A Brief Economic Analysis of Watershed Restoration Investments: A Case Study of Southwestern Oregon

This methodology report was prepared for the Whole Watershed Restoration Initiative
and accompanies Ecotrust's brochure:
"The Restoration Economy: Investing in natural capital
for the benefit of communities and salmon in Southwestern Oregon"

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About the WWRI and this study

The Whole Watershed Restoration Initiative (WWRI) is a public-private competitive grant program for salmon habitat restoration in river basins of high ecological importance in Oregon, Washington, and Idaho. Coordinated by Ecotrust, WWRI partners include the NOAA Restoration Center, Oregon Watershed Enhancement Board (OWEB), U.S. Forest Service, Bureau of Land Management, the U.S. Fish and Wildlife Service, and the Natural Resources Conservation Service. The initiative awards restoration funding in select watersheds in order to accelerate measurable and sustainable salmon habitat recovery.

In addition to direct ecological impacts, the WWRI's funding partners are also interested in better understanding the economic and social effects of their restoration investments. Fortunately, the Ecosystem Workforce Program (EWP) at the University of Oregon recently conducted a series of studies, funded by OWEB, that quantify the employment and economic impacts of public investments in restoration. The EWP's resultant working paper, "The Employment and Economic Impacts of Forest and Watershed Restoration in Oregon," and "Economic Impacts of Restoration Calculator for Oregon v.1.0," are at the leading edge of socioeconomic analysis of habitat restoration (Nielsen-Pincus and Moseley, 2010). For the first time, practitioners and economists have the tools to estimate restoration's economic impact.

In September 2011, a WWRI tour of restoration projects near Medford, Oregon, provided an opportunity to make use of the new tools from the Ecosystem Workforce Program. Participants in the tour included a range of stakeholders, such as public officials, watershed managers, and local community members. In preparation for the tour, Ecotrust undertook a brief assessment of restoration's economic impacts in a five-county area of Southwestern Oregon. Relying upon publicly available data and EWP methodologies, Ecotrust generated estimates for employment and economic outputs from restoration investments made in the area between 2000 and 2009. In addition, a brief literature review was done on the non-market values of restoration and resulting improvements to stream and fish health in order to provide a more complete picture of restoration's value to our communities.

The results of this work are presented here. This assessment is brief but the findings are clear: restoration activities create local jobs, typically in rural communities hit hard by the economic downturn. Restoration investments also continue to accrue and pay out over time. Long-term improvements in habitat create enduring benefits, from enhanced recreational and fishing opportunities to the quality of life Oregonians treasure.

Cathy P. Kellon
Water & Watersheds Program Director at Ecotrust
January 2012

1. INTRODUCTION

Healthy watersheds provide abundant natural resources and opportunities for Oregonians including clean drinking water, clean air, robust salmon populations, and a variety of recreational opportunities. Healthy watersheds also mean healthy economies; investing in watershed restoration can create jobs and stimulate economic activity for local communities, today and into the future. This paper examines the employment and economic impacts of watershed restoration investments made in Oregon, using economic multipliers recently produced by the Ecosystem Workforce Program of the University of Oregon (Nielsen-Pincus and Moseley, 2010).

We examine the economic impacts of direct investments in watershed restoration in the five-county area of Coos, Curry, Douglas, Jackson, and Josephine counties in Southwestern Oregon. As a case study, we analyze the economic impacts attributable to a single restoration project, the Little Butte Creek Meander Restoration Project in Jackson County. To provide context, we then compare our estimates of the economic impacts from restoration activities to the job creation potential of select other sectors. Finally, we present findings from recent literature to address some of the non-market benefits (goods or services with values that are not typically traded in markets or paid for by consumers) and recreational benefits associated with restoration activities.

2. RESTORATION & THE LOCAL ECONOMY: Southwestern Oregon

In this section we examine the potential employment and other economic impacts of restoration investments.

2.1 Methods

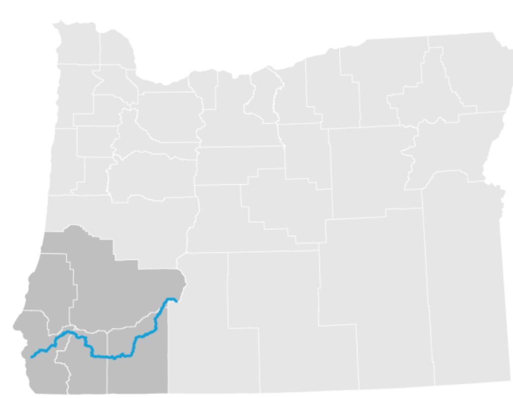
Southwestern Oregon was the focus of our regional case study analysis. The Oregon counties of Coos, Curry, Douglas, Jackson, and Josephine defined our study area (see Figure 1). Dominated by public forests, and characterized by large rivers such as the Rogue (depicted in Figure 1) and Umpqua and many smaller coastal rivers like the Sixes and Chetco, much of the region is rural. For the past two decades unemployment rates in the study area have been above state and national averages. Structural changes in the wood products industry and changes in land management on federal forests initially led to increased unemployment levels as early as the 1980s. In the latest recession, unemployment rates have reached as high as 16% in some parts of the study area (Oregon Employment Department, 2011). Meanwhile, tourism and population growth driven by newly arrived retirees presents new economic opportunities and new demands on public lands and watershed services.

