

## **Salmon Recovery in Idaho: What is a Big Fish Worth?**

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Within the western United States, Idaho is the only landlocked state with a chinook salmon run. Every summer chinook salmon, called “kings” in Alaska, complete a 900-mile journey up the Columbia, Snake, and Salmon River systems to spawn in the crystal-clear headwaters of the Salmon River and its tributaries. The salmon run is one of nature’s marvels, and anyone that witnesses schools of the magnificent fish working their way up a small mountain stream is sure to be awestruck.

Unfortunately, a “tragedy of the commons” has jeopardized the future of Idaho’s anadromous fish runs, including chinook salmon, steelhead, and sockeye (collectively called “salmon” here). Dams along the Snake and Columbia River have also contributed to the salmon’s decline. However, recent data suggest that improving technology is increasingly able to mitigate damage to the salmon from the dams. But beyond the dams, serious threats to the fishes’ long-term survival result from difficulties in defining and enforcing property rights for the fish. Salmon born in Idaho follow the Snake, Salmon, and Clearwater Rivers to the Columbia River and then downstream to the Pacific Ocean. The salmon spend the majority of their adult life in the ocean, entering fishing waters off the shores of Oregon, Washington, Canada and Alaska. After three or four years in the ocean, they re-enter the Columbia River for the long migration back upstream to spawn. Native Americans and sports fishermen throughout the Pacific Northwest vigorously pursue the salmon during their upstream journey. Once they reach Idaho a short salmon fishing season of uncertain duration occurs, causing sportsmen to race to harvest the fish before the Idaho Department of Fish and Game announces the fishing cutoff date.

Competing interests have led to a spirited debate regarding

whether the salmon run is worth protecting, what steps should be taken to preserve the run, and at what cost. To a large extent the debate has been dominated by politicians, lawyers, spokespersons for various interested parties, and fish biologists. Economists, whose expertise is precisely in weighing and evaluating tradeoffs, have not played a significant role in the discussions. With minimal participation by economists, little attention has been given to exploring private market solutions to enhance the run and provide for the optimal use of the resource.

The costs of preserving salmon runs in the Pacific Northwest are enormous. The Bonneville Power Administration, charged with marketing electricity from dams on the Snake and Columbia Rivers, spent over \$576 million in 2005 on fish and wildlife conservation in the Pacific Northwest, much of that spending being directed at facilitating the passage of salmon over the dams in their migration to and from the ocean.<sup>1</sup> The \$576 million spent by the Bonneville Power Administration is reflected in rates paid by consumers of electricity throughout the Pacific Northwest. Federal spending through The Pacific Coast Salmon Recovery Fund totaled an additional \$88.2 million in fiscal year 2005.<sup>2</sup> Add to that the spending associated with the operation of state-run salmon hatcheries, fish and wildlife departments, and so on. In short, taxpayers, electric ratepayers, and—to a much lesser extent—fishermen, are paying an enormous price to safeguard the Pacific Northwest's salmon runs. Given the costs involved, anyone with even the most basic understanding of economics principles is likely to cringe at the sight of pickup trucks lined up by the side of Idaho's Little Salmon River with Native Americans selling freshly caught chinook for \$4 a pound.

Greater attention needs to be paid to formulating public policy that directs scarce resources to their highest valued use. In the case of Idaho's salmon, there is some question as to whether the runs are worth preserving at all, given the enormity of the costs involved. And, if the runs are saved, consideration needs to be given to the issue of how to

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<sup>1</sup> See the Bonneville Power Administration 2005 Annual Report, page 45.

<sup>2</sup> 2005 Report to Congress: Pacific Coastal Salmon Recovery Fund, page 1.

optimally allocate the fish to interested parties so as to create proper incentives for resource use and conservation. It is the goal of this paper to approach some of the issues of Idaho's salmon runs from the perspective of an economist. The paper does not intend to provide a thorough cost/benefit analysis, but rather the objective is to organize thinking about some of the problems in terms of economics principles, and to provide a potential launching pad for further inquiry leading to rational public policy.

