

The wild caught salmon industry: Its challenges and potential

A summary overview

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August 2010*

Introduction

Fisheries in Oregon and wild caught salmon in particular have been critical to many Native American tribes both culturally and economically. Salmon continue to play a central economic role today in many coastal and inland communities of Oregon. Due to the difficulties of maintaining salmon habitat, providing for migration over or around dams, and managing commercial and recreational fishing at sustainable levels, even extensive efforts to help salmon recover have had varying levels of success.

This summary provides:

- (1) **background** both about this industry and about Oregon State University's research in support of wild caught salmon fishing in Oregon,
- (2) an **overview of the markets** to which most of the research discoveries contribute,
- (3) an **economic estimate** of the current and potential value of the research to industry,
- (4) **examples of benefits** provided by the industry that are outside the profit-and-loss considerations of the market, and
- (5) a few **options to consider** that could enhance the economic effects of the wild caught salmon industry.

The National Oceanic and Atmospheric Administration's *Snapshot of Salmon & Steelhead Endangered Species Act (ESA) Status*² lists 19 salmon species that are *endangered*, *threatened*, or *of concern*. The slow progress in salmon recovery has influenced Pacific Fisheries Management Council recommendations to the National Marine Fisheries Service (NMFS), which makes the final fisheries management decisions. Recent fishing season curtailments or closures are dimensions of the declining place of salmon in Oregon's fishing industry.

¹ Gwil Evans edited this report and provided many useful ideas that increased the report's clarity. Numerous scientists including Gil Sylvia and Michael Banks gave freely of their time for interviews and offered many helpful suggestions.

² <http://www.nwr.noaa.gov/ESA-Salmon-Listings/upload/snapshot-7-09.pdf>

Salmon fishing in 1974 was about 40 percent of the commercial fishery's sales; today it provides approximately 10 percent in a normal season and 3 percent when the season is significantly reduced or closed for a major portion of the year.³ Salmon comprise approximately one-third of Oregon's total income effects from the salt and freshwater recreational fishing industry.⁴

Numerous governmental agencies, nonprofit organizations, and private firms/fishers collaborate in managing the stocks of salmon in Oregon and fishing within the 200-mile Exclusive Economic Zone off Oregon's shore. The collaborators need current and detailed information to make their decisions. Until recently they have relied on data that averaged the information or data collected from all the different salmon stocks. Many colleges at Oregon State University are working to provide more detailed scientific information and recommendations to support the management decisions that determine the economic opportunities for Oregon's commercial and recreational fisheries. The majority of these efforts are based in the College of Agricultural Sciences.

An example of one such research program is the Collaborative Research on Oregon Ocean Salmon (ProjectCROOS) which is working with more than 100 fishers to analyze a fin sample from each salmon caught off the Oregon Coast.

Currently, concern for certain vulnerable salmon stocks can force fishing for *all* salmon to be closed, as happened in 2008 and 2009 south of Cape Falcon. OSU ProjectCROOS scientists are developing techniques that can determine the home waters of each salmon caught. With this information they can provide real-time and detailed analysis that may be used for more sophisticated management decisions than have previously been possible. When the ProjectCROOS techniques are verified and accepted for routine use, management agencies may then adjust seasons to protect the species of concern and open others to harvest the species that are thriving. Salmon fishing closures could then be much more selective, thus increasing and stabilizing salmon harvests.

Another example of OSU's contribution to the fishing industry and a partner effort with ProjectCROOS is the Pacific Fish Trax program. Using the same bar codes that are applied to the fish when a fin sample is taken for ProjectCROOS, the Pacific Fish Trax program maintains a tracking system that may be used by all levels of the fisheries market—from fisher to processor to restaurant patron or supermarket consumer.

³ The Research Group 2010 for the Oregon Coastal Zone Management Association and the Oregon Department of Fish and Wildlife. *Briefing Report Oregon Commercial Fishing Industry Economic Contributions in 2009 Version 1.1 January 2010*. Corvallis, Oregon.

⁴ Dean Runyan Associates 2009. *Fishing, Hunting, Wildlife Viewing, and Shellfishing in Oregon 2008 State and County Expenditure Estimates*. Oregon Department of Fish and Wildlife and Travel Oregon. [http://www.dfw.state.or.us/agency/docs/Report_5_6_09--Final%20\(2\).pdf](http://www.dfw.state.or.us/agency/docs/Report_5_6_09--Final%20(2).pdf)

Bar codes can be used in a special kiosk in a restaurant or supermarket, or the bar code number may be entered by a consumer on a home computer to provide a complete history of the fish from where it was born to where it was harvested to where it was processed and sold. Initial estimates indicate that consumers may pay a premium of 10-25 percent for this additional background tracking service, thereby allowing consumers to differentiate salmon caught in Oregon from salmon caught elsewhere.