To conduct our analysis we gathered the following data:

1. Details about expenditures`, type, and location of watershed restoration projects occurring in the study area over the years 2000–2009;
2. Restoration related economic and employment multipliers.

To gather project data, we considered the multiple funders of such work in the area such as Oregon Watershed Enhancement Board (OWEB), U.S. Forest Service

Figure 1. Study area region



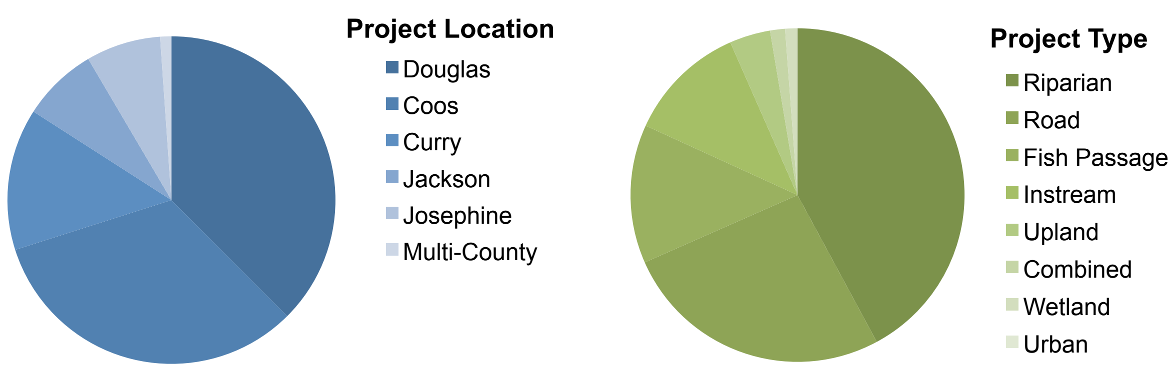
Source: Current study

(USFS), Bureau of Land Management (BLM), National Ocean and Atmospheric Administration (NOAA), U.S. Fish and Wildlife Service (USFWS), Oregon Department of Environmental Quality (DEQ), Oregon Department of Fish and Wildlife (ODFW), and Natural Resources Conservation Service (NRCS). Some of these funders had databases documenting restoration activities, including OWEB's Oregon Watershed Restoration Inventory (OWRI); the United States Department of Agriculture's Wildlife, Fish, and Rare Plant Management System (WFRP-MS); the USFS and BLM Interagency Restoration Database; and the NOAA Restoration Atlas.

OWEB's OWRI proved to be the most extensive, accessible, and complete database, documenting nearly 13,000 watershed projects throughout all of Oregon from 1995–2009. The relevant projects recorded in the other queried databases were fewer and also mostly accounted for within the OWRI database. This suggests that OWRI may be representative of the entire region; the OWRI data coordinator states, "It is the goal of OWRI to be the central repository of restoration project data in Oregon" (B. Riggers, personal communication, July 19, 2010). Given these reasons and the extensive project monitoring methodology used by OWRI that allows more comprehensive analysis, we used OWRI data for our regional analysis.

The five-county query of the OWRI returned a total of 2,350 projects from 2000–2009, the majority of which occurred in Douglas County (882), while multi-county projects were least common (26).[1] By project type, 'Riparian' projects were most common (990) while 'Urban' projects were least common (1). (See Figure 2 for more project location and project type details.)

Figure 2. Five-county case study projects by project location and project type



Source: Based on OWEB (2011) data

[1] Multi-county projects occurred in a) Jackson and Josephine counties; b) Coos and Douglas counties; or c) Coos and Curry counties.

We grouped restoration project activities according to the same categories used by Nielsen-Pincus and Moseley (2010):

Fish passage:	Removal of barriers to fish passage such as culverts and dams
In-stream:	Enhancement of stream habitat and function
Riparian:	Enhancement and restoration of native riparian vegetation
Road:	Inventory, construction, reparation, or decommission of roads
Upland treatments:	Agricultural water management, juniper management, and noxious weed
Urban:	Urban centered actions removing sources of watershed pollution
Wetland:	Restoration of wetland and estuarine habitat
Combined:	A diverse combination of some of the above project types

It should be noted that although the OWRI is the most comprehensive database documenting watershed restoration projects and likely includes the majority of restoration projects occurring in the state, it does not include *all* restoration projects and efforts. There were likely additional watershed restoration projects completed in the study area during the same time period that our analysis did not include. This suggests that our findings likely underestimate the total employment and economic impacts of restoration projects in the five-county region over this period.