### **Salmon and the Dams**

Numerous biologists, the Idaho Department of Fish and Game, many fishermen, and self-proclaimed "environmentalists" tend to spotlight man-made dams as the primary culprit in reducing salmon runs in Idaho. They target a series of four dams on the Snake River that create dead water and allegedly prevent the young smolt from reaching the ocean. Also, power-generating turbines at the dams can have the negative side effect of killing smolt on their downstream journey.

What is often ignored is that rapidly improving technology has made the dams much less of an obstacle to the salmon's survival than they used to be. Fish ladders provide a means for returning adult fish to climb the dams when heading upstream. The ladders appear to be a success, and (debatably) do not represent any more of an obstacle to the upward migration of salmon than can occur in a naturally flowing river in the form of rapids and small waterfalls. A free-flowing river can provide numerous and ever-changing challenges for migrating salmon to confront on their journey. For example, the Dalles Dam on the Columbia River flooded and eliminated Celilo Falls, which was a great barrier for salmon and thus resulted in large congregations of fish below the falls. As a result of the large numbers of impeded fish, Celilo Falls was one of the favorite fishing spots of Native Americans. Wooden scaffolds were constructed below the falls, providing a means for fishermen to walk out over the river and gain access to the blocked salmon, which were then harvested by scooping the fish out with dip nets. Hundreds of fishermen would gather below the falls during the height of the salmon run. Photographs taken

prior to construction of the Dalles Dam depict hordes of fishermen standing on scaffolds below a turbulent torrent of water rushing over a large fall—an obstacle that appears to be much more daunting for a migrating salmon when compared to two carefully constructed fish ladders at the Dalles Dam.

The biggest issue with the dams is not how to get the returning adult salmon over them, but rather how to facilitate the passage of young ocean-bound smolt downstream past the barriers. One solution has been the use of barges; the young fish are trapped at collection points above the dams and are simply barged downstream past Bonneville Dam, which is the last dam smolt must cross on their downstream journey before the Columbia River reaches the ocean.<sup>3</sup> For the fish that aren't barged downstream, improvements are continually being made to the dams and turbines to allow fish passage with minimal mortality. Bypass systems are in place and are regularly improved; these systems facilitate the passage of downstream migrating salmon through the dams while at the same time avoiding the electricity-generating turbines.

As is carefully detailed by James Buchal in *The Great Salmon Hoax* (1998), some environmentalists appear to have little or no interest in using technology to improve and preserve salmon runs. Rather, they target dam removal as the only viable solution to protecting the fish. Evidence that improvements in technology can increase salmon survival is either ignored or dismissed. The reluctance to embrace technology is baffling if the objective is to get more salmon—the goal of some appears to be the destruction of the dams for its own sake. Buchal (1998, 16) summarizes that “[t]o the conservation biologists who now have the ear of Northwest policymakers, there is but one true path to salmon recovery [that path being the removal of dams], as salmon recovery is subordinate to a larger political imperative: the return to a state of nature.”

In 1998 the Idaho Department of Fish and Game prepared a

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<sup>3</sup>Incredibly, returning adults that were barged past the dams as smolt still manage to plot a course back up river to the same stream and spawning grounds that they left several years prior.

report titled *Idaho's Anadromous Fish Stocks: Their Status and Recovery Options*. At that time it was IDFG's position that transportation of salmon and steelhead in barges was largely ineffective, and would probably not prevent the gradual decline of salmon in Idaho. Regarding the use of barges, the report stated "[t]here is no scientific basis for assuming this approach will recover Idaho's wild salmon and steelhead." (1998, 12). The document contrasts the use of barges with the "natural river option" (which involves the breaching of four dams on the Snake River in Washington), and concludes that "[t]he natural river option has a strong scientific basis for being the best biological choice for Snake River salmon and steelhead recovery" (1998, 14).