Background

Oregonians demonstrated their concern for salmon in the Oregon Territorial Constitution of 1848, Section 12, when they "...declared that rivers and streams supporting salmon shall not be dammed or otherwise obstructed unless fish passage is provided."⁵ The first cannery was built on the Washington side near the mouth of the Columbia River in 1866 and the first hatchery was built on the Clackamas River in 1877. The 1898 special session of the Oregon Legislature passed a salmon law.⁶

These actions were designed to conserve salmon; however, for more than 130 years, funding was often insufficient to make the intentions reality. In 1980, salmon stocks were seriously depleted and a permitted entry system was established for offshore fishing. That same year, Congress passed the Northwest Power Planning Act and created the Northwest Power Planning Council (now the Northwest Power and Conservation Council) with funding for fish and wildlife mitigation.⁷ Thus began the current era of fisheries management and regulation that determines the economic effects of the fishing industry in Oregon.

Economic profile

Wild caught Oregon salmon commands a premium, \$3-6 dollars to the fishers just as they come off the boat (known as *exvesse!*) and up to \$25 per pound retail. Demand for salmon is sensitive to changes in consumer income and product price. To the extent Oregon wild caught salmon can be distinguished from wild caught salmon from outside Oregon or farmed salmon, people will be less likely to reduce their salmon consumption proportionate to changes in income, and economic shocks will not force price fluctuations such as those the industry has experienced in the past.

Information from ProjectCROOS may soon help avoid extensive salmon fishing season closures that historically have made tenuous the supply of salmon to the market. Knowing when to fish and when to let endangered stocks pass will stabilize the supply of salmon.

⁵ Oregon Department of Fish and Wildlife. Oregon Department of Fish and Wildlife History, 1792-1990. <http://www.dfw.state.or.us/agency/history.asp>

⁶ Ibid.

⁷ Oregon Department of Fish and Wildlife. Oregon Department of Fish and Wildlife History, 1792-1990. <http://www.dfw.state.or.us/agency/history.asp>

The Pacific Fish Trax Program can complement this more reliable supply of salmon by the distinguishing characteristic for Oregon wild caught salmon of traceability from fisher to consumer. In concert, the two programs may significantly reduce uncertainty of supply and prices for both producers and consumers.

Commercial and recreational fisheries compete for the same fish. As ProjectCROOS and the Pacific Fish Trax program introduce the potential for greater stability to the commercial fishing industry, it is likely that the recreational fishing industry will also be able to increase the allowable catch and/or the length of the seasons so the number of recreational fishing days and expenditures will increase. While this conjecture is reasonable, there are not detailed projections of this increased economic activity so this effect has not been quantified herein.

Economic linkages and effects

OSU’s ProjectCROOS and the Pacific Fish Trax Program with their many collaborators annually spend together approximately \$800,000. An average of \$500,000 is expended through contracts with the fishers and private coordinators or liaisons with the fishers. An estimated \$300,000 is spent for technical support with scientists, research assistants, graduate students, and website developers.

Table 1 summarizes the **direct** private and public expenditures made for these programs, the **indirect** spending or effects with suppliers, and the **induced** effects, which are caused by everyone from fishers to suppliers spending their incomes within their communities. The direct, indirect, and induced effects are expressed in four ways; 1) output – funding received, 2) employment – both in full and part-time jobs, 3) labor income and 4) the total value added to the product which includes the labor income, proprietor income, property income (leases and rentals), and indirect business taxes.

Table 1. Economic effects of ProjectCROOS research and the Fish Trax Program market development expenditures

<i>Type of Economic Effect</i>	<i>Output</i>	<i>Employment Full & Part-time</i>	<i>Labor Income</i>	<i>Total ValueAdded</i>
Direct	800,000	137	349,644	342,162
Indirect	251,540	2	89,476	135,806
Induced	384,343	4	121,732	220,367
<i>Total</i>	<i>\$1,435,883</i>	<i>143</i>	<i>\$560,852</i>	<i>\$698,335</i>

ProjectCROOS reimburses each participating fisher up to \$6,500 per season. Since the research work by fishers is done at the same time, yet distinct in purpose from the salmon harvest, the direct employment impact includes a separate part-time job for each cooperating fisher along with the liaison staff and scientists.

The fishing industry has gone through some major fluctuations and this employment impact is a particularly important contribution of the project that extends well beyond the financial expenditures. As the ProjectCROOS director Gil Sylvia states, "It keeps the fishermen on the water." both gathering the data as research assistants and then as fishers with more days to fish, by reducing the need for season closures, resulting from the better data they have gathered.

When ProjectCROOS has developed a reliable database and the broad sweeping closures become unnecessary, the fisheries output will increase. In years with extensive closures, ocean salmon fishers' revenues decline from more than \$10 million to less than \$5 million.⁸

A significant closure can be anticipated every three years, so the annual benefits of avoiding these types of closures could be at least \$5 million/3 = \$1.66 million per year. If this \$1.66 million of salmon is processed in Oregon, the annual increase in wholesale seafood attributable to ProjectCROOS would be \$4.25 million.

