mylchreest, July 1984.
6. Fleet Rationalization Committee Report, pages 78-80.
7. Fraser, G. Alex, "License Limitation on the British Columbia Salmon Fishery."
8. The "\$" signs used in this British Columbia section refer to nominal Canadian dollars.
9. The expiration date on original "B" licenses was later extended through 1983. These permits have since been terminated and a legal challenge has been filed. (Personal communication with Russell G. Mylchreest, a management economic advisor at the Economics and Statistics Branch of the Department of Fisheries and Oceans)
10. Fraser, G. Alex, "License Limitation in the British Columbia Salmon Fisheries."
11. Fraser, G. Alex, "Working Paper on the Reinstitution of Buyback."
12. Why auction vessels might be relatively cheap could be due to (1) Transactions costs associated with the sale being absorbed by the program or (2) the temporary glut caused by auctioning a large block of vessels at one time.
13. Fraser, G. Alex, "Working Paper on the Reinstitution of Buyback."
14. Canada, Department of Fisheries and Oceans. "Reinstitution of a Salmon Vessel Buy Back Program in British Columbia."
15. Campbell, Blake. "A Review and Appraisal of the Salmon License Control Program in British Columbia," Part III.
16. *ibid*, page 390.

17. See Fraser, "Working Paper on the Reinstitution of Buyback" and Burlington and Associates, "Evaluation of the British Columbia March 1981 Salmon Vessel Buyback Program."
18. This assumes that highliners would require more for their licenses. To the extent that a highliner's vessel is more expensive (greater fishing capacity), the absolute transactions costs required the purchase and resell the vessel would be higher. Hence, the greater drain in funds.
19. Fraser, G. Alex, "Working Paper On the Reinstitution of Buyback," page 4.
20. Actually the problem may be a good deal more complex since the fishery has multiple species, and different gear types (which cluster into different tonnage ranges) tend to target on different species.
21. Campbell, Blake, page 384.
22. *ibid*, page 379.
23. Fraser, G. Alex, "Working Paper on the Reinstitution of Buyback," page 4.
24. Burlington, page 14.
25. Pearse, page 104.
26. Burlington, page 15.
27. Burlington, page 17.
28. Burlington, pages 15, 17.
29. Pearse, page 104.
30. Pearse, page 104.
31. Burlington, page 18.
32. Pearse, page 267.
33. Pearse, page 106.
34. Pearse, pages 87, 107-109.
35. Pearse, pages 93-95.
36. Pearse, page 110.
37. Pearse, page 110.
38. Pearse, page 114.

III. Washington State

The four approaches to buyback tried in Washington differed in several respects from the first program in British Columbia. The emphasis in the program goals was different. The British Columbia program tended to emphasize fleet reductions. The Washington program was implemented in the aftermath of court decisions which suddenly and drastically reduced the salmon available to fishermen operating in Washington's waters. In consequence, the Washington program put relatively greater emphasis on assistance to fishermen affected by the Boldt decision.^{1/} Where the first program in British Columbia was funded by license fees paid by the fishermen themselves, the program in Washington has been funded by successive grants from the Federal Government. In British Columbia vessels were always purchased while in Washington licenses have sometimes been purchased alone or in combination with a restriction on the use of the vessel. In the first British Columbia program licenses were not gear specific and so no decisions had to be made about the division of buyback funds among fleets. In the later part of the Washington program these decisions were made explicitly.

A. Limited Entry

In the years prior to limited entry commercial fishermen operating in Washington's waters had to purchase a license every year that they wanted to fish. Licenses were issued separately for purse seine, gill net, reef net, and troll gear. In addition to

the commercial gear license a vessel delivery permit valid for salmon was necessary for all vessels delivering salmon caught in Federal waters. In practice a vessel delivery permit was issued with every troll permit. Some trollers who only fished in Federal waters did not have troll licenses but did have vessel delivery permits. Troll gear was the only gear for which vessel delivery permits were necessary.^{2/}

In the spring of 1974 Washington enacted a moratorium on the issuance of new salmon fishing licenses in commercial salmon fisheries other than the charterboat fishery and the issuance vessel delivery permits for salmon from the beginning of 1975 through the end of 1977.^{3/} Although a major part of the motivation for acting in 1974 may have been concern over Federal court cases dealing with Indian fishing rights the moratorium had been under debate since the mid-sixties.^{4/} In 1975, 1976, and 1977, licenses and permits were only to be issued to the owners of licensed vessels which actually had been used to land salmon between January, 1970, and early May, 1974, or to owners of vessels meant for use in the fishery which were under construction or purchased between mid-April, 1973, and early May, 1974. Licenses were transferable and were not tied to the vessel.^{5/}

Major changes were made in the moratorium in 1977 and 1979. In 1977 the state extended the moratorium through the end of 1980, expanded it to include charter boats, and made the qualifications for a license more restrictive in 1979, and 1980. After 1978 vessels had to have been licensed and used to land fish in the previous year (although the fish could have been landed in another

state) in order to qualify for a license. The charter boat moratorium was very similar to the moratorium for other vessels.^{6/} In 1979 the commercial license moratorium was made permanent.^{7/} In addition, the charter boat moratorium was altered in an interesting way when the focus was shifted from restricting the number of individual vessels to restricting the number of passengers they could carry. The right to carry each angler was made transferable.^{8/}

In 1974 Federal Judge George Boldt held that treaties between the U.S. and local Indian tribes entitled those tribes to over 50% of the salmon and trout caught in the Puget Sound area.^{9/} This decision substantially reduced the salmon resource available to non-Indian commercial fishermen and was extremely controversial.