Subsequent to the department's publication of the aforementioned report, several years of impressive salmon and steelhead runs have occurred, providing new and compelling evidence regarding the efficacy of barging as a technological tool for salmon recovery. Lower Granite Dam, constructed in 1975, is the final dam that a returning adult salmon or steelhead passes before leaving Washington and entering Idaho on its way upstream to its spawning grounds. The Army Corps of Engineers counts returning steelhead and salmon as they climb fish ladders at the dam, and the data are published on the Internet.<sup>4</sup> Table 1 shows the number of salmon crossing Lower Granite Dam each year going back to 1975.

In spite of the data showing that some of the strongest salmon runs since the construction of Lower Granite Dam have occurred during the last five years, calls continue to be made for the breaching of the four dams on the lower Snake River. Don Chapman, a biologist and one of the nation's foremost experts on salmon, has recently suggested that, in the interest of salmon, removal of the dams is "imperative." Referring to Chapman's position, *The Idaho Statesman* (August 9, 2005) reported as follows:

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<sup>4</sup> Go to [www.cbr.washington.edu/dart/dart.html](http://www.cbr.washington.edu/dart/dart.html). The data in Table 1 are obtained by querying the database for annual returns of salmon over the Lower Granite Dam.

Table 1  
Salmon Entering into Idaho as Counted at Lower Granite Dam

<u>Year</u>	<u>Chinook*</u>	<u>Steelhead</u>	<u>Sockeye</u>
1975	28,460	17,786	206
1976	31,667	23,017	531
1977	49,092	53,037	458
1978	54,242	30,068	123
1979	12,549	25,071	25
1980	10,132	40,574	114
1981	19,198	40,234	218
1982	19,476	73,051	211
1983	16,201	86,766	122
1984	16,533	99,228	47
1985	36,615	117,725	49
1986	43,056	134,957	24
1987	37,666	69,334	29
1988	37,857	87,043	23
1989	19,603	132,598	4
1990	23,417	56,992	0
1991	13,669	100,400	14
1992	26,193	121,483	15
1993	30,447	66,699	12
1994	5,078	47,550	5
1995	3,702	80,925	3
1997	46,727	85,880	27
1998	18,561	71,778	4
1999	15,853	73,189	14
2000	62,662	113,049	299
2001	210,381	262,558	36
2002	119,304	218,718	55
2003	119,676	180,672	14
2004	109,061	154,587	113
2005	49,481	152,802	19

\*The Chinook column reflects the combined total of mature Chinooks and "Jack" Chinooks (early returning salmon whose length is less than 22 inches).

Source: <http://www.cbr.washington.edu/dart/dart.html>. The data in Table 1 come from the database for annual returns of salmon over the Lower Granite Dam.

Breaching the dams is necessary, he [Chapman] said, because many residents value salmon and want the fish to survive in harvestable numbers. Salmon represent the region's wild heart and provide food and spiritual sustenance for Native Americans and a fishing industry worth hundreds of millions of dollars.

Given his extensive background and knowledge base, Chapman's opinions regarding the survivability of salmon deserve special consideration. However, whether the fishing industry is "worth hundreds of millions of dollars" is an economic matter that is open to debate. While it is possible that breaching the dams is the best option for the salmon, it is not clear that it is the best option for the people.

The dams along the Snake and Columbia Rivers have made the cost of electricity in the Pacific Northwest the lowest in the nation. Making sound policy decisions will involve weighing costs and benefits of dam operation versus dam removal, which is difficult given the myriad of interdependencies and externalities that are involved. But, a necessary starting point in formulating policy is an estimation of the economic benefit of a healthy salmon run. Breaching should be considered only if the value of the increased salmon run exceeds the value of the lost electricity, irrigation, and flood control benefits currently provided by the dams.