According to the OWRI database, expenditures of $54.9 million were invested in the 2,350 watershed restoration projects in the five-county area between 2000 and 2009.[2] This total investment reflects only cash expenditures and excludes in-kind[3] contributions to project activity costs. These investments, in turn, contributed to economic activity and employment in the region.

To determine the economic impacts resulting from restoration investments in this region, we used economic and employment multipliers supplied by the EWP (Nielsen-Pincus and Moseley, 2010). Economic multipliers measure the changes in economic activity or output resulting from an initial expenditure or investment.[4] For example, a multiplier of 1.5 implies that $1.00 of direct expenditure on restoration generates an additional $0.50 in economic activity, resulting in a total economic impact of $1.50. Multipliers capture the ripple effects of economic activity; simply put, a direct change in one industry affects other industries. The multiplier effect (Figure 3) includes direct, indirect, and induced economic activity. Direct effects are the most straightforward; they include the economic activities associated with the restoration activity itself. Indirect effects account for the demands for services, supplies, equipment and other inputs produced by related industries to support the restoration work. Finally, induced effects capture the increased spending and economic activity that result when those employed in sectors linked directly and indirectly to restoration activities spend their income on goods and services. Employment multipliers measure the number of jobs created in the economy as a whole from each job created to do restoration work.

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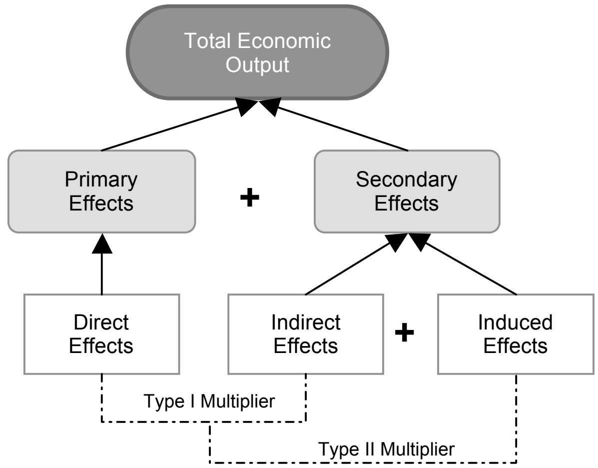
[2] All dollar values in 2010 dollars unless otherwise noted.
[3] 'Total In-kind' costs are defined as, "the value of donated or in-kind services, materials, labor, etc." (OWEB, 2011).
[4] Economic multipliers, invaluable tools in economic analyses, are derived from input-output (I-O) models that describe the structure of an economy in terms of the inputs to its various industry sectors and the distribution of the outputs from those sectors. I-O models are the most comprehensive economic accounts at the level of the whole economy. In the United States, it is common to use multipliers derived through IMPLAN.

Figure 3. Multiplier effects



Source: Current study

The multipliers used in this analysis come from a recent study produced by the EWP (Nielsen-Pincus and Moseley, 2010). The purpose of their study was, "to examine the employment and economic impacts of public investment in forest and watershed restoration in Oregon" (Nielsen-Pincus and Moseley, 2010, p. 4). To derive the multipliers, the EWP study used the economic impact modeling software IMPLAN, which contains county and federal economic statistics specialized by region, U.S. Census Bureau payroll statistics, and OWRI data from completed Oregon forest and watershed restoration projects. The resulting multipliers, therefore, are appropriate for our analysis.

These jobs may be full-time, part-time, temporary, seasonal, or non-seasonal in nature. Table 1 details the multipliers and EWP's estimates of the number of jobs supported per $1 million invested in specific restoration activities. These jobs may be full-time, part-time, temporary, seasonal, or non-seasonal in nature.

Table 1. EWP economic multipliers and employment effects

	Economic multipliers		Employment per $1 million invested	
Restoration Activity	**Type I**	**Type II**	**Direct+ Indirect**	**Direct+ Indirect+Induced**
Fish passage	1.8	2.3	10.6	15.2
In-stream	1.7	2.2	10.5	14.7
Riparian	1.7	2.4	17.5	23.1
Upland	2	2.6	10.8	15.0
Wetland	1.8	2.4	12.5	17.6
Combined	1.8	2.3	10.4	14.7

Source: Nielsen-Pincus and Moseley (2010)

The EWP study also estimated the employment impacts of restoration investments by contractor type, including labor-intensive, equipment-intensive (watershed), equipment-intensive (forestry), and technical contracting (see Table 2). Labor-intensive restoration activities — such as site preparation, tree and shrub planting, and cutting small trees and brush by hand — demonstrate the greatest employment potential. These labor-intensive restoration activities have the potential to create 23.8 jobs for every $1 million invested. Across all contracting types, restoration activities on average have the potential to create 19 jobs for every $1 million invested.