B. The First Program

In November, 1974, the Governor of Washington requested the State's Departments of Commerce and Economic Development and of Fisheries to develop a plan to provide relief to active Puget Sound fishermen impacted by the Boldt decision and to contribute to the long run health of the fisheries. These agencies proposed a gear reduction program to be funded by the Federal government under the Economic Development Administration Act.^{10/} By the summer of 1975, Washington had passed the legislation necessary to implement a buyback program and had obtained a \$3,500,000 grant from the Economic Development Administration (EDA) to pay for several fisheries programs. The gear reduction program initially received

\$2,400,000 of this and another \$300,000 was eventually transferred to the gear reduction program from a loan subsidy program. Money over and above this was available for administration.^{11/} The first vessels were purchased in January, 1976.^{12/}

Vessel and gear purchases were the focus of Washington's first approach to buyback. Licenses were purchased for a fixed and nominal fee while vessels and gear were purchased after a complex appraisal process. Two appraisals were conducted on each vessel (and the gear fixed to the vessel) submitted for buyback and the State's offer price was a simple average of the results. If the results were far apart a third appraisal was done and the average of the two appraisals closest together was used as the offer price. If the seller wasn't satisfied with the price he could commission a fourth appraisal and the new price would be an average of the two of the four appraisal values which were most similar. The vessel owner was free to walk away from any offer made on the basis of the appraisals.^{13/} Nets were purchased at prices based on a fixed depreciation schedule.^{14/} The licenses were purchased at prices equal to the cost to the fisher of renewing them with the state. This was \$100 for gill net and reef net licenses and \$200 for seine licenses.^{15/}

Applications by fishermen to sell their vessels, gear, and permits were handled on a first-come first-served basis.^{16/} There was thus no explicit attempt made to affect the composition of Washington's fishing fleets through this program or to take out highliners. Altogether 253 vessels were purchased: 244 Puget Sound gill netters, 4 Puget Sound reef net netters, and 5 Puget Sound

seiners.^{17/} Thus although no explicit attempt was made to affect fleet composition the purchases came disproportionately from the gill net fleet.

On completion of purchases certain gear was separated from vessels and both vessels and gear were turned over to private contractors for storage. There is evidence that, at least during part of this program, there was substantial deterioration of a number of vessels during storage. Some vessels deteriorated when kept in dry storage for a year^{18/} and others sank at their moorings during storage.^{19/} The suggestion has also been made that the separation of gear, such as electronics, from vessels after purchase reduced the value of both. It has also been pointed out that sometimes vessels and gear were damaged during the separation.^{20/}

Most vessels and gear were sold at auctions held when 30 to 50 vessels had been accumulated. Some were also sold by other methods.^{21/} All vessels were sold on condition that they not be used again in any Washington commercial fisheries.^{22/} The reported revenues and costs for this part of the buy back program are often merged into reports of overall EDA grant revenues and costs which include the funds involved in the second buy back program as well as the funds associated with some of the other activities funded by the grant. It is, however, possible to make rough estimates of the costs of original vessel purchase and the revenues from vessel resales. These suggest that about \$5,306,000 was spent to purchase the vessels and gear (but not the licenses)^{23/} and that \$2,247,000 was realized, apparently net of sales commissions, from vessel and

gear resale.^{24/} Thus the program was able to recover about 42% of the original vessel purchase costs through resale. This overall figure conceals wide variations in purchase cost recoveries. For example, an auction of 34 vessels in February, 1979, recovered about 18% of purchase costs while individual sales of three vessels following the auction led to recoveries of 72%, 76%, and 83%.^{25/} This figure also ignores the expenses associated with vessel storage.

Bell, the program manager, speaking when this part of the buyback program was largely over, felt that it had not been very successful in reducing fishing effort. Speaking about both British Columbia and Washington he stated, "We have, however, succeeded in removing all the nonproducing licenses from both fleets, but with little effect on the amount of gear actually fishing."^{26/} Bell felt that the problem was caused, not only by the purchase of non-producing licenses, but by the fact that in many cases the seller used the money from the transaction to upgrade his operation and to continue his fishing activity with better equipment.^{27/} Bell's comments are supported by a Federal interim audit for the program for the period from June, 1976, to June, 1979. The audit indicated that in many cases "marginally productive" rather than "serious" fishermen were being bought out.^{28/} Further, the auditors found that "many productive fishermen who participated used the program only to upgrade their vessels and gear. This is possible because many fishermen own more than one license or vessel. We found more than forty percent of the fishermen who participated in the program sold an unwanted license or vessel to the DOF, upgraded their vessels and gear, and remained in the industry."^{29/}

As was noted above, the state was only paying the renewal charge for the licenses. However, at this time licenses were freely transferable. Although no records on license transfer prices appear to have been kept by the state until 1978 it seems likely that the transfer prices were greater than the renewal fees.^{30/} In the second part of the program, in 1979, the state paid 1978 market values for licenses. These are set out in Table 5 where it can be seen that in 1978 the market prices for Puget Sound seine, gill net and reef net licenses were \$12,000, \$8,000 and \$5,000 respectively. However, in 1976 and 1977 the program was paying \$200 for seine permits and \$100 for gill net permits. Even assuming that the prices rose sharply, perhaps more than doubling, from 1976 to 1978 there should have been a strong incentive not to sell them to this program. Two possible explanations for the large numbers of fishermen, particularly of gill netters, who did sell suggest themselves. First, the search and transactions costs associated with selling a permit to the state may have been lower than those incurred in selling a permit and vessel on the open market. A second possibility is that there was some upward bias in the vessel appraisals. This might be the case if vessel appraisals in general have an upward bias or if the appraisals were based on lagged market information and vessel values at this time were moving downwards.

C. The Second Program

In the spring of 1979, with about \$800,000 left in the EDA grant, the program was changed. In March, 1979, applications to sell were solicited for a two week period. The applicant could apply for one of two options. Under the first, the fisher could offer to sell his license to the state at a figure estimated to be slightly less than its market value. These market values were based on a survey of license transactions in 1978 in which vessels did not change hands and were published in a fixed schedule in the solicitation letter. These prices are summarized in Table 5. Persons selecting this option were given priority over those selecting the second option in selling their licenses.^{31/}

The second option was to sell the license, vessel, and gear. The license and gear were to be purchased at prices set forth in a published schedule while the vessel price was to be based on surveys. The prices set for licenses in the second option were less than in the first in an effort to compensate the state for losses in vessel resale. Persons selecting the second option would only be considered after all those selecting the first option had been taken care of. Not enough money was available to pay all those selecting option two so the applicants were ranked by the length of time they had held the license being offered for sale. The ranking could not be continued back beyond 1964 due to inadequate state records and there were insufficient funds after the purchases from those selecting option one to buyback vessels and licenses from the 34 persons who held licenses in 1964. Thus these persons were priority ranked through a random drawing.^{32/}

This second part of the program saw the first extension of the program to fisheries outside of Puget Sound which had been affected by Federal Indian rights decisions. These included the Willapa Harbor-Columbia River gill net, Grays Harbor-Columbia River gill net, and coastal troll salmon fisheries. This part of the program was dominated by purchases from trollers. There appear to be two reasons for this. First, as Table 6 shows, trollers were by far the largest gear group participating in the program. Second, it can also be determined from Table 6 that trollers were making applications to sell in larger numbers than than the other gear. For example, 10% of the trollers applied to sell under option 1 and another 8% under option 2. These percentages were greater than those for any other gear type. Virtually no Puget Sound gill netters applied under option 1 and only 3% under option 2. The license prices offered by the state in this part of the program were supposed to be slightly under the market value but the large number of offers to sell from the troll fishery suggest that this was not the case, at least for this fishery.

