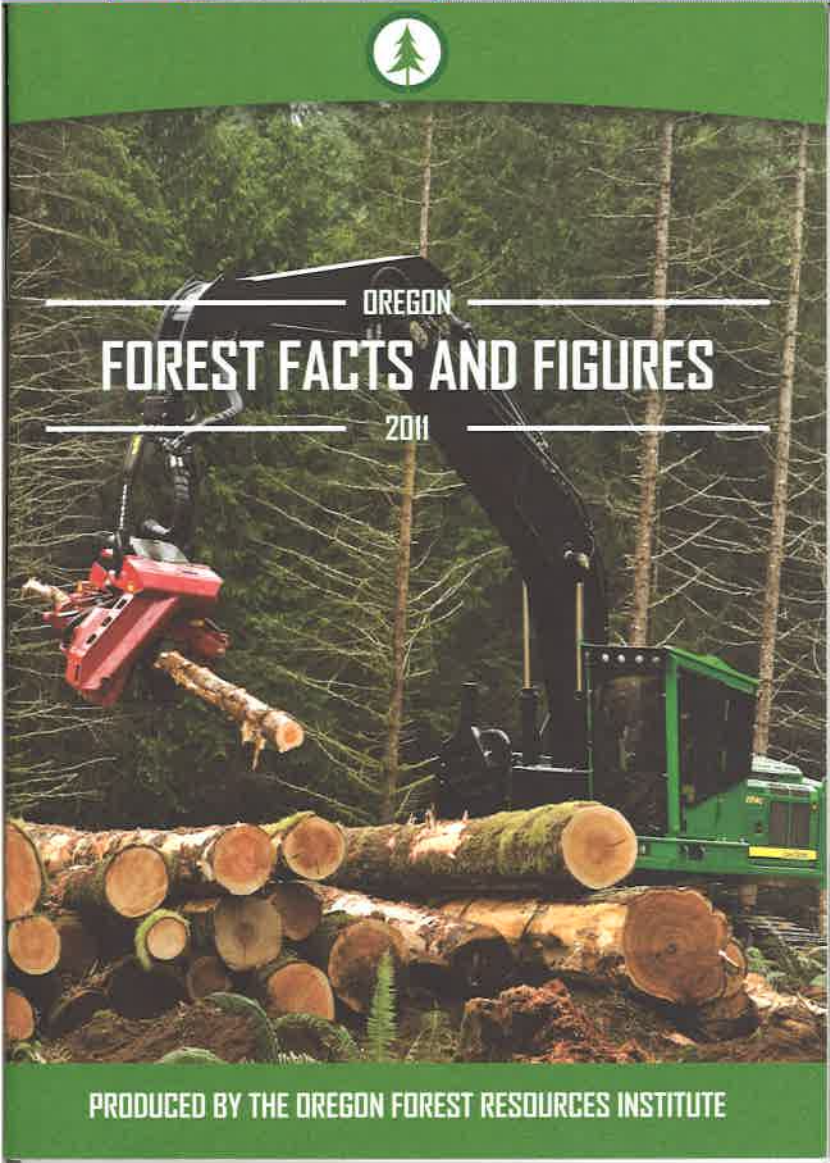


OREGON

FOREST FACTS AND FIGURES

2011

PRODUCED BY THE OREGON FOREST RESOURCES INSTITUTE

In Green We Trust.

This second edition of Forest Facts and Figures offers a snapshot of an Oregon forestry sector at a crossroads. Down one path: at-risk forests, declining investment and loss of jobs. Down the other: a healthy industry, nationally leading sustainable forest management practices and the assets for a green economy.

In this era of high unemployment and state budget cuts, it's that last item that deserves particular consideration. Oregon forests are a natural asset that can supply good-paying green jobs, thriving ecosystems and healthy communities.

The Oregon Employment Department defines a green job as one that provides a service or produces a product to increase energy efficiency; produce renewable energy; prevent, reduce or mitigate environmental degradation; or clean up and restore the natural environment. By those and other measures, jobs in Oregon's forest sector are green jobs.

OFRI's most recent *Oregon Forests Values and Beliefs Study* found that Oregonians want timber harvesting to remain an important part of the state's economy, but only as it balances economic, environmental and recreational interests.