Table 2. EWP employment effects by contracting type

	Employment per $1 million invested	
Type of restoration contracting	**Direct+ Indirect**	**Direct+ Indirect+ Induced**
Labor-intensive	17.5	23.8
Technical	12.6	19.1
Equipment-intensive (watershed)	10.5	15.7
Equipment-intensive (forestry)	12	17.2
Average	**13.2**	**19.0**

Source: Nielsen-Pincus and Moseley (2010)

2.2 Results

To determine the total direct, indirect, and induced economic output resulting from restoration investments, we multiplied the total project investment in each category of restoration work by the relevant multiplier. We then summed the total economic activity by county to arrive at a five-county regional total (Table 3). We also summed the total economic activity by project type (Table 4). To determine the total number of jobs created through project work, we multiplied total project investment by the estimated number of jobs created per $1 million invested in specific restoration activities. We then summed the total job impacts by county to estimate the five-county regional total. We estimate that expenditures on restoration activities in the five-county area of Southwestern Oregon contributed between $97.3 million and $125.1 million in economic output and supported 616 to 865 jobs.[5]

[5] The lower values in the range are calculated by using Type I multipliers, which measure only the direct and indirect effects of the restoration expenditure. The higher values in the range are calculated by using Type II multipliers, which measure the direct, indirect, and induced effects of the investment.

**Table 3. Five-county restoration projects:
Estimated economic impacts by county, 2000–2009 (2010$)**

County	# of Projects	Total investments (million $)	Estimated economic output (million $)	Estimated employment (jobs)
Coos	765	$16.2	$28.9 – $37.6	187 – 262
Curry	329	$5.7	$10.1 – $13.1	63 – 89
Douglas	882	$25.0	$43.9 – $56.8	271 – 382
Jackson	175	$5.1	$9.1 – $11.7	54 – 77
Josephine	173	$2.0	$3.5 – $4.6	25 – 35
Multi-County	26	$1.0	$1.8 – $2.4	16 – 21
TOTAL	**2,350**	**$54.9**	**$97.3 – $126.1**	**616 – 865**

Sources: Author's estimates using data from OWEB (2011) and Nielsen-Pincus and Moseley (2010)

**Table 4. Five-county restoration projects:
Estimated economic impacts by project type, 2000-2009 (2010$)**

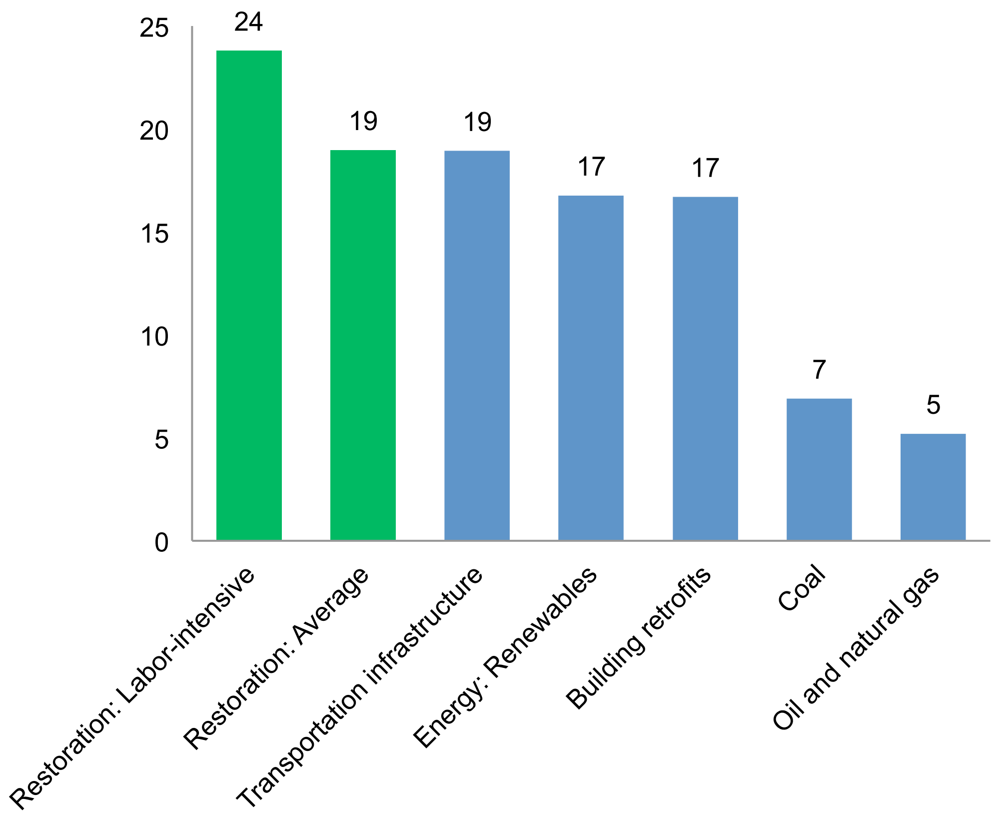
Project Type	# of Projects	Total investments (million $)	Estimated economic output (million $)	Estimated employment (jobs)
Fish Passage	34	$1.4	$2.6 – $3.3	15 – 21
In-stream	316	$17.5	$31.5 – $40.3	186 – 266
Riparian	272	$13.9	$23.6 – $30.5	146 – 204
Road	990	$4.9	$8.3 – $11.8	86 – 113
Upland	617	$13.3	$23.9 – $30.6	138 – 195
Urban	93	$1.5	$3.1 – $4.0	17 – 23
Wetland	1	$0.0	$0.0 – $0.0	0 – 0
Combined	27	$2.4	$4.3 – $5.7	30 – 42
TOTALS	**2,350**	**$54.9**	**$97.3 – $126.1**	**616 – 865**