If the Pacific Fish Trax Program can stabilize prices by adding the attribute of traceability to the wild caught Oregon salmon, the income and price sensitivity of salmon sales could be reduced. Should such traceability increase consumers' sense of the health and safety benefits of Oregon wild caught salmon, then consumers presumably would substitute more Oregon wild caught salmon for fish caught outside Oregon or that from salmon farms. This shifting from purchasing imported salmon to locally caught wild salmon is termed *import substitution*; it is as valuable economically as exports because it plugs a leak of dollars from Oregon consumers to markets outside Oregon.

When the Pacific Fish Trax Program is regularly used by consumers and Oregon wild caught salmon can be distinguished from their competitors, fishers and seafood processors may expect a 10-25 percent premium in the prices. For calculation here, we use 15 percent as a conservative average. This premium would have at least an annual economic effect of \$3.85 million in the fishing industry.

Economists have studied the effects of the Country-of-Origin Labeling (COOL) legislation, which went into effect for salmon in 2005, looking for the effects of traceability at least to the country-of-origin and observed no effect on salmon consumption.⁹ Still, the \$3.85 million remains a conservative amount because the Fish Trax Program's website goes well beyond COOL requirements to the extent of providing consumers a qualitatively different product. Also, the estimate calculates only the effects through the wholesale level; retail prices may increase much more than 15 percent.

⁸ The Research Group 2010 for the Oregon Coastal Zone Management Association and the Oregon Department of Fish and Wildlife. *Briefing Report Oregon Commercial Fishing Industry Economic Contributions in 2009 Version 1.1 January 2010*. Corvallis, Oregon.

⁹ Wozniak, Shawn 2010. *Has Country of Origin Labeling Influenced Salmon Consumption? Selected Paper prepared for presentation at the Southern Agricultural Economics Association Annual Meeting, Orlando, FL, February 6-9, 2010. N.C.A & T State University, Greensboro, NC. <http://ageconsearch.umn.edu/bitstream/56460/2/2010%20SAEA%20Wozniak.pdf>*

With Copper River Salmon from Alaska, we have an example of consumers perceiving one type of salmon as being quite different from its competitors and being willing to pay a premium that ranges from 25 percent to 100 percent of the price of salmon from other places. However, Copper River Salmon also demonstrate that while differentiated products can be less sensitive to changes in consumer income the differentiated products are still affected.¹⁰ Table 2 shows the economic effects of successful outcomes for both ProjectCROOS (\$4.25 million) and the Fish Trax Program (\$3.85 million).

Table 2. Potential economic effects of stabilizing salmon seasons and differentiating Oregon wild caught salmon from competitors

<i>Type of Economic Effect</i>	<i>Output</i>	<i>Employment Full & Part-time</i>	<i>Labor Income</i>	<i>Total ValueAdded</i>
Direct Effect	8,100,000	23	738,054	825,228
Indirect Effect	4,436,965	36	1,405,586	2,262,240
Induced Effect	1,854,225	15	587,741	1,062,984
Total Effect	\$14,391,190	75	\$2,731,381	\$4,150,456

Contributions beyond the market

ProjectCROOS has potential to preserve salmon stocks that are endangered while also preserving the fishing industry and communities that rely on fishing for their economic vitality. The Pacific Fish Trax program will also contribute to the resilience of the fishing industry and the survival of fishing communities.

Options to enhance economic contributions of wild caught salmon

By supporting programs for recovery of salmon stocks, Oregonians have demonstrated their deep cultural commitment to salmon and have recognized the fish's strong economic importance. Oregonians pay higher prices in markets ranging from utilities to food to tourism in an effort to return salmon runs to sustainable levels. Oregonians have paid higher public fees (e.g. fishing licenses) and incurred higher costs of production to abide by more stringent regulations in riparian zones and forests to support salmon recovery. The public's high level of concern for salmon while still maintaining traditional Oregon industries has often led to contention among different stakeholders and sacrificing economic production for species conservation.

¹⁰ Gaudette, Karen 2008. *High prices prompt shoppers to alter Copper River salmon buying habits*. The Seattle Times, http://seattletimes.nwsources.com/html/foodwine/2004469713_copper11.html

ProjectCROOS and the Pacific Fish Trax program bring the different stakeholders—both private and public—together to share the costs and benefits of salmon recovery. The programs are now expanding beyond Oregon waters into Washington and California and now study the distribution of salmon at a scale that would have been unimaginable only a few years ago. Yet these research efforts require major investments by the industry, scientists, and cooperators and it can be easier to *initiate* programs than *sustain* them over time. There are some key steps or decisions that could move these programs from experimental to reliable components of the fishing industry;

- Develop five years' of sampling data with partners in California and Washington.
- Evaluate these data using Pacific Fish Trax to test management applications.
- Continue testing market application.
- Provide data to fishers via Pacific Fish Trax so they may use data in real time to improve economic performance, reduce operations cost, and increase harvests of healthy stocks.

Funding this research effort over a number of years may provide stability to the wild caught salmon industry for the first time in its history. Salmon fishers could look forward to many years of predictable harvests and invest their efforts and resources knowing there is a high probability that they will realize a reasonable return. They may even be able to encourage their children to become fishers.

Please direct your questions to:

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Reference websites:

<http://www.pacificfishtrax.org/>

<http://projectcroos.com/>