The forest sector will play a significant role in restoring Oregon's economic health. Now, more than ever, it's time to put our trust in green.

Mike Cloughesy
Director of Forestry
Oregon Forest Resources Institute

Throughout this book we have inserted various "insights" from the *Oregon Forests Values and Beliefs Study June 2010*, as indicated by this symbol.

OREGON FORESTLAND AREA [1,2]

Oregon, the ninth-largest U.S. state, spans 63,018,000 acres or 98,466 square miles. Nearly half of this is forested – 30,472,000 acres, or 48.4 percent. Oregon's forestland owners or managers include federal, state and local governments; Native American tribes; large private landowners; families; individuals; and land trusts and other conservation organizations. Ownerships vary from a few acres to millions in the case of Oregon's federal forestlands. The federal government manages and conserves about 30 percent of the land base of Oregon, and about 60 percent of its forests.

TOTAL LAND AREA	63,018,000 acres
Forestland	30,472,000
Other land (urban, cropland, grazing, etc.)	32,546,000
GOVERNMENT FORESTLAND	19,408,000 acres
Federal	
U.S. Forest Service national forestland	12,133,000
U.S. Forest Service reserved lands (e.g., wilderness)	2,139,000
U.S. Forest Service national grassland	11,000
National Park Service	159,000
Bureau of Land Management (reserved and unreserved)	3,760,000
U.S. Fish & Wildlife Service	16,000
Other federal	27,000
Total Federal Forestland	**18,245,000**
State	
State forests	848,000
Other (parks, ODOT, College of Forestry)	159,000
Total State Forestland	**1,007,000**
County and municipal lands	156,000
PRIVATE FORESTLAND	10,601,000 acres
Large private landowners (≥ 5,000 acres)	5,933,000
Small private landowners (< 5,000 acres)	4,668,000
NATIVE AMERICAN TRIBAL FORESTLAND	463,000 acres
TOTAL FORESTLAND	30,472,000 acres

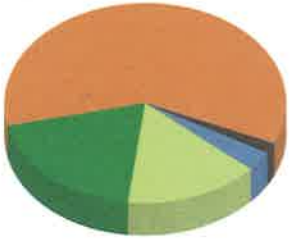
CHANGE IN FORESTLAND AREA [3]

Oregon forestlands in 2007 comprised nearly 99 percent of the area they occupied in 1630. This compares with 89 percent for Idaho, 87 percent for Washington and 74 percent for California.

State	2007		1963	1907	1630
Oregon	**30,169**	**99% of 1630 acres**	**30,739**	**31,729**	**30,590**
Idaho	21,430	89% of 1630 acres	21,815	21,967	24,130
Washington	22,279	87% of 1630 acres	23,050	26,834	25,670
California	32,817	74% of 1630 acres	34,541	37,404	44,470

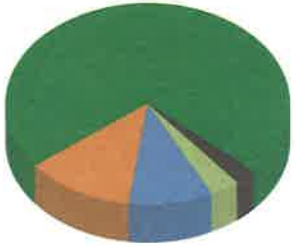
(Numbers above represent thousands of acres)

OREGON FORESTLAND BY OWNER (AS PERCENTAGES) [1]



- 60% FEDERAL GOVERNMENT
- 19% LARGE PRIVATE
- 15% SMALL PRIVATE
- 4% STATE AND OTHER PUBLIC
- 2% TRIBAL

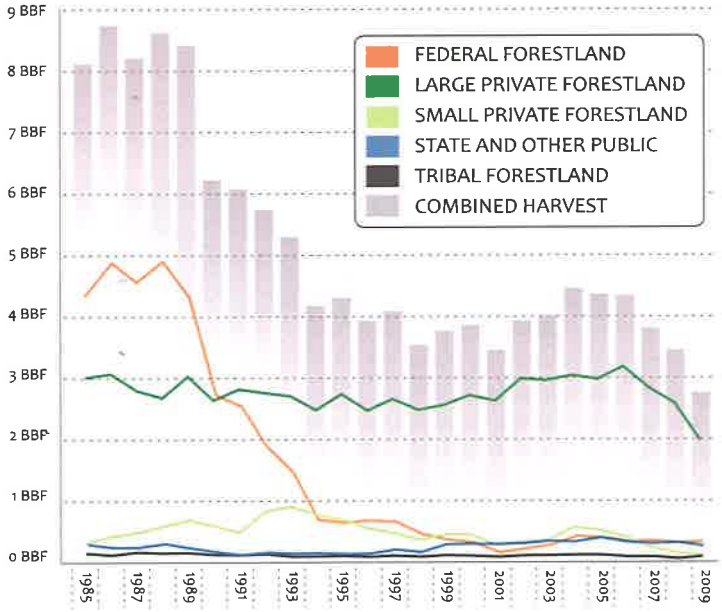
PERCENTAGE OF CURRENT HARVEST BY OWNER [4]