Sources: Author's estimates using data from OWEB (2011) and Nielsen-Pincus and Moseley (2010)

Restoration employment in context

How does the job creation potential of restoration activities compare to investments in other sectors of the economy? Heintz et al. (2009a) estimates the job creation potential from investments in transportation infrastructure and renewable energy. Similarly, Heintz et al. (2009b) estimates the job creation potential from investments in building retrofits, coal, and oil and natural gas. The comparison shows that restoration activities create more jobs than comparable green investments in renewable energy, building retrofits, and transportation infrastructure (Figure 4). Restoration investments also create more than twice the number of jobs as comparable investments in coal, and more than three times the number of jobs as comparable investments in oil or natural gas.

Figure 4. Average # of jobs per $1 million of investment by sector



Source: Based on employment estimates from Nielsen-Pincus and Moseley (2010), Heintz (2009a), and Heintz (2009b)

The jobs created by restoration activities are located mostly in rural areas, in communities hard hit by the economic downturn. For instance, unemployment rates in each of the five rural counties covered by this study have consistently exceeded both state and national averages. Restoration activities bring a range of employment opportunities for those working in construction, engineering, natural resource sciences, and other fields. Restoration also stimulates demand for the products and services of local businesses such as plant nurseries, heavy equipment companies, and rock and gravel companies. In addition, these dollars tend to stay in the local economy. A recent University of Oregon study found that approximately 80% of OWEB's restoration investments stay in the county where the project is located. Over 90% of restoration investments stay within the state (Hibbard and Lurie, 2006).

2.3 Single Project Analysis: The Rehabilitation of Little Butte Creek

The Ecosystem Workforce Program at the University of Oregon recently released a calculator to allow restoration practitioners to estimate the economic impacts of their work at the level of an individual project. The calculator quantifies county-level economic and employment impacts from investments in ecological restoration throughout the state of Oregon[6] and allows project

[6] The calculator itself can be downloaded from the EWP at: http://ewp.uoregon.edu/economy/calculator-form.
A user guide for the calculator, including its methodology, is available online at:
http://ewp.uoregon.edu/sites/ewp.uoregon.edu/files/downloads/resources/Economic_Impacts_Calculator_Handbook.pdf.

managers to calculate the county-level employment, earnings, and total economic output projected from their restoration investments. To arrive at these estimates, project managers input data specific to their project, including project spending by work type, project location, amount of funds spent in the local county, and the timeframe for planning and implementation.

Availability of the EWP calculator offered an opportunity for the project sponsors of the Little Butte Creek restoration project to share estimates of their project's projected economic impact at the WWRI's September 19, 2011 tour. Little Butte Creek runs through the Denman Wildlife Area and feeds into the middle Rogue River near Medford in Jackson County, Oregon. It is important to steelhead, coho, and Chinook salmon but spawning and rearing habitat was greatly reduced by the straightening and confinement of Little Butte Creek in the 1950s for aggregate mining and agriculture. From 2009 through 2011, Oregon Department of Fish and Wildlife, Geos Institute, USFS, Middle Rogue Steelheaders, Rogue Flyfishers and other local partners worked to restore the meandering stream channel, reconnecting it with the floodplain, and increasing stream complexity.

The Little Butte Creek restoration project employed local equipment operators, project managers, and ecologists, and locally sourced nearly all materials. The primary out-of-county expense was for restoration engineering and design that was contracted to a firm based in Corvallis, Oregon. As a result, 72% of the total project budget was spent within Jackson County, and 97% was spent within the state.[7] With in-county expenditures shy of 80%, and in-state expenditures above 90%, the Little Butte Creek project spending pattern was consistent with that determined by the University of Oregon (Hibbard and Lurie, 2006).

Project funds spent within Jackson County (72%) totaled just over $391,000. More than half of that amount consisted of wages to local workers. Other expenses consisted mostly of project materials, such as boulders, logs and native plants that were sourced from local businesses. These purchases also produced indirect effects such as supporting jobs at those businesses. The EWP calculator estimated that the original project investment resulted in more than half a million dollars ($516,713) in economic output within Jackson County.