D. The Third Program

In September, 1980, the U.S. Congress appropriated \$1,000,000 to allow the Washington program to purchase fishing licenses only. Under this program the state offered to pay a fixed fee, based on a survey of license transfers occurring from late 1979 to the summer of 1980, for the license and to add a \$500 bonus if an offer to sell the license was received before a given deadline. The amounts

that fishermen could have received for a license are summarized by fishery in Table 7. Applicants were ranked by the length of time that they had held their permits and enough money was available to purchase all of the licenses that had been held by their owners at least five years. Licenses were purchased from 198 of 325 applicants. Seventeen applications were withdrawn and 78 were rejected for various reasons of which the most important was that the applicant had not held a license during the years 1974 to 1977. Funds ran out before 32 applicants who had only held their licenses for four years could be accomodated.^{33/}

E. The Fourth Program

The fourth part of the fleet adjustment program began in October, 1981, using funds provided by the Federal government. In this part of the program the state purchases either licenses or licenses plus a promise that the vessel will not be used in Washington's commercial salmon fisheries for 10 years. The prices of the licenses are based on a survey of open market transfers during the previous year. The restrictions on vessel use are purchased at 30% of the vessel's appraised value. A group of fishermen whose landings during the period 1973 to 1977 were in the bottom 5% of fleet landings are not allowed to sell a vessel restriction to the state although they may sell their license.^{34/} Under this program only fishermen who held their permits prior to passage of the Federal Salmon and Steelhead enhancement and Conservation Act in December of 1980 are eligible to sell to the state.^{35/}

Table 5

Schedule of License Payments in the Second Part of the
Washington Program

Fishery	License Only	If the Vessel was Bought as Well
Puget Sound Purse Seine	\$12,000	\$8,000
Puget Sound Gill Net	8,000	5,000
Puget Sound Reef Net	5,000	3,000
Willapa-Columbia River Gill Net	3,000	1,000
Grays Harbor-Columbia River Gill Net	2,000	1,000
Troll	2,000	1,000

Source: Washington. Department of Fisheries. "Annual Report 1979."
A copy of the "Offer to Purchase" letter on page 13.

Table 6

Applications by Fishery for the Second Part of the
Washington Program

Fishery	Licenses Issued in 1979	Total Program Applicants	License Only Purchases	License and Vessel Purchases*
Puget Sound Purse Seine	400	2	0	0
Puget Sound Gill Net	1,485	46	2	5
Puget Sound Reef Net	69	6	4	0
Willapa-Columbia River Gill Net	418	20	3	0
Grays Harbor-Columbia River Gill Net	275	27	9	0
Troll	3,029	556	210	6

* Charter vessels became eligible for this program later in the year and two were purchased.

Source: Washington. Department of Fisheries. "Annual Report 1979."
page 14.

Table 7

Costs for the \$1,000,000 License Only Buyback Program

Cost Category	Number of Licenses Bought	Cost Per License	Total Cost
Purchase of Puget Sound Gill Net	37	\$ 8,500	\$ 314,000
Purchase of Grays Harbor-Columbia River Gill Net	19	5,500	104,500
Purchase of Willapa-Columbia River Gill Net	1	5,500	5,500
Purchase of Purse Seine	4	25,500	102,000
Purchase of Reef Net	4	8,500	34,000
Purchase of Charter	14	300*	49,300
Purchase of Troll	119	3,000	357,000
Administrative Costs			33,200
TOTAL COSTS			\$1,000,000

* \$300 per angler.

Source: Washington. Department of Fisheries. "Annual Report 1980-81." page 7.

Table 8

Schedule of License Payments Implied by Table 8.

Fishery	Payment
Puget Sound Purse Seine	25,000
Puget Sound Gill Net	8,000
Puget Sound Reef Net	8,000
Willapa-Columbia River Gill Net	5,000
Grays Harbor-Columbia River Gill Net	5,000
Troll	3,000

Source: Table .

The sale of a license but not a vessel restriction to the state does not necessarily imply a strong commitment by the fisher to leave the fishery. He may have a good vessel which he may plan to sell back into the fishery or he may plan to purchase a new license on the open market and reenter the fishery himself. In several of these fisheries license prices have tended to fall during the period of the program. Since in each year the program offers a price based on market prices in the previous year the falling prices imply that the program is paying above market prices at any point in time. In this situation it may pay some fishermen, particularly highliners whose special skills may still be earning them a rental in the fishery, to sell their license to the state without the vessel restriction, to purchase a new permit in the open market, and to continue to fish as before. An examination of Table 9 suggests that in 1982 a Puget Sound gill netter could have sold his permit to the program for \$8,000 and bought a new permit on the open market for \$6,000 picking up \$2,000 in the process.

The sale of a ten year restriction to the state implies a greater commitment to exiting the fishery. A fisher would be more likely to accept this option if he felt that the vessel could be utilized in another fishery so that he could continue to use it or so that a market would continue to exist for it. For example many fishermen use the same salmon seine vessel to fish in Puget Sound and Southeast Alasaka during the course of the same summer. These fishermen may find it relatively less burdensome to give up the right to fish in Puget Sound. The amount of money they could receive for giving up that right for ten years could be substantial. An

examination of the figures for license prices paid, the numbers of licenses purchased, and program expenditures, found in Tables 9 and 13, suggests that Washington was paying about \$50,000 for each 10 year restriction purchased on a seiner.