Presently, the right to catch a salmon in Idaho is not bought and sold in a marketplace, and thus no directly observable measure of the value of a returning fish exists. The following section examines Idaho's current "fishing license" approach to salmon allocation, and reviews some of the peculiar incentives and resource misallocation that it creates. Then a "salmon certificate" system is proposed as an alternative, under which the price mechanism would be used to ration harvestable salmon and the numerous advantages of transferable private property rights would be realized. One of the benefits of a salmon certificate system is that, properly structured, such an approach could provide a useful measure of how highly sports fishermen value the opportunity to catch the impressive fish.

### **Idaho's Present Approach to Salmon Allocation**

Steelhead and chinook salmon returning to Idaho can be classified as either “wild” or “hatchery” fish. Wild fish are those that occur naturally in the river, whereas hatchery fish are reared in state-operated fish hatcheries until they are smolt old enough to be released into the river to begin the long journey to the ocean. After spending three or four years in the ocean, returning wild fish will go back to the spawning grounds where they were born, whereas returning hatchery fish will head in on the hatchery where they were previously released into the river as smolt.

The distinction between hatchery and wild fish is an important one, as wild fish are protected from harvest by sports fishermen. Hatchery fish can be identified by a missing adipose fin, which is removed from the fish in the hatchery when they are smolt. Any wild fish that are caught by sportsmen must be immediately released unharmed, whereas hatchery fish can be harvested subject to the license and limit restrictions set by the Idaho Department of Fish and Game. The attempt to release a wild fish unharmed is frequently unsuccessful, however, and as a result of rough handling many wild fish end up dying after being released back into the river.

Numerous salmon fishermen are not interested in harvesting a fish, but rather fish for sport on a catch-and-release basis regardless of whether they are catching hatchery or wild fish. Many catch-and-release fishermen will argue—sometimes a bit sanctimoniously—that their brand of fishing is better for fish, and much more sportsmanlike, than “meat fishing” for the dinner table. But, in private conversations Idaho Department of Fish and Game personnel expressed concerns that an unfortunate side effect of catch-and-release fishing is that many more fish are ultimately hooked, and consequently killed, than would occur if fishermen simply halted fishing after catching and keeping their limit of harvestable hatchery fish. In theory, this problem could be corrected if limits were placed on the number of fish *caught*, rather than on the number of fish harvested. By limiting the number of fish caught, a catch-and-release fisherman would be required to quit fishing after the

daily limit of two or three fish are landed, regardless of whether the fisherman decides to harvest the salmon or release it back into the stream.

Native Americans play a distinctive role in Idaho salmon fishing as a consequence of a treaty made between the United States and the tribes in 1855. According to the treaty, Native Americans are granted “the right of taking fish at all usual and accustomed places, in common with the citizens of the Territory.”<sup>5</sup> Over time the courts have interpreted this to mean a 50/50 split should occur when dividing the harvestable salmon between Native Americans and sportsmen. Each year the Idaho Department of Fish and Game monitors the number of salmon clearing the Bonneville Dam on the Columbia River and the Lower Granite Dam on the Snake River. When climbing the ladders at the dams, the fish are manually counted by individuals gazing through windows constructed for the express purpose of keeping track of the number of returning fish. Based upon the number of salmon entering the state, the Idaho Department of Fish and Game determines a “harvestable surplus.” The harvestable surplus is then available for Native Americans and sports fishermen to catch using the 50/50 split. The fishing season remains open until the available surplus has been harvested, at which time the season is promptly declared closed for the year.