3. ADDITIONAL BENEFITS FROM RESTORATION

A critical assessment of restoration's value would not be complete without consideration of its primary intended benefits to habitat and fish populations. In addition to jobs and local spending, restoration investments continue to accrue and pay out over time. Resulting improvements in aquatic and terrestrial habitat function and fish and wildlife populations contribute to recreational and commercial opportunities that can provide jobs, stimulate output, and sustain rural livelihoods and economies. Improvements in habitat function also provide ecosystem goods and services that are fundamental to human health, economic productivity, and quality of life. In this section, we briefly discuss some of these additional benefits of restoration activities using results found in existing literature, including an appraisal of salmon recovery importance to Oregonians; expenditures on recreation in Oregon; and a valuation of Rogue River salmon and steelhead. Given the significant differences in methodology and objectives of the following cited reports,

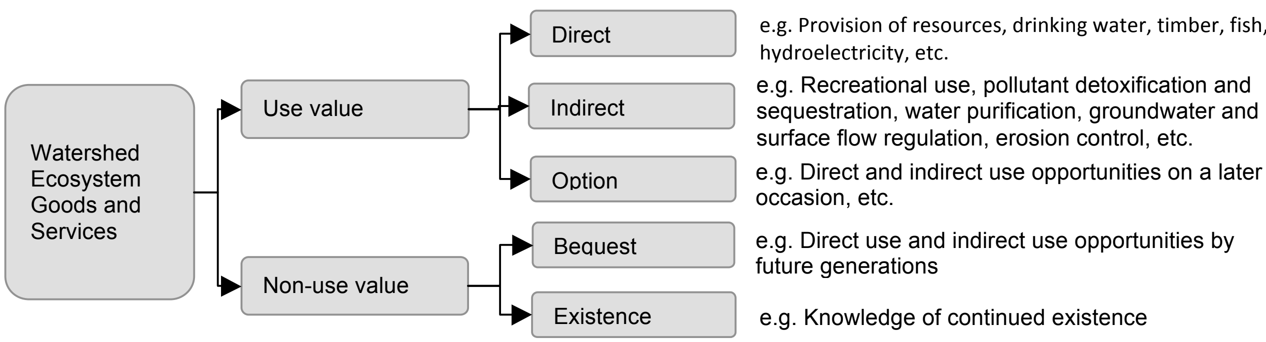
[7] The project data for the Little Butte Creek restoration project was input into the EWP calculator by project lead Brian Barr of the Geos Institute, who provided the results to Ecotrust on Sept. 13, 2011.

our coverage is meant to be only an introduction to the multiple ways to calculate and represent the long-term value of restoration.

3.1 Non-Market Benefits Of Restoration

As originally outlined by Daily (1997), watershed ecosystems supply a vast array of vital ecosystem goods and services which provide direct and indirect support of local economies. The total economic value of ecosystem goods and services is comprised of use and non-use values (Figure 5). Use values consist of direct use, indirect use, and option values. Non-use values are more difficult to quantify; they represent the values placed on the basic existence of natural resources irrespective of use, and the ability to bequest these values to future generations.

Figure 5. Total economic value of ecosystem goods and services



Source: Current study

Estimating ecosystem values is difficult, as most ecosystem services have non-market values — meaning they are not traded in markets with prices than can be observed and cash flows that can be counted. For example, a timber harvest generates cash revenues, but there is no market equivalent for clean air or wildlife habitat. Intangibles, such as the cultural significance of hunting and fishing, a scenic landscape, and the ability to pass on Oregon's natural wealth and beauty to future generations, are valuable but not captured in market prices.

In Oregon, some of the most significant values attached to watershed restoration may be social and cultural. One goal of watershed restoration investments in Oregon is the return of key, traditional fish species to rivers. Wild salmon, which have experienced serious population declines in the Pacific Northwest, are traditionally known as the first food to offer itself as nourishment to Native People and, to this day, are socially important to many Oregonians for cultural, recreational, and other reasons.

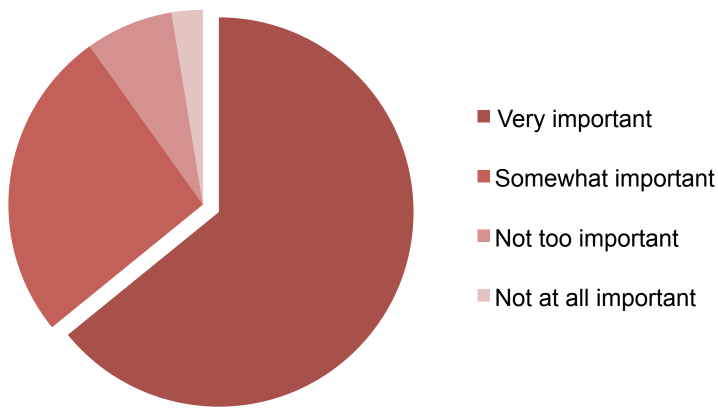
To assign dollar values to non-market goods and services, such as the significance of salmon to Oregon, economists can use a variety of non-market valuation techniques, including willingness-to-pay (WTP) surveys. These surveys estimate non-market benefits by asking respondents how much they would theoretically be willing to pay for improvements in environmental quality. The results of WTP surveys are highly dependent on survey design; the method requires very careful survey design and extensive sampling to ensure reliable data collection.