This part of the Washington program differs somewhat from those that came before it since an attempt is made for the first time to explicitly balance purchases made from a fixed fund among several different gear groups. During each year the program aims to balance buy back expenditures among the different fleets according to the percentages shown in Table 11. These percentages were worked out in 1978 in the course of planning for a buy back program which never got off the ground and were adopted when the 30% program began. They are believed to represent an allocation of funds among fleets based on the number of licenses in each fleet modified by an effort to account for the different license and vessel values in each fleet.^{36/}

The applicants are sorted by fishery and ineligible applicants are weeded out. The remaining applicants are then ranked first by the number of years they have held licenses and second, by their average landings in the period 1973 to 1977. The application period is only opened when all the applications from the preceding period have been dealt with. In fact during the initial application period in 1981, 1,299 applications were received divided among the fisheries as shown in Table 12. It is only this summer that the supply of original applicants in two of the fisheries, Willapa-Grays Harbor gill net and charter, have been exhausted and the application opportunity reopened.^{37/}

Under this program, at any point in time most fishermen have not been eligible to sell their licenses to the state and if they want to sell them must sell them on the open market. This applies to all the fishermen who did not apply to the program in the initial application period in late 1981, to any persons purchasing permits after the date of the Salmon and Steelhead Act in December, 1980, and to any person who was eligible and applied but whose turn to sell has not arrived. Because of this the open permit market should be "insulated" to a considerable extent from events in the state purchase program. In particular the state program, while perhaps raising prices somewhat, is not itself setting a floor under the market prices with its purchase prices. Thus in 1982 the state paid \$2,500 for troll permits but the open market transfer price in 1982, adopted by the state in 1983 as the state's offer price was \$1,800. The key to this insulation is the fact that the program budget is limited and cannot be used to purchase all the licenses that people might desire to sell at the price that has been called out.

Table 9

Yearly License Prices set by Washington in the Program
Embodying the Purchase of Vessel Restrictions

Fleet	1982	1983	1984
Puget Sound Gillnet	\$ 8,000	\$ 6,000	\$ 5,000
Grays Harbor Gill Net	5,500	5,500	5,500
Willapa Harbor Gill Net	5,500	5,500	4,600
Puget Sound Purse Seine	25,000	25,000	25,000
Puget Sound Reef Net	10,000	10,000	10,000
Charter*	300	200	200
Troll	2,500	1,800	1,600

* Price for each angler permit

Source: Personal communication from Mary Jelvik, Program Manager, in July, 1984.

Table 10

Yearly Permit and Vessel Restriction Purchases in the Program
Embodying the Purchase of Vessel Restrictions

Fleet	1982 License Only	1982 License and Restriction	1983 License Only	1983 License and Restriction
Puget Sound Gillnet	18	29	18	15
Grays Harbor and Willapa Harbor Gill Net	30	14	15	3
Puget Sound Purse Seine	1	9	1	5
Puget Sound Reef Net	4	0	2	0
Charter	11	18	5	13
Troll	25	39	11	25

Source: Personal communication from Mary Jelvik, Program Manager, in July, 1984; Washington. Department of Fisheries. "Annual Report 1979" page .

Table 11

Target Allocation of Buyback Funds Among Fleets in the Program
Embodying the Purchase of Vessel Restrictions

Fleet	Percentage of Funds Alloca- ed to Fleet
Puget Sound Gillnet	21
Grays Harbor and Willapa Harbor Gill Net	10
Puget Sound Purse Seine	17
Puget Sound Reef Net	1
Charter	19
Troll	32

Source: Personal communication from Mary Jelvik, Program Manager, in July, 1984.

Table 12

Initial Applications for Participation in the Program
Embodying the Purchase of Vessel Restrictions

Fleet	Applications
Puget Sound Gillnet	327
Grays Harbor and Willapa Harbor Gill Net	80
Puget Sound Purse Seine	63
Puget Sound Reef Net	12
Charter	108
Troll	709
TOTAL	1,299

Source: Personal communication from Mary Jelvik, Program Manager, in July, 1984.

Table 13

Cumulative Costs for the Buyback Program
 Embodying the Purchase of Vessel Restrictions
 October, 1981, to December, 1983

Cost Category	Number of Licenses Bought	Number of 30% Purchases	Costs
Puget Sound Gillnet	36	44	\$1,189,631
Grays Harbor and Willapa Harbor Gillnet	45	17	529,932
Purse Seine	2	14	1,117,614
Reef Net	6	0	60,000
Charter	16	31	1,005,530
Troll	36	64	2,073,678
Administrative Costs			203,948
TOTAL COSTS			\$6,180,333

Source: Personal communication from Mary Jelvik, Program Manager, in July, 1984.

Washington Footnotes

1. Bell, page 355. Bell was the manager of the British Columbia program and of the first part of the Washington program.
2. Personal communication from Mary Jelvik.
3. Benson and Longman, pages 333-334.
4. Rettig, page 27.
5. Benson and Longman, page 334.
6. Benson and Longman, pages 335-336.
7. Benson and Longman, pages 335-336.
8. Benson and Longman, pages 336-337.
9. Benson and Longman, page 339.
10. Wash. "Interim Report... Planning Grant," page 3.
11. Wash. "Annual Report, 1979," page 3-4.
12. Wash. "Annual Report, 1976," page 6.
13. Queirolo, page 1.
14. Queirolo, page 2.
15. Bell(letter), page 1.
16. Bell, page 356.
17. Wash. "Annual Report, 1979," page 10.
18. Wash. "Annual Report, 1979," page 11.
19. Reynolds, page 2-3.
20. Wash. "Annual Report, 1979," page 10.
21. Wash. "Annual Report, 1979," page 11.
22. Personal communication from Mary Jelvik.

23. A total of \$6,132,000 was spent under the EDA grant for vessels, gear, and permits (U.S. Department of Commerce audit, page 2). This included about \$800,000 that was spent in the second buyback program (Wash. "Annual Report, 1979," page 13) and about \$25,800 for license purchases in the first part. The license costs are based on purchases of 248 gill net and reef net licenses at \$100 each and five seine licenses at \$200 each. Deducting these amounts from the over all total gives an estimate of about \$5,306,000.
24. U.S. Dept. of Comm. "Audit," page 1.
25. Wash. "Annual Report, 1979," page 11.
26. Bell, page 357.
27. Bell, page 357.
28. U.S. Dept. of Comm. "Audit," page 3.
29. U.S. Dept. of Comm. "Audit," page 4. (Material in parentheses is not part of the original quote.)
30. Personal communication from Mary Jelvik.
31. Wash. "Annual Report, 1979," pages 12-15.
32. Wash. "Annual Report, 1979," pages 12-15.
33. Wash. "Annual Report, 1980-81," page 7.
34. Wash. "Annual Report, 1982," pages 1-2.
35. Personal communication from Mary Jelvik.
36. Personal communication from Mary Jelvik.
37. Personal communication from Mary Jelvik.