The Idaho Department of Fish and Game monitors the harvest of the portion of the salmon allocated to sports fishermen. Along some stretches of the river, check stations are set up on roadways where fishermen must stop their vehicles to have their fish counted by game wardens. When the Idaho Department of Fish and Game believes sports fishermen have caught their portion of the harvestable surplus, the particular stretch of river is declared closed. Often times the closure occurs during the best part of the run, when a fisherman’s shot at catching a fish in a short amount of time is at its optimum. The threat

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<sup>5</sup> See Columbia River Inter-Tribal Fish Commission, Treaty with the Yakama, <http://www.critfc.org/text/yaktreaty.html>.

of a surprise closure of a stretch of river leads fishermen to begin fishing very early in the salmon run, lest they risk being shut out before they have had a chance to catch a fish. Hordes of fishermen line up elbow to elbow at the best fishing holes, resulting in a fishing experience that is often less than desirable for many of the anglers, but necessary in the race to catch a fish before the stream is declared closed. Due to overcrowding, fishing can sometimes deteriorate into confrontation and physical violence. More than one fistfight has erupted on the bank of the South Fork of the Salmon River as a consequence of tangled lines associated with the race to harvest.

### **An Individual Transferable Quota System**

One way to measure the economic benefit of salmon in Idaho is to institute a system that allows for transferability of the right to catch a salmon. While Native Americans are often seen along the riverbank selling harvested salmon for prices similar to those paid at the local fish counter, anecdotal evidence indicates that to a sports fisherman the right to catch a salmon is much greater than the value of an already harvested fish. Indeed, the presence of numerous catch-and-release fishermen suggests the value is in the catching, not in the keeping. A salmon certificate system allowing for the transferability of fishing rights between individuals would provide a measurement of the amount a sports fisherman might be willing to pay for the opportunity to catch a salmon. Misfeldt (1999) proposed such a system for the state of Washington, and much of the following discussion draws on Misfeldt's analysis.

The salmon certificate system Misfeldt describes is also referred to as an individual transferable quota system or an individual fishing quota system, and has been used in varying degrees in Australia, British Columbia, Iceland, New Zealand, and in Alaska's commercial halibut fishery. Under a certificate system, a fisherman receives the exclusive, transferable right to harvest a fish. Once the right has been acquired, the owner of the right is able to sell the right to someone else, or to use it himself. In practice, the system has been employed in commercial rather

than sports fisheries. However, the benefits of free exchange of fishing rights in a sports fishery would be as significant as those realized in the case of commercial fisheries. As Misfeldt observes, the certificate system would provide numerous advantages over the present system of allocating harvestable salmon. Perhaps most significantly, a salmon certificate would eliminate the rush to harvest that is now evident in Idaho's recreational salmon fishery. With a certificate in hand, a fisherman would be able to fish at her leisure, with no concern that fishing on the river would be closed prior to exercising her fishing opportunity. Under such a system, a person without one or more certificates in possession is not legally allowed to fish. By restricting the number of allocated certificates to the size of the harvestable surplus, the race to harvest is eliminated. Indeed, a fisherman could optimize his fishing experience by waiting to take to the stream until the salmon run is at its peak, when the time investment in catching a fish is minimized. As was discussed above, under the present fishing license system the fisherman does not have the luxury of waiting until the salmon run is peaking, as odds are high that the stream will be declared closed to fishing and the angler will left out in the cold.

As discussed in the previous section, presently the Idaho Department of Fish and Game determines the "harvestable surplus" of salmon each year. The calculation is based on biological considerations, with a significant factor being the number of returning fish counted while ascending fish ladders on their way to Idaho.

From an economic efficiency perspective, the determination of the "harvestable surplus" should not be made solely on the basis of biological factors. Rather, the optimal harvest should reflect the number of fish returning to the state, the estimated demand for catching the fish in the current and in future years, and the time value of money. More returning fish should be allocated to harvest in years when demand is high, and less when demand is low. Other things being equal, a high interest rate environment reflective of a preference for current consumption should lead to more fish being harvested now, while fewer should be harvested if interest rates are low. The optimal rate of harvest

is the one that maximizes the present value of profits associated with harvesting the fish.

