

# **Salmon, Timber, and the Economy**

Ernie Niemi, Ed Whitelaw, Michelle Gall, and Anne Fifield

## **ECONorthwest**

99 W. Tenth, Suite 400  
Eugene, OR 97401  
(541) 687-0051

Prepared for:

Pacific Rivers Council  
Oregon Trout  
Audubon Society of Portland  
Institute for Fisheries Resources

December 1999

© ECONorthwest 1999

# EXECUTIVE SUMMARY

---

Facing imminent loss of their wild salmon, Oregonians have decided the problem warrants extraordinary effort to solve. Americans, in polls and through their agent, the National Marine Fisheries Service (NMFS), agree with them. At the forefront of efforts to solve the problem are proposals to restrict logging and related practices on private and state lands. In this report we examine these proposals and the potential economic consequences of implementing them.

## WHY FOCUS ON LOGGING RESTRICTIONS?

---

Logging and related forest practices are an important, but not sole, cause of declining salmon populations—agricultural practices, urban development, fishing practices, and dams also are important. Private entities and the state own 56 percent of Oregon's timberland, about 9 million acres. Past timber production on these lands has degraded the habitat salmon need to survive by increasing sedimentation in streams, stream temperatures, and the incidence of harmful landslides. It also has destroyed spawning sites and created impediments to the movement of spawners upstream and juveniles downstream.

Furthermore, three recent science-based reviews have concluded that the state's current forest-practice regulations will not prevent further degradation, let alone reverse past degradations (IMST 1999; NMFS 1998; Pacific Rivers Council 1999). The reviews generally recommend restricting logging near streams and in landslide-prone areas, rehabilitating existing roads and changing the design of future roads, and protecting areas with the best salmon habitat that serve as refuges amid habitat desolation.

## WHY FOCUS ON THE ECONOMIC CONSEQUENCES?

---

The proposals to restrict logging and related activities on private and state forest lands have triggered considerable opposition, largely because many landowners believe the proposals would cause them to forgo substantial expected revenues from the production of timber. After NMFS issued its initial proposal, for example, the two organizations representing landowners complained the proposal would take 39 percent of the private timberland out of production at a cost of about \$8,700 per acre, or \$29 billion total (Oregon Small Woodlands Association and Oregon Forest Industries Council 1998).

Costs to landowners, however, are only part of the story. Rebuilding healthy salmon populations offers large benefits for the economy. The importance of looking at both the benefits and the costs was recognized by 78 economists, who recently sent a letter to the governors of the four Pacific states and the premier of British Columbia (Whitelaw et al. 1998), urging them to look beyond those who cast conservation as a salmon-vs.-economy

contest by focusing solely on the costs of salmon conservation. This report takes the broader view recommended in the economists' letter.

## **WHAT ARE THE MAJOR POTENTIAL ECONOMIC CONSEQUENCES?**

---

As salmon-related restrictions generate costs and benefits for the economy, they also will have positive and negative impacts on jobs. These major effects will occur against the backdrop of several important issues.

### **Costs and Benefits**

---

Recent studies indicate that implementing the logging and other restrictions needed to restore healthy salmon habitat on private and state forest lands would remove 15-45 percent of the lands from timber production. Though some landowners argue the proposals would cost landowners as much as \$8,000 per acre, most studies conclude the costs would be 1–10 percent this level, i.e., \$80-800 per acre. Even these estimates, however, fail to account for the opportunities available to landowners for mitigating the costs. These include conducting watershed analyses to determine where, exactly, the restrictions are warranted and where they are not. Absent such analyses, it is prudent for the agencies charged with restoring salmon populations to paint the restrictions with a broad brush.

Restricting logging would create numerous benefits. The most apparent is an increase in salmon populations, important to the commercial-fishing industry, recreationists, and those who treasure salmon's intrinsic value. In addition, logging reductions should yield cleaner streams, by reducing logging-related sediment. With past logging practices common in the western Cascades, for example, clearcutting one acre imposed \$208 in flood-damage and other costs on downstream firms and households.

Other benefits are less direct but no less important. The cleaner streams, fewer clearcuts, and other environmental improvements accompanying logging reductions would enhance the profits of firms in the recreation and tourism industries. They also would improve the quality of life for those Oregonians who value such things and, when the improvement is enough to influence workers and households to locate in Oregon, it would increase the profits of firms that hire and sell goods and services to them.

Quantifying these and other benefits is devilishly hard. There is evidence, though, indicating that the benefits are commensurate with, or even exceed, the costs.

Studies of federal lands east of the Cascades, for example, found that recreational services account for about 90 percent of the total value of all services and commodities derived from these lands. Fishing is especially important. Timber accounts for only about 10 percent of the total, and this percentage is expected to fall.