IV. Oregon State

A. Limited Entry

In 1980 Oregon implemented a moratorium on the entry of new fishing operations into its Columbia River drift gill net fishery.^{1/} The criteria for qualification for a permit to continue to land salmon from the river in Oregon were not difficult to meet: (1) land one salmon in one of two base years, (2) or have a vessel for use in the fishery under construction during part of the base period, (3) or have made a good faith purchase of a vessel meant for the salmon fishery.^{2/} Under these liberal criteria 572 permits were issued in the program's first year.^{3/} In 1981 the moratorium was made permanent and in October, 1981, the permits were made transferable.^{4/} In 1982 only 58 permits were transferred and only 9 of these provided price information and were not transferred in a package with a vessel or gear. The mean price for these nine transfers was \$756.^{5/}

B. Buyback

In 1981, in the course of providing additional funding for the Washington buyback program, Congress made provisions for the possible purchase of vessels and permits from the Columbia River salmon gill netters impacted by the Belloni court decision on Indian fishing rights. Gillnetters were to be eligible for the program only if they had held a license and fished prior to the

consent decree in the Belloni decision in February, 1977.^{6/} In 1981 the Oregon legislature approved the idea of a state buyback program and in 1982 the state gave it specific content. Because of the way the Federal legislation was written the money was made available to Oregon through a contract with the Washington Department of Fisheries.^{7/}

The Oregon program was designed with three goals in mind. These were: "(1) promote sound management, conservation and protection of the resource, (2) respond to dislocations resulting from federal court decisions, and (3) reduce fishing capacity."^{8/}

The path Oregon chose to follow was very simple. No vessels would be purchased. Permit holders would be asked to submit "offers to sell" to the state. The state would rank these offers from lowest to highest, establish a cut off point, and purchase the permits below that cut off point at the price each fisher quoted in his "offer to sell."^{9/} If more than one fisher submitted a bid at the cut off point and there was not enough money available to buy all the permits, the applicants were to be ranked by landings size.^{10/} Federal conditions for release of the money required that permits be repurchased at "fair market prices".^{11/} The approach chosen was believed to be "fair."^{12/}

The program has so far gone through two "rounds" each consisting of a month long period during which applications to sell were accepted, a period during which eligibility of applicants was examined, other applications were ranked, and a cut off point chosen, and a period during which permits were purchased.

The first application period opened in May, 1983, when application materials were mailed to permit holders, and ended in June, 1983. Thirty-five offers to sell were received ranging from \$750 to \$25,000. A cut off point of \$5,500 was chosen on the basis of several criteria. Washington State was paying \$5,500 for comparable licenses, \$5,500 would be widely perceived as fair, and \$5,500 would bring the round in well under budget. Given the cut off point 25 permits were purchased for at an average cost of about \$3,600 each.^{13/} This average was higher than the market price appears to have been in the preceding year

The application period for the second round began in mid-January and ended in mid-February, 1984. The program received 65 applications ranging from \$3,500 to \$30,000 with 15 at \$5,500. A cut off point of \$5,450 was chosen and 31 permits were purchased for an average cost of about \$4,900 each.^{14/}

The 25 permits purchased in the first round cost \$102,775 of which \$17,140 or about 17% went for administrative costs. The 31 permits purchased in the second round cost \$173,074 of which \$21,156 or about 12% was for administrative costs.^{15/}

Under the Oregon program a fisher would not submit an offer price lower than the difference between what he could receive in the open market and any savings in transaction costs. The state need not purchase any permits in a round except those less than \$1,000 but it seems likely that it will and, in the normal course of events, will buy them at above market prices. A comparison of the price survey data from 1982 and the average price paid for permits in 1983 suggests that this is what is happening. If the

Oregon program is paying above market prices for permits it may find persons who value their permits above the buyback price "cut off" selling their permits to the program below the "cut off" and then buying new ones in the open market. This could only be done once since the program regulations only allow each applicant to sell one permit to the program.^{16/} Presumably this regulation was written to produce the widest possible distribution of buyback funds. With this regulation and the program's eligibility restriction which only allows fishermen with vessels licensed before March, 1977, to sell to the program the potential for this sort of arbitrage is not widespread. This "one permit" rule and the eligibility restrictions may raise the expenditure required to achieve a given reduction in potential capacity.

The results of the two rounds suggests that a certain amount of gamesmanship is going on between the fishermen and the buyback administrators. In the second round there was an overall increase in the average of the permit sales prices submitted with a substantial clustering of prices at the cut off point in the earlier round, \$5,500. Many fishermen appear to have used the information about the program's behavior generated in the first round in formulating their second round offer prices. The Commission also indulged in strategic behavior in the second round of lowering its cut off point by \$50 and not buying from any of those who submitted \$5,500 offers.

Oregon Footnotes

1. Oregon, "Proposal," page 1
2. Personal communication from Chris Carter of the Oregon Department of Fish and Wildlife in July, 1984
3. Oregon, "Proposal," page 6
4. Oregon, "Proposal," pages 1 and 7
5. Table of information on the 1982 transfers supplied by Dr. Chris Carter of the Oregon Department of fish and Wildlife.
6. Oregon "Staff Report" dated July, 1983, page 2
7. Oregon, "Staff Report," dated July, 1983, page 1
8. Oregon, "Midterm Report," page 2
9. Oregon, "Midterm Report," page 3
10. Oregon, "Cooperative Agreement." Appendix A, page 2
- 11.. Oregon, "Midterm Report," page 3
12. Oregon, "Midterm Report," page 3
13. Oregon, "Staff Report," dated July, 1983, pages 2-3; Oregon, "Midterm Report," page 6
14. Oregon, "Staff Report," dated March, 1984, page 1 and personal communication from Chris Carter of the Oregon Department of Fish and Wildlife in July, 1984
15. Revised budget data dated April 20, 1984, supplied by Dr. Chris Carter of the Oregon Department of Fish and Wildlife.
16. Oregon, "Administrative Rules," page 2, 635-06-425(6).

V. The Alaska Buyback Program

The Alaska limited entry program has defined salmon fisheries as gear types used to fish for salmon in different regions of the state. For example, among the 19 salmon fisheries originally limited when the program began in January, 1974, there were a Prince William Sound salmon seine fishery and a Bristol Bay set gill net fishery. If two different gear types are used to fish for salmon in the same area then these are considered two separate salmon fisheries. In Cook Inlet there are separate drift gill net and set gill net fisheries.

As fisheries are limited maximum numbers of gear operators and permit holders for that fishery are established which are equal to the largest number of units of gear operating in the four years immediately preceding the limitation of entry. Permits are rationed among fishermen, no more than one in any fishery to any person, on the basis of a complex point system that seeks to balance economic dependence on the fishery and the extent of past participation in it. Once issued most entry permits are freely transferable, although they may be leased under certain very restrictive conditions.