The Biennial Oregon Population Survey, last completed in 2008, asked respondents about their willingness to pay to improve salmon runs. The survey asked Oregonians two salmon-specific questions:

1. "How important do you feel it is to improve salmon runs in Oregon?"; and
2. "How much per month would you be willing to pay for water quality and habitat improvement efforts to help improve salmon runs in Oregon?" (Oregon Progress Board, 2009).

In 2008, over 90% of respondents felt improving salmon runs in Oregon was "somewhat" to "very important." Two thirds of Oregonians responded "very important" (See Figure 6).

Figure 6. "How important do you feel it is to improve salmon runs in Oregon?"



Source: Based on Oregon Progress Board (2009) data for the year 2008

Helvoigt and Charlton (2009) analyzed the WTP data collected from an earlier Oregon Population Survey in 2006. They estimated that Oregonians were willing to pay $75,958,977 (2008 dollars) annually to improve salmon runs. This is just one important indicator of the economic value of restoring habitat for Pacific Northwest salmon populations.

3.2 The Value of Watershed-Supported Recreation

Outdoor recreational activities are important in Oregon, especially fishing for salmon and steelhead. But recreational tourism also includes hunting, wildlife viewing, hiking, camping, rafting, kayaking, and mountain biking, among other activities. All of these pursuits are dependent upon the existence of healthy watersheds. Investing in watershed restoration, therefore, can lead to increased expenditures on recreation and tourism in Oregon.

Dean Runyan Associates (2009) estimated hunting, fishing, wildlife viewing, and shellfish harvest participation and related expenditures throughout Oregon in 2008. The study surveyed participants selected at random from license sales records; samples were stratified by certain regions of the state and by quarterly collection period. Overall, nearly 12,000 individuals provided information about their fishing, hunting, shellfishing, and wildlife viewing trips. Their results show that, in 2008, nearly 2.8 million Oregon residents and nonresidents participated in select recreational activities: 631,000 fished, 282,000 hunted, 175,000 harvested shellfish, and

1.7 million participated in outdoor recreation where wildlife viewing was a planned activity. And the cumulative expenditures by participants (state residents and nonresidents) in fish and wildlife recreation in 2008 were estimated at $2.5 billion for spending on travel, local recreation, and equipment purchases (Dean Runyan Associates, 2009).

Travel-generated expenditures for freshwater fishing alone totaled an estimated $195.6 million in 2008 (Table 5). More than 60% of total expenditures were not “local” or associated with trips less than 50 miles. This is important to point out because non-resident spending in regional economies generates new income for residents. It is also interesting to note that the $195.6 million in total travel-generated expenditures was fairly distributed across the state of Oregon, ranging from 5% to 18% per travel region. On the other hand, the portion of local expenditures varied greatly across travel regions, from 17% in the North Coast region to 92% in the Portland Metro/Columbia region.

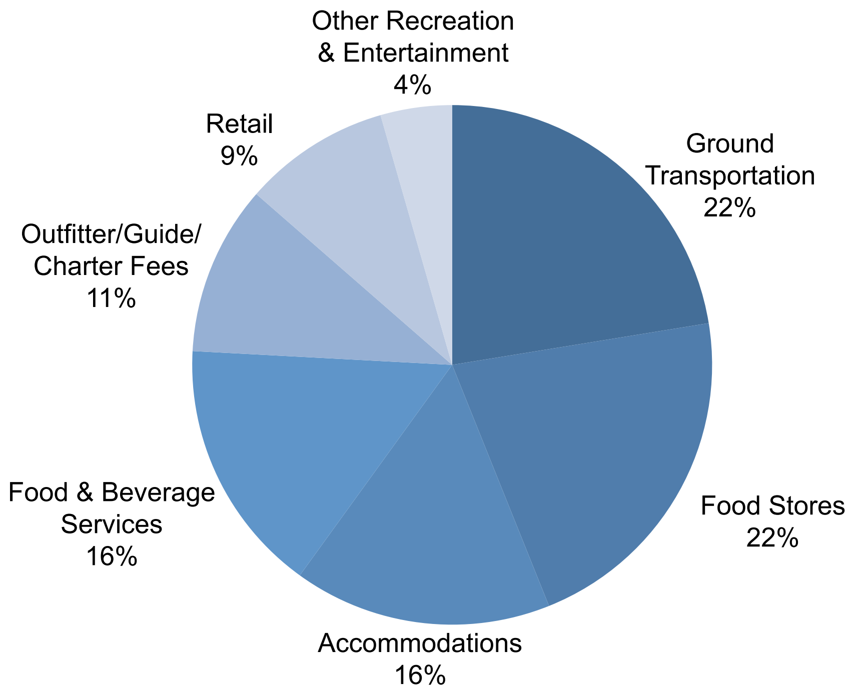
Table 5. Expenditures for freshwater fishing by trip type for Oregon travel regions, 2008