Another useful comparison entails recognizing that salmon habitat acts like financial assets, generating a flow of economic benefits over time. Evidence from the past decade indicates that, if habitat improvements resulting from salmon-related logging restrictions

generated one additional fish for the recreational fishery per year per acre for the foreseeable future, the asset value of the habitat would be about \$2,800 per acre.

By comparison, the average timber-asset value of state and private land used for growing timber in Oregon is about \$400 per acre in Western Oregon, and the average value of land plus standing timber is about \$4,000 per acre. Values are less east of the Cascades.

Thus, if logging restrictions converted one acre of private or state land from producing timber to producing one salmon per year for the recreational fishery, the asset value of the new salmon habitat would be about seven times the forgone timber-asset value of the land, alone. The recreation-related, habitat-asset value would be about two-thirds the average value of the timber-asset value of the land plus the current stocking of timber.

Furthermore, some foresters believe that the forgone timber-asset value could be reduced by half because, with appropriate forest-practice regulations, landowners could improve salmon habitat and produce some timber from some acres.

To weigh the costs and benefits fully, one would have to incorporate into the comparison other benefits, such as reductions in sediment-related damage and the intrinsic value of salmon. Surveys indicate, for example, that Oregon households, on average, are willing to pay \$2.50–7.00 per month to protect or restore salmon. Applied to the 1.25 million Oregon households, the total is about \$3–8.75 million per month. Some undetermined portion of this applies to salmon restoration in private and state forests.

Thus, instead of costing billions of dollars, as some have concluded by looking only at gross estimates of the effects on the timber industry, the actual net effect of the proposed logging restrictions would be much different. The costs and benefits of logging reductions would vary from place to place and it is impossible to trace them all. The available data indicate, though, that many, perhaps most, of the costs could be mitigated, and many—in some instances, perhaps all—of those that remain, would be offset by benefits.

## **Negative and Positive Impacts on Jobs**

---

Restricting logging on 15–45 percent of private and state lands would potentially jeopardize up to 3,500–18,500 jobs in the timber industry. Every job lost in the timber industry would jeopardize roughly two more jobs in other industries. Given the robust strength of the state's economy, however, these risks would quickly evaporate in most instances.

Oregon's robust economy would help dislocated workers find replacement jobs. Most would find new jobs within three months, and the percentage remaining unemployed after one year probably would not exceed the background percentage for the workforce as a whole. Unemployment-insurance benefits and other forms of assistance would smooth the transition. This is not to discount the trauma of being laid off or the fact that some workers would experience declines in earnings. Still, the region has, over the past decade, demonstrated its ability to mitigate and adjust to contractions in the timber industry.

The positive impacts on jobs would be less visible, but persist longer. If successful in restoring healthy salmon populations, the proposed logging restrictions would generate jobs

in the commercial and recreational fisheries, and in related forms of recreation. By reducing the costs logging imposes on others—by reducing logging-caused sediment in streams, for example—the logging restrictions would improve the profits of the firms and the incomes of the households that currently bear those costs. Perhaps most important, by improving the state's overall natural-resource amenities, the logging restrictions would make the state more attractive to workers, households, and investors. Through its impacts on Oregon's quality of life, the logging restrictions would affect all sectors of the state's economy, even those with no direct link to forests, streams, or salmon.

### **Important Background Issues**

This is not the first time that Oregon's timber industry has faced reductions in logging. Over the past two decades the state has adjusted to reductions far larger than those needed to restore salmon habitat on forest lands. These experiences have taught many lessons.

One is that, although some workers, families, firms, and communities endured severe difficulties as logging diminished, far more have prospered. There is no apparent reason to expect a different outcome following salmon-related reductions in logging. A rosy statewide picture, though, can mask the problems that logging restrictions might generate for some individuals, firms, and communities. These problems can be dealt with directly.

Another lesson is that the rights and responsibilities of landowners frame the definition of all the economic consequences that might follow implementation of tighter restrictions on logging and related activities. How one defines landowners' rights and obligations determines the composition of the costs and benefits associated with the proposed logging restrictions. Some in the state believe salmon-related restrictions on logging would restrict the rights of landowners to produce timber and, thus, impose costs on them. Others have a different view. To them, landowners have an obligation not to inflict further harm on salmon, not to impose costs on others, and to repair the harm from past logging activities. The rights and obligations of landowners have yet to be fully clarified.

A final lesson is the importance of weighing the consequences of making decisions that do not yield the intended results. One of the most frustrating characteristics of the proposals to restrict logging is that nobody can say definitively what impact they will have on salmon. Landowners understandably conclude from this that it would be unfair to them to impose restrictions that later prove fruitless. Given the public's strong opposition to allowing salmon to go extinct, however, it appears that it is better to err in favor of salmon than in favor of timber. If logging restrictions later prove unwarranted, the unlogged trees will have grown and become more valuable. In the meantime, there are numerous options available for mitigating unreasonable costs to landowners. In contrast, if needed restrictions are not implemented, so that salmon slide further toward extinction, the challenge of reversing the slide will become even greater.