In addition to providing criteria for limiting fisheries and issuing permits the limited entry law also provides for "Reduction to Optimum Numbers of Entry Permits" in its Article 5. Under this article the Commercial Fisheries Entry Commission, the state agency responsible for the administration of the limited entry program, is charged with identifying an "optimum" number of entry permits for the limited fisheries, and in the event the optimum is less than

the existing number, with operating a 'buyback' program to reduce the actual number to the optimum. The article also makes some provisions for increasing the number of outstanding entry permits should that be necessary. A more detailed discussion of the provisions of Article 5 will be a useful basis for a discussion of the questions this paper seeks to address.

Under Alaska law the first step on the road to buyback is the determination of an optimum number of entry permits. This number is to be "based upon a reasonable balance" of three "general standards." The first is that the number of permits be "sufficient to maintain an economically healthy fishery that will result in a reasonable average rate of economic return to the fishermen participating in that fishery, considering time fished and necessary investments in vessels and gear"^{1/} The second condition is that the number of permits be enough "to harvest the allowable commercial take of the fishery resource during all years in an orderly, efficient manner, and consistent with sound fishery management techniques."^{2/} The final condition is that the optimum number of permits be "sufficient to avoid serious economic hardship to those currently engaged in the fishery, considering other economic opportunities reasonable available to them."^{3/}

The law provides that the optimum number may be revised if there is either "an established long-term change in the biological condition of the fishery" which "substantially alters the optimum number of permits,"^{4/} or "an established long-term change in market conditions has occurred, directly affecting the fishery, which substantially alters the optimum number of entry permits."^{5/}

The number of permits outstanding in a fishery may only be

reduced to the optimum number through a "voluntary buyback" program.^{6/} When a buyback program is indicated the Commercial Fisheries Entry Commission is to "establish and administer a buyback fund for that fishery for the purpose of reducing the number of entry permits to the optimum number within no more than 10 years, at a rate to be established by the Commission."^{7/} The money for the buyback funds is to come from a tax on holders of entry permits which could rise up to 7% "of the gross value of the total annual catch attributable to the holder's entry permit, except that the holder of a permit who has made no commercial landings in a given year will be assessed the average all other holders of the same type of permit in that year."^{8/} Money collected from the holders of permits in a fishery is to be used for buying back permits in that fishery.^{9/} "Assessments need not equal annual buyback fund expenditures within a particular fishery but shall be continued until the buyback fund for that fishery has been reimbursed."^{10/}

During the buyback program as long as there are sufficient funds "when entry permits...and the vessels and gear related to those permits are offered for sale to the Commission, the Commission shall purchase the permits and related vessels and gear at fair market value."^{11/}

The law makes a very general provision for the issuance of new permits if the original optimal number is greater than the actual number. The Commission is to "determine equitable methods of issuance...that assure the receipt of fair market value for the permits issued."^{12/} The new permits are to go to "applicants who are presently able to engage actively in the fishery."^{13/}

Alaska Footnotes

1. AS 16.43.290(1)
2. AS 16.43.290(2)
3. AS 16.43.290(3)
4. AS 16.43.300(a)(1)
5. AS 16.43.300(a)(2)
6. AS 16.43.300(b)
7. AS 16.43.300(a)
8. AS 16.43.310(b)
9. AS 16.43.310(b)
10. AS 16.43.310(c)
11. AS 16.43.320(b)
12. AS 16.43.330(b)
13. AS 16.43.330(a)

VI. Buyback Experience - Implications for Alaska

Of the buyback programs implemented to date, only one has been financed by fishermen.^{24/} The other programs have been funded by the relevant federal government, and as such represent a considerable subsidy.

While fishermen in several of Alaska's limited fisheries are interested in a buyback program they would prefer that the money come from the general taxpayer. Many fishermen feel that monetary expenditures required to buy out participants will exceed the net benefits accruing to those remaining in the fishery. While government funded programs may sometimes be concerned with "the bang for the buck," to this point no program has faced the concern that monetary expenditures not exceed net benefits generated. In theory, a fisherman funded buyback program could make some persons better off and no one worse off. In practice, such a program may be impossible to design.

The problem in Alaska's small boat fisheries may be further complicated by the presence of participants who are low producers in the fishery and whose net benefit streams from the fishery are not entirely based on economic profits from the resources. Some inframarginal fishermen may be earning psychic returns from fishing activities and others may be using the fishery as a tax shelter to subsidize their recreation. Using above market prices to entice such persons to leave the fishery may adequately compensate those who sell, but may not provide additional net benefits for those remaining in the fishery.^{25/}

Given experiences with buyback programs in British Columbia, Washington, and Oregon, what advice can be given Alaska, with respect to program design and decision rules? What rules could the state government adopt to make a fisherman funded program more workable and palatable to fishermen? The authors tentatively offer the following suggestions:

A. Buyback Financing

If the fishermen must fund their own program, what is the best way to do it? A stiff annual fee would be a funding mechanism which would be more preferable to highliners than to casual participants. The first British Columbia buyback program used a flat tax annual renewal fee for program financing. When profits and hence license values increased, the funding proved to be inadequate. If a flat tax is the sole source of funding, it may have to be frequently changed. A tax which is more closely tied to the earnings stream, such as an ex-vessel specific or ex-vessel ad valorem tax, would increase and decrease with that stream. An additional benefit of a tax tied to catch or earnings would be its dampening effects on fishing effort relative to the flat tax.

A tax proportional to gross earnings would appear to be easy to administer. Casual participants would be more likely to prefer such a funding method. However, some have suggested that this will create enforcement problems as bonus payments, post season adjustments, and non-monetary payments will become

more prevalent. This could also contribute to a further deterioration in the accuracy of ex-vessel price estimates.

The current Alaskan statute seems to suggest that a tax proportional to gross earning should be used to fund buyback. As indicated above, permit holders could be charged up to 7% of their gross earnings and those who opted not to fish would pay the average assessment of those who did.

A species specific tax per pound was suggested by Pearse. Such a tax would be proportional to the stock externalities which fishermen impose on each other. As a side effect it might encourage more on-board dressing of fish (to reduce landed weight) and hence improve product quality. However, frequent adjustments of the tax to accommodate changing market conditions could be a problem to administer.