If the returning fish were “owned” by a profit maximizing entrepreneur, the number of salmon certificates sold in any year would be reflective of the demand and supply conditions in the present as well as those expected in the future. Attaining such optimality under present day political realities will not be simple. As stated by Anderson and Leal (1991), “[a]lthough it may not be possible to state precisely what is maximized by politicians and bureaucrats, it is clear that efficiency is not the main goal.” Still, government agents do respond to incentives, and an outcome that is nearer to economic efficiency might be accomplished by allowing the Idaho Department of Fish and Game and the tribes to directly benefit from the proceeds resulting from the selling of salmon certificates.

Evidence that a certificate system, or a transferable fishing quota system, will eliminate the race to harvest and result in a longer fishing season can be found in the experience of the Alaska halibut fishery. As reported by Leal (2006), transferable fishing quotas for halibut were introduced in Alaska’s halibut fishery in 1995. Prior to the quota system, fishing seasons were characterized by a race to harvest within a very short time window of one or two days. The short seasons were necessary to avoid the excessive harvest of fish at a long-term unsustainable level. Since the implementation of the quota system, the Alaska halibut season has been extended to an eight-month period.

Of course, eliminating the race to harvest in a fishery also reduces overcrowding. A longer fishing season spreads fishing pressure out, resulting in a more enjoyable fishing experience. Leal notes that in the case of Alaska’s halibut fishery, prior to implementation of the quota system, overcrowding resulted in tangled fishing gear that was often left at sea. Likewise, in Idaho’s salmon fishery overcrowding and the concomitant tangled lines are commonplace.

On Idaho’s South Fork of the Salmon River, the fishing is extraordinarily good, and the crowds are enormous. Fishing opens in the morning one half hour prior to sunrise, and closes in the evening

one hour after sunset. The stretch of the South Fork of the Salmon River that is open to salmon fishing is located within the boundary of the Boise National Forest. Recently the United States Forest Service instituted a prohibition against camping along the riverbank to prevent the shoreline from being littered with trash and fire rings. Prior to such restrictions, fishermen would camp alongside the stream for days at a time to hold down spots at the choicest fishing holes. The definition of “camping” is somewhat ambiguous even with the restriction, and many fishermen will arrive at the river shortly after midnight to curl up in lawn chairs next to the river, waiting for the legal opening of fishing at daybreak.

To avoid killing numerous wild fish as a result of hooking and releasing salmon, the property right associated with a salmon certificate could be specified as “the right to catch a hatchery fish,” regardless of whether the fish is kept or released. Under the present fishing license system there is a limit of two or three fish per day (the limit varies from year to year depending on the size of the run), but the limit is on fish *kept*, not on fish *caught*. As a result, when fishing is exceptionally good, many fishermen will fish all day long on a catch-and-release basis. As discussed above, many fish that are released subsequently die. Changing rules to place restrictions on the number of fish caught, rather than on the number kept, does not require a salmon certificate system—the Idaho Department of Fish and Game has discussed the idea within the present license and limit system. Such a change, regardless of whether it is made within the context of a salmon certificate system or the present system, would significantly reduce the large number of fish that die after being released back into the river and would go a long way toward restoring Idaho’s salmon fishery.

Implementation of a salmon certificate system, while at the same time honoring the 1855 treaty with Native Americans, would require that 50 percent of the salmon certificates each year be allocated to the tribes. Tribal leaders would be responsible for distributing the certificates to tribal members using whatever process they deem appropriate. Undoubtedly, some Native Americans would choose to

use their certificates for fishing themselves, while others might be inclined to sell their certificates to the highest bidder. The option to sell the certificate to someone else has value, regardless of whether the certificate holder chooses to sell the certificate or not. Undoubtedly, a Native American would garner more income by selling a certificate providing for the opportunity to catch a fish than through the selling of an already harvested salmon at grocery store prices.

Under a certificate system the 50 percent of the salmon certificates that do not go to Native Americans would be allocated to sports fishermen. Misfeldt proposes that, for the state of Washington, certificates could be auctioned off to the highest bidder, which would allow the state to generate revenue to run the salmon program and enforce the system of property rights associated with the certificates.