# TABLE OF CONTENTS

	Page
<b>EXECUTIVE SUMMARY .....</b>	<b>I</b>
<b>TABLE OF CONTENTS .....</b>	<b>V</b>
<b>READER'S GUIDE TO THIS REPORT .....</b>	<b>1</b>
WHAT IS THIS REPORT? .....	1
WHY WAS THIS REPORT PREPARED? .....	1
WHAT IS THE REPORT'S STRUCTURE? .....	2
WHO PREPARED THIS REPORT? .....	3
HOW CAN YOU GET MORE INFORMATION? .....	3
<b>1. THE ECONOMICS OF SALMON CONSERVATION—PRINCIPLES AND PRACTICE .....</b>	<b>5</b>
A SURVEY OF RECENT STUDIES .....	7
MOST STUDIES VIOLATE MOST OF THE ECONOMISTS' PRINCIPLES.....	8
STUDIES THAT SATISFY MOST OR ALL OF THE ECONOMISTS' PRINCIPLES .....	10
SUMMARY.....	14
<b>2. APPLYING THE PRINCIPLES—THE FULL MODEL .....</b>	<b>15</b>
THE ECOLOGICAL PERSPECTIVE .....	16
FULL COMPETITION .....	17
COMPETITION FOR PRODUCTION AMENITIES .....	17
COMPETITION DIRECTLY FROM CONSUMERS.....	20
DYNAMIC ADJUSTMENT .....	22
THE ECOSYSTEM'S PRODUCTION AMENITIES.....	23
THE BEHAVIOR OF CONSUMERS .....	23
CHANGES IN THE DEMAND FOR LABOR.....	24
TRACE THE ADJUSTMENTS OVER TIME .....	25
RELEVANT AUTONOMOUS TRENDS .....	27
FEEDBACK TO THE ECOSYSTEM .....	28
SUMMARY.....	28
<b>3. POTENTIAL COSTS OF CURTAILING LOGGING TO RESTORE DEGRADED SALMON HABITAT .....</b>	<b>29</b>
RECENT ESTIMATES OF ECONOMIC COSTS.....	29
PUTTING THE ESTIMATES IN CONTEXT .....	33
POTENTIAL NON-SALMON RESTRICTIONS .....	33
OPTIONS FOR MITIGATING LANDOWNERS' REVENUE REDUCTIONS .....	34
LANDOWNERS' DEBT OBLIGATIONS.....	39
SUMMARY.....	40

<b>4. POTENTIAL BENEFITS OF RESTORING DEGRADED SALMON</b>	
<b>HABITAT .....</b>	<b>43</b>
PRODUCTION AMENITIES FOR NON-TIMBER INDUSTRIES .....	44
COMMERCIAL FISHERY .....	44
MUNICIPAL-INDUSTRIAL WATER .....	45
TOURISM .....	45
CONSUMPTION AMENITIES FOR DIRECT CONSUMPTION BY HOUSEHOLDS .....	46
RECREATION .....	46
AESTHETICS.....	51
SUBSISTENCE.....	51
REDUCTIONS IN SPILLOVER COSTS.....	51
LOGGING RESTRICTIONS SHOULD INCREASE THE INTRINSIC VALUE OF PRIVATE AND STATE FORESTS.....	54
SUMMARY.....	55
<b>5. POTENTIAL NEGATIVE AND POSITIVE IMPACTS ON JOBS .....</b>	<b>59</b>
POTENTIAL NEGATIVE IMPACTS .....	59
POTENTIAL POSITIVE IMPACTS.....	61
REDUCE THE LOGGING-RELATED COSTS ON OTHERS .....	62
INCREASED GOODS AND SERVICES FOR NONTIMBER INDUSTRIES.....	62
GOODS AND SERVICES FOR CONSUMERS .....	64
A WRONG WAY TO THINK ABOUT IMPACTS—THE ECONOMIC-BASE MODEL .....	66
WHY THE ECONOMIC-BASE MODEL DOESN'T WORK .....	67
SUMMARY.....	70
<b>6. THE NET EFFECT—GOOD BAD FOR OREGON'S ECONOMY? .....</b>	<b>71</b>
COSTS AND BENEFITS .....	71
NEGATIVE AND POSITIVE IMPACTS ON JOBS .....	73
DISTRIBUTION OF COSTS AND BENEFITS, AND OF POSITIVE AND NEGATIVE IMPACTS .....	74
RIGHTS AND RESPONSIBILITIES .....	74
UNCERTAINTY AND SUSTAINABILITY.....	75
BEYOND SALMON AND LOGS.....	76
<b>REFERENCES .....</b>	<b>77</b>
<b>APPENDIX. LETTER FROM CONCERNED ECONOMISTS TO GOVERNORS     KITZHABER, KNOWLES, LOCKE, WILSON, AND PREMIER CLARK .....</b>	<b>87</b>