Alternatively, a stiff annual fee discourages speculation and encourages casual participants to sell out. Under Alaska's program, the state would announce the number of units which will be removed from the fishery over a ten year period. Hence, low producers may have more of an incentive to wait and sell later when more units have been removed and the permit has substantially appreciated. If buyback were funded by a 7% tax on gross earnings, a single (perhaps falsified) landing per year would require a relatively small monetary outlay for those opting to speculate. A relatively stiff annual fee would better discourage this type of rent seeking behavior on the part of eventual sellers. Thus taxation for buyback purposes might require both a stiff annual fee and a tax which increases with earnings.

Thus taxation for buyback funding purposes might require both a stiff annual fee and a tax which increases with earnings. A plan to increase either or both taxes as the fleet is reduced may inhibit increases in permit prices and further discourage people from waiting for permit appreciation.

A concern of knowledgeable fishermen is that Alaska's buyback program would require them to pay increased taxes when their economic conditions are already poor. In addition, the benefits accruing from the program would develop slowly. The state could expedite the fleet reduction process by providing some "up-front" funding. While a direct subsidy might be justifiable from a state accounting stance, such funding would be difficult to obtain. As an alternative, a state investment in fleet reductions, in return for a new tax revenue stream of equal present value may be more palatable from a political perspective. Such an investment would be particularly attractive if earlier availability of buyback funds increased the present value of the net benefits generated from buyback.

B. Announcing Targets

The buyback programs in British Columbia, Washington, and Oregon have announced neither the magnitude of the fleet reductions nor the time period in which the program would be completed. With the exception of the first British Columbia program (which was short lived), the programs seemed to have

conveyed the impression that the funding might not be available for long. Such procedures may discourage speculation by adding to the uncertainty and creating a "get it while it lasts" mentality.

Alaska's statute specifies that optimum numbers (and hence the magnitude of the fleet reduction) should be announced after which a buyback program to reach the optimum must be completed within ten years. In Alaska's statute the targets are announced and much of the uncertainty is removed. Even the source of funding and its approximate magnitude are known.

Relative to the other programs, Alaska's procedures seem to be more conducive to rent seeking behavior on the part of speculators. Permits should appreciate as buyback proceeds, and waiting to sell may be attractive if the expected appreciation exceeds the opportunity costs of waiting.

To discourage such behavior and to encourage persons to make "hold" or "sell" decisions based on the current value of the permit to them, more uncertainty concerning the fleet reduction program would be helpful. Decisions to wait for permit appreciation would be less prevalent if either the magnitude of the fleet reduction, or the time frame in which the reductions will occur were unknown. Announcing both of these targets reduces the uncertainty involved in waiting, and could serve to undermine the program's capability of removing permits as near to their current valuations as reasonably possible. Announcing neither target (if politically feasible) would have an even greater dampening effect on such speculation.

C. Vessels and Gear

Previous and existing buyback programs raise serious doubts about the efficacy of purchasing vessel and gear. Substantial real costs are associated with the purchase and resale of vessels, all or most of which are absorbed by the program. When handling vessels is involved, a substantial portion of the administrative costs are directly associated with the disposal process.

In addition, constraints placed on the reuse of a buyback vessel lead to substantial reductions in their resale value, and thus drain available purchase funds. Deterioration of vessels in storage and the disposal of a large block of vessels in a single auction may contribute to lower resale values.

A consideration of the first Washington program and second British Columbia program suggest that if vessels are to be bought and resold, the contractor responsible for vessel storage should be given some incentive to keep the vessels in good condition. If a fisher sells his vessel himself he will take care of it while waiting for a buyer so as to equate the marginal cost of such care with its marginal benefit. If the state handles the resale the profits of the sale will accrue to a very diffuse group of persons. Since none of them will have a large interest in the income from resale none of them will have a strong interest in seeing that maintenance is done at optimal levels. This problem could be circumvented by giving the storage contractor an interest in resale revenues.

In the original British Columbia buyback program, the purchased vessels were forbidden to be reused in any west coast fishery. Similar types of restrictions have been placed on vessels under the various phases of Washington's buyback programs.

The ostensible reason for British Columbia's restrictions was the fear that without it "bargain basement" auction prices would allow for more rapid upgrading in the salmon fishery and would increase the capital entering other overcrowded fisheries. The restriction was forcing vessels into their next best non-fishing and/or non-Canadian alternative use. There were naturally enforcement problems.

Capital intensification per fishing unit occurs under license type limited entry programs. Preventing a buyback vessel from reentering the fishery may serve to delay this process in the short run. It may also cause resources to be used in construction of a new vessel which would not be used if the buyback vessel were allowed to reenter the fishery.

If a buyback objective was to remove vessels, stigmatize them with reuse restrictions upon resale, and minimize the drain on buyback funding, the decision rule would be to select vessels which have the highest opportunity costs in alternative uses per dollar of purchase price. Unfortunately that type of figure may be difficult to obtain and if estimated would be subject to considerable pre-purchase controversy. The best information will come upon resale.

Prior to resale, the present owner may have the best idea, but ranking vessels and making purchase decisions on the basis of owners' suggestions concerning vessels' alternative worth may be a bit risky. One method of "revealing" vessels with the highest opportunity costs, would be a procedure similar to that currently utilized in Washington. Simply offer a price for vessel use restrictions and purchase from those who accept. Don't purchase and resell the vessels.

Previous and existing buyback programs have used other criteria to decide which vessel to stigmatize. For example, a "first come - first served" decision rule makes offers, in order of application receipt, consistent with the vessel's present worth in the fishery. If the owner accepts, the vessel is purchased. Under such a criterion, a vessel with no alternative uses could conceivably be removed from the fleet. In theory, such vessels should be the last removed. Thus besides draining buyback funds, the vessel purchase and resale process seems to be potentially wasteful from a social perspective. It is an expensive way to attempt to inhibit the post-buyback capital intensification process within a limited fleet.

Buyback decision rules which succeed in removing the most potential capacity given any level of expenditure would seemingly be the most desirable in a program funded by persons in the fishery. To fishermen interested in improving their condition, pareto efficient moves are of greater interest than charitable transfer payments.

In a buyback program where the permits or licenses purchased are homogeneous, any permit or license has the same potential capacity. There would be no advantage of paying an additional premium to purchase a highliner's permit, particularly if the person can simply purchase another one at the market rate and reenter the fishery. Thus the most potential capacity would be removed through purchase of permits at the lowest prices offered. This point has been eloquently made by Carter, with respect to Oregon's buyback program.^{26/} Purchasing vessels and gear seems to be an unnecessary complication. If the vessel can reenter the same fishery (as was allowed under the second British Columbia program), and the program absorbs all the transactions costs associated with the purchase and resale the state may wind up subsidizing both the original seller and the new purchaser. If the goal is to subsidize sellers and/or buyers, other methods would involve the use of fewer real resources.