- 73% LARGE PRIVATE
- 12% FEDERAL GOVERNMENT
- 10% STATE AND OTHER PUBLIC
- 3% SMALL PRIVATE
- 2% TRIBAL

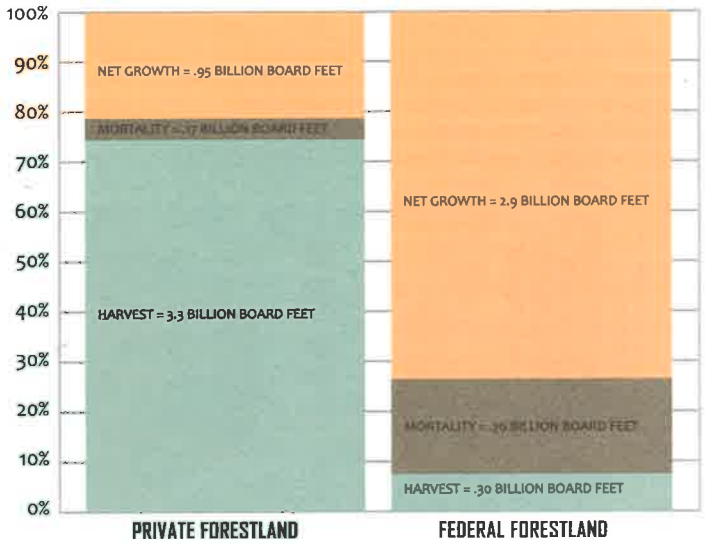
TIMBER HARVEST BY OWNERSHIP [4]

Oregon timber harvests in 2009 reached their lowest level since the Great Depression. Harvests declined 20 percent between 2008 (already a low year) and 2009. From after World War II until 1989, timber harvests in Oregon generally ranged from 7 to 9 billion board feet annually. Since 1989, timber harvests on federal lands have dropped more than 90 percent, due to a major shift in management emphasis and environmental litigation. Meanwhile, harvests from private lands have remained relatively stable. Harvest levels from combined public and private forests now total less than 3 billion board feet annually. Today, 76 percent of Oregon's timber harvest comes from private forestlands, with 12 percent from federal lands and 12 percent from other public and tribal lands.



SUSTAINABLE TIMBER HARVEST [4,5]

ANNUAL TIMBER HARVEST AND MORTALITY (2001-2005)
As % of Gross Annual Growth



This graph shows net growth – the difference between what grows in Oregon forests versus what is harvested or dies. On private lands (left), much of the growth is harvested, little goes to mortality and a fair portion goes to increase the amount of standing timber volume. On federal lands, little is harvested, a large amount goes to mortality and most goes to increase the standing timber volume. In young forests in western Oregon, high net growth can be considered positive. On overcrowded federal forests in eastern and southern Oregon, high net growth increases fire risk and can aggravate forest health problems.

FOREST PRODUCT USES [6]

Wood products make up 47 percent of all raw materials used in manufacturing in the United States. Nearly 100 percent of a log can be used to make wood and other products we use every day.

GREEN BUILDING

Wood has important environmental advantages over other building materials:

- Wood is renewable.
- Wood is reusable and recyclable.
- Wood removes carbon dioxide from the air.
- Wood stores carbon.
- Wood requires less energy and water to produce than concrete, steel and plastic.
- Wood can be sourced locally.
- Wood is not removed from Earth's crust, unlike fossil fuels or minerals.

Products made from trees grown in Oregon number in the thousands.