	Travel-generated expenditures* (millions $)					
Travel region	**Overnight**	**Day**	**Total**	**% by travel region**	**Local expenditures** (millions $)**	**% of expenditures local**
Willamette Valley	$14.4	$12.3	$26.7	14%	$17.6	66%
North Coast	$9.1	$8.9	$18.0	9%	$3.0	17%
Central Coast	$12.0	$8.1	$20.1	10%	$3.9	19%
South Coast	$6.3	$2.7	$9.0	5%	$2.6	29%
Portland Metro/Columbia	$8.9	$9.2	$18.1	9%	$16.6	92%
Southern	$16.8	$11.5	$28.3	14%	$11.3	40%
Central	$25.8	$9.6	$35.4	18%	$7.3	21%
Eastern	$20.6	$7.0	$27.6	14%	$6.1	22%
Mt. Hood/Gorge	$6.9	$5.4	$12.3	6%	$6.0	49%
State	**$120.8**	**$74.8**	**$195.6**	**100%**	**$74.3**	**38%**

Note: Resident and nonresident expenditures associated with freshwater fishing in Oregon.
* Travel-generated expenditures associated with overnight and day trips 50+ miles (one-way).
** Local recreation expenditures associated with trips under 50 miles.
Source: Dean Runyan Associates (2009)

These travel-generated expenditures were spread throughout the state economy and occurred in many different sectors (Figure 7). However, recreationists don’t only spend money in the categories displayed below; there are also expenditures made on durable goods, such as boats, which also impact regional economies. For more details on the information presented here, please see Dean Runyan Associates (2009).

Figure 7. Travel-generated freshwater fishing expenditures, 2008



Source: Based on Dean Runyan Associates, 2009

3.3 The Value of Rogue River Salmon

The Rogue River is the largest and perhaps most well-known river in Southwest Oregon, flowing from headwaters near Crater Lake and entering the Pacific Ocean at Gold Beach, Oregon. The river and its surrounding watershed provide important habitat for a variety of salmon populations including spring and fall Chinook, summer and winter steelhead, and coho. As salmon populations in other rivers in the Pacific Northwest decline, the relatively healthy habitats in much of the Rogue River basin take on even more importance for local economies and regional salmon recovery.

A report in 2009 by ECONorthwest estimated the economic value of commercial fishing, recreational fishing, and non-use values associated with a healthy Rogue River salmon fishery (Helvoigt and Charlton, 2009). ECONorthwest estimated the commercial, recreational, and non-use values for Rogue River Salmon using catch data from the Oregon Department of Fish and Wildlife (ODFW) and previously established estimates of: 1) the economic impact of each fish commercially harvested; 2) the willingness to pay of recreational fishermen per fish; and 3) the willingness to pay to protect northwest salmon populations.

For the year 2007, ECONorthwest estimated the annual associated economic values of Rogue River salmon and steelhead at $1.4 million in commercial harvests and $16 million in recreational catches. Non-use values for Rogue River salmon and steelhead were estimated at $1.5 billion for residents of Oregon, Washington, and California. Recent investments in upland and in-stream habitat improvements, as described in this report, are intended to help bolster fish runs, promising to increase sport and commercial fishing opportunities in the coming years.

4. CONCLUSION

From supplying us with clean water, fresh air, and productive soils to supporting salmon runs and recreational opportunities, Oregon's watersheds are a vital resource. Restoring them not only maintains and enhances these critical goods and services, but also provides local jobs and bolsters regional economies.

In our case study analysis, we estimated that $54.9 million in watershed restoration expenditures made over ten years in the five-county area of Southwestern Oregon generated up to $126.1 million in economic output and supported up to 865jobs.

Recent literature shows that restoration investments can support at least as many, if not more, jobs than other sectors of the green economy, such as building retrofits, renewable energy, and transportation infrastructure. They have the potential to employ nearly five times more workers as investments in the fossil fuels sector. Most restoration jobs cannot be outsourced, so employment and economic benefits tend to fuel local growth in rural economies. Taking a closer look at a single creek rehabilitation project in Jackson County, we found that 72% of total project expenditures were spent in the county and 97% were expended in Oregon.

Looking at recent, available literature, we were also able to uncover some of the non-market benefits of healthy habitat including the importance of salmon to Oregonians, the annual watershed-related outdoor recreation expenditures in Oregon, and estimates of the economic values of Rogue River salmon.

Whether estimating market or non-market returns, restoration investments and restored watersheds provide Oregonians with benefits today and into the future.

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