The problems associated with purchasing a vessel and not allowing it to be reused in the fishery and/or other fisheries have already been discussed. The authors feel strongly that purchases of vessels and gear should be eschewed. Under Alaska's program, the maximum reduction in potential capacity at least costs can be achieved by purchasing the cheapest permits available. More permits can be removed at a point in time by simply offering a higher price. Incentives to sell involving vessels are unnecessary and undesirable.

D. Effects of Buyback on Fleet Composition

In early Washington State programs, a single buyback fund was utilized to purchase licenses, vessels, and vessel reuse restrictions from multiple salmon fisheries distinguished by gear type and/or area. Purchase decisions could and did affect the relative capacities of each fleet although those impacts were not explicitly considered. The most recent program has incorporated criteria for the allocation of the buyback fund among gear types, although the reasons for the allocation decision are unclear.

In British Columbia, salmon licenses did not specify gear types or area. As Fraser noted,^{27/} the program even without fleet reductions was resulting in changes in the complexion of the fleet. The British Columbia programs lacked goals with respect to gear type since, if you reduced the number of gillnetters, more trollers might simply opt to gill net. Nevertheless, Canadian planners may be concerned about buyback's affect on the changing fleet composition.

Alaska's statute implies the use of separate buyback funds by fishery, where the fisheries and permits are distinguished by gear type and area. While gear types within an area may be targeted by management on different species or stocks of salmon the gear types may still intercept each others fish. Overall declines or increases in regional run sizes will also put pressure on managers to reallocate stocks among gear groups so that they either bear the burden or the

fruits of the changes. In this context buyback in one fishery will have important implications for allocations of fish to fishermen in other fisheries harvesting the same stocks. These conflicts need not be between different commercial gear groups but may also involve relations between commercial and recreational or subsistence fishermen.

These considerations suggest that the optimum numbers criteria in the limited entry law are too narrow to the extent that they ignore the impact of a buyback program in one gear group on the status of other gear groups exploiting the same stocks. Buyback in any one gear group should be considered in a wider context.

E. Application Periods

An open-ended application period during buyback would seemingly necessitate purchases on a first come - first served basis. To rank applicants with respect to different purchase criteria requires that a cut-off date be established. Applicants can then be ranked and purchase decisions can be made.

If applicants are to be ranked on the basis of permit asking prices, relatively short and sporadic application periods may be desirable. This is essentially the system designed by Dr. Chris Carter for Oregon's Columbia River drift gill net fishery.

An application period should be well publicized and sufficiently long to give people adequate time to apply. However, as conditions in the fishery change individual asking prices may be altered. Thus a short time between receipt of applications, ranking of applicants, and purchase decisions would be desirable.

Making the time periods between applications highly variable, would add to the uncertainty and hopefully reduce the numbers of persons holding permits in anticipation of buyback appreciation.

F. Offer Price Procedures

Permit or license market values represent marginal valuations. If the supply curve for these use privileges is not perfectly elastic, a buyback program will have to pay above market values in order to remove substantial numbers of permits.

Washington and Oregon vessel licenses are separable from vessels and freely transferable. Within a fishery these licenses are homogeneous in that each conveys precisely the same use privilege. In that sense, the licenses are quite similar to Alaska's limited entry permits.

In the first Washington program, licenses were purchased by the state for its annual renewal fee. It appears that the annual renewal fee was below the price which could be obtained in the market, suggesting that those who sold must have

achieved more than adequate compensation by disposing of their vessel through the state. In the later Washington programs permits were purchased at prices quoted by the state which were based on lagged average market prices. In a period of falling market prices, this procedure also leads to above market offers.

An offer above market price will attract all sellers whose reservation price is below the offer. With a fixed budget, the offer may attract fewer sellers or more sellers than can be accommodated. If more sellers are attracted, secondary rationing criteria such as "first come - first served" might be necessary. Interpretation of fair market value in Washington requires that purchasers at a point in time be paid the same price.

In Oregon, each applicant is required to provide an "asking price." The asking prices are arrayed in ascending order and a cutoff price is picked. Persons below the cutoff are paid their asking prices. In Oregon, fair market value is the price to which a seller (and buyer) voluntarily agree. Again, "asking" prices should be at or above the difference between market value and the savings in transaction costs.

Alaska's limited entry statute does not define "fair market value." It is clear that "above market" offers will be necessary to purchase substantial numbers of permits. If Oregon's procedure of requiring "asking prices" was guaranteed to obtain actual reservation prices, the bid procedure would result in lower expenditures and less rent capture by the sellers.

Strong expectations of cutoff prices could cause submitted "asking prices" to deviate considerably from the individual's reservation price. The Oregon program sets up this natural gamesmanship.

To administer an Oregon program it would be important to utilize as much uncertainty as possible to reduce strategic behavior on the part of sellers. Application periods should be sporadic and difficult to predict. In this regard, the funding source should be such that monies don't have to be spent by the end of the fiscal year or be forever lost. Cutoff prices should be varied dramatically by application period. Conceivably application periods could even be held where no purchases are made.

Washington's procedure of calling out a single price has its own set of problems. A priori the amount of excess supply which will result from an above market offer and a limited budget is unknown. Excess supply will necessitate costly secondary ranking criteria.

Which method will purchase permits at the least cost is presently unknown. The answer will probably be dependent upon administrative implementation. Non-buyback market prices should continue to exist under both programs. The ratio of average price paid to the permit's average market price during the same time period might be one rough method to evaluate performance under the two methods.

With either method, restrictions should not be placed on the number of times a permit is purchased from an individual.

In the absence of such restrictions persons may be encouraged to offer permits to the program below their reservation price (but above market value), if they feel that they can repurchase a permit on the market for less than their asking price. Such behavior should not be discouraged, as it would serve to lower the monetary expenditures required to remove permits.

Another question with respect to offer prices relates to the timing of buyback. *Ceteris paribus*, as buyback reduces the size of a fleet permit values will rise. Persons selling later will capture some of the rents generated from earlier fleet reductions. With this in mind, should buyback occur in one step or should it proceed slowly if the goal is to remove permits at least cost? The buyback programs discussed herein provide little guidance, since fleet reductions have been minimal. As noted earlier, increasing taxes as fleet reductions occur would be a method of containing permit appreciation and discouraging the speculative "holding" of permits. Such taxation procedures, would seemingly reduce monetary outlays for buyback, irrespective of the timing chosen for fleet reductions.

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