TYPES OF IMPORTANT PRODUCTS MADE FROM TREES HARVESTED IN OREGON:

- Structural lumber and other softwood products used in construction, such as dimensional lumber, solid beams, laminated beams, joists, laminated veneer lumber, finger-jointed lumber and other engineered structural softwood
- Millwork includes a variety of softwood and hardwood lumber for products such as doors, windows, cabinets, furniture, siding, flooring, moldings, fencing, shipping pallets, lathe and other millwork (e.g., pencils, musical instruments).
- Plywood and paneling from softwood and hardwood veneer or other composite panels such as particleboard, hardboard and fiberboard
- Posts, poles and timbers, such as utility poles, house logs, fence posts, pilings, treated timbers, cross-arms and railroad ties
- Pulp and paper products from wood fiber, including packaging, printing paper, newsprint, tissue, toweling, absorbents, adhesives, fluff pulp and cellulose products such as rayon, cellophane, food additives and pharmaceuticals
- Biomass energy is a major Oregon product, as most mills burn wood waste to generate heat and electricity for manufacturing.

FOREST SECTOR ECONOMICS [9]

The forest sector makes up about 8.5 percent of Oregon's total payroll, when we account for direct and indirect jobs. It ranks in the top four of Oregon traded sectors – those industries producing income for goods and services sold out of state. Oregon's primary wood products (lumber, veneer and plywood), secondary wood products (doors, windows, furniture, cabinets, etc.) and forestry services (consulting, firefighting and reforestation) contributed $12.6 billion to the state's economy in 2000, the latest year in which this was assessed.

Wood products manufacturing comprises 50 percent or more of the manufacturing employment in eight of Oregon's 36 counties. Because of higher-than-average wages and the prevalence of forest products companies in rural areas, forest sector jobs are particularly important to rural economies, especially on the north coast and in southern Oregon, eastern Oregon and the Willamette Valley, in order of relative importance.

Oregon's lumber and wood products industry has become more efficient and diverse. Although the industry has lost jobs due to the recession, the forest sector will remain an important part of Oregon's economy, especially the state's rural economy, into the future.

FOREST SECTOR EMPLOYMENT DECLINED IN RECESSION [10]

As Oregon and the nation have suffered through the great recession, forest sector employment has declined, primarily due to a reduction in home building in the western United States. Since 2005, forest sector employment has declined, both in total numbers and as a percent of the state's total employment.

	2005	2006	2007	2008	2009
Forest sector employment	67,418	67,090	63,497	58,373	47,722
Percent of state's total employment	4.1	3.9	3.7	3.4	3.0

FOREST PRODUCTS DIRECT EMPLOYMENT [10]

The state's forest sector directly employs at least 47,000 Oregonians. The actual total is greater, because Oregon Employment Department data do not count many self-employed, contractor and other forest sector workers – in jobs such as transportation, heavy construction, business services and forest labor. Using an employment factor developed by an econometric model (IMPLAN), OFRI estimates total forestry and wood products employment in Oregon for 2009 at about 57,000 jobs.

These jobs account for about 3.5 percent of jobs in Oregon and 3.8 percent of the state's labor income.

CATEGORY	2009 AVERAGE EMPLOYMENT	2009 AVERAGE PAYROLL	2009 AVERAGE PAY
Forestry and logging	5,883	$253,389,007	$43,071
Support activities	3,587	$91,470,574	$25,501
Federal natural resources	3,508	$197,652,508	$56,343
Primary wood product manufacturing	26,442	$1,185,256,347	$44,825
Secondary wood product manufacturing	5,005	$171,543,092	$34,274
Lumber and paper wholesalers	3,297	$198,185,287	$60,111
Total	**47,772**	**$2,097,496,815**	**$43,952**

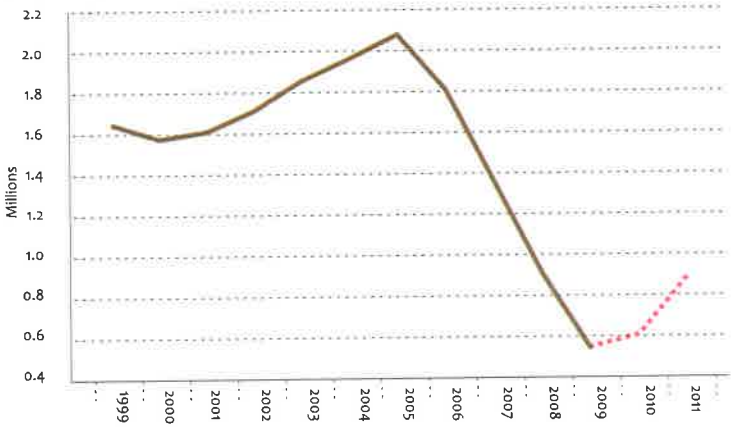
Annual forest sector payroll totals $2.1 billion. The forest sector pays an average wage of $43,952 – 8 percent higher than the state's average wage of $40,742.