In private conversations Idaho Department of Fish and Game officials expressed concerns that auctioning off fishing rights to those individuals willing and able to pay the highest price does not fit in well with the department's long-standing objective of providing opportunities to all of the state's citizens, not just the economically advantaged. Gissurarson (2003) describes the adoption of an individual transferable quota system in Iceland, and argues that it would have been politically impossible to institute the system had the government attempted to auction the quotas (or certificates) to the highest bidder.

The system was acceptable to the majority of fishermen because its initial design did not prevent anyone from obtaining a fishing quota due to an inability to pay. Of course, if the quotas are transferable they ultimately will end up in the hands of those fishermen willing to pay the most for them, as Gissurarson goes on to observe that (2003, pp. 60) "[t]he end result was more or less the same as if the quotas had been initially auctioned off by government."

It is worth noting that Idaho has some of the nation's best big game hunting, and without doubt the Idaho Department of Fish and Game could auction off some of the state's prized hunts, such as moose and bighorn sheep, for enormously high prices. Instead, the Department presently allocates the coveted hunts using a "controlled

hunt” system in which each interested hunter has an equal opportunity to apply for the hunt and potentially be pulled out as a lottery winner. Winners are given the non-transferable right to participate in a particular controlled hunt. Such a “controlled hunt” system could easily be utilized within the framework of a salmon certificate system, with the notable difference being that—unlike the controlled hunt permits presently used in Idaho—the salmon certificates must be transferable to achieve greater economic efficiency.

In theory, the final distribution of the certificates will be unaffected by whether the Idaho Department of Fish and Game initially sells them to the highest bidder or distributes them to lottery winners, so long as the certificates are transferable. From the point of view of getting the resource to the fisherman valuing it the highest, it does not matter which approach is adopted. But, the choice of how to initially distribute the certificates will determine where economic rents accrue, which will likely impact the incentives of the Idaho Department of Fish and Game when it comes to determining the size of each year’s “harvestable surplus.” If the Idaho Department of Fish and Game were to auction off the certificates, the result would be greater revenue for the state to use in its salmon management program, perhaps encouraging the Department to make tradeoffs approximating those that would be made by a for-profit private company. On the other hand, allocating the certificates to individuals by lottery would result in a windfall for the lottery winners, who find themselves with a certificate that may be used for fishing or alternatively for selling to someone else for a profit.

## **Conclusions**

Enormous amounts of money are spent in an attempt to enhance Idaho’s salmon run. The funds come from taxpayers, electric ratepayers, and fishermen. Dam breaching is seriously discussed, as Native Americans, fishermen, and environmentalists generally prefer to focus on dams, rather than on overfishing, as the root cause of the decline of salmon in the state. Breaching of dams would result in lost

electricity, irrigation, and flood control. Also, the construction of the dams and locks along the Snake and Columbia Rivers have enabled the development of the Port of Lewiston, a seaport that facilitates transport of Idaho products by boat to the Pacific Ocean. Should breaching occur, these benefits would be lost. Thus, any serious analysis of dam breaching should involve weighing the value of the increased salmon runs—assuming breaching would have the effect of increasing run size—against the value of the other benefits that would be lost. Little formal work has been done to estimate the value of Idaho’s salmon fishery.

To truly know what a salmon is worth in Idaho would require a market for the right to catch a fish. Implementing a salmon certificate system, even on a limited experimental basis, would allow policy makers to directly observe the value of the right to catch a salmon. More broadly applied, a salmon certificate system could alleviate overcrowding and the race to harvest that presently characterizes salmon fishing in Idaho. Properly structured, the certificate system could affect the annual determination of the “harvestable surplus” by creating incentives for the Idaho Department of Fish and Game to consider economic as well as biological variables. Economic efficiency would be encouraged in that the transferability of salmon certificates would direct the right to fish to those individuals valuing the fishing experience the most.

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