- Jobs and revenue for communities together rank as the highest forest concern for Oregonians.
- Nine of 10 Oregonians agree that a healthy forest products industry is important for Oregon's economy to be strong and diversified.

LUMBER SALES DEPEND ON HOUSING STARTS [7]

Lumber and plywood sales are critical to the Oregon forest sector economy. Douglas-fir, the dominant species grown in Oregon, is used mainly for lumber and plywood. Lumber and plywood are used primarily for new housing and remodeling. Housing starts are a good predictor of lumber and plywood sales and thus a good predictor of the Oregon forest sector economy. In 2005, U.S. housing starts were more than 2 million units. This dropped in a nearly linear fashion as the U.S. economy entered a recession. In 2009, U.S. housing starts were fewer than 600,000 units. During this same period, Oregon lumber production, timber harvest and forest sector employment all dropped drastically. Housing starts are forecast to rebound in the next four years to more than 1 million units. The Oregon forest sector economy is expected to rebound also, but the recession has caused a decline in harvesting and milling infrastructure that will take a concentrated effort to overcome.

TWO-YEAR FORECAST FOR U.S. HOUSING STARTS (2010 - 2011)



Source: U.S. Bureau of the Census, Construction Reports
Forecast by National Association of Home Builders - www.HousingEconomics.com

OREGON BOARD OF FORESTRY [11]

A seven-member citizen board guides forest policy in Oregon. The Oregon Board of Forestry adopts rules regulating forest practices, appoints the state forester and provides broad oversight of the Department of Forestry. The board's mission is to "... lead Oregon in implementing policies and programs that promote environmentally, economically and socially sustainable management of Oregon's 30 million acres of public and private forests." Board members are appointed by the governor and confirmed by the state senate.

SUSTAINABLE FOREST MANAGEMENT [12]

The Oregon Board of Forestry bases its definition of sustainable forest management on Oregon law (ORS 184.421). According to its definition, sustainable forest management uses, develops and protects forest resources across the landscape at a rate and in a manner that allows Oregonians to meet their current environmental, economic and social needs while leaving the forests in a condition that allows future generations to meet their own needs. With broad public input, the board also has adopted a set of indicators to help citizens gauge whether Oregon's forests are being managed sustainably.

FORESTRY PROGRAM FOR OREGON [13]

Every eight years, the Board of Forestry establishes a strategic plan for Oregon's forests. The *Forestry Program for Oregon* lays out the board's mission and vision for Oregon's forests, and the values and strategies to guide its decisions. The program describes how Oregon's private and public forest landowners can work with citizens to ensure that Oregon's forests are managed for the best mix of economic, environmental and social benefits. First published in 1977, the program's latest update is scheduled to be adopted in 2011.

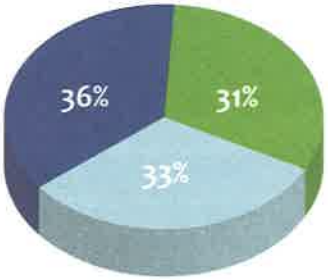
Substantial majorities understand that Oregon law requires protection of streams, water, fish and wildlife during timber harvests on forestlands.

FORESTLAND MANAGEMENT CLASSIFICATIONS [14]

Oregon's forests are managed to reflect the interests and policies of different owners. The land base is managed for three distinct purposes:

WOOD PRODUCTION

Forests managed mostly for income or timber production by both large and small private owners and tribes; they supply nearly 76 percent of the annual statewide timber harvest



MULTI-RESOURCE

Forests managed for multiple uses including recreation, water, wildlife habitat and timber production; primarily public, tribal and small private ownerships

RESERVE

Forests managed and conserved mostly for environmental or cultural attributes such as old-growth habitat, with limited timber harvest; largely owned by the federal government and may be set aside for parks, wilderness, or riparian or endangered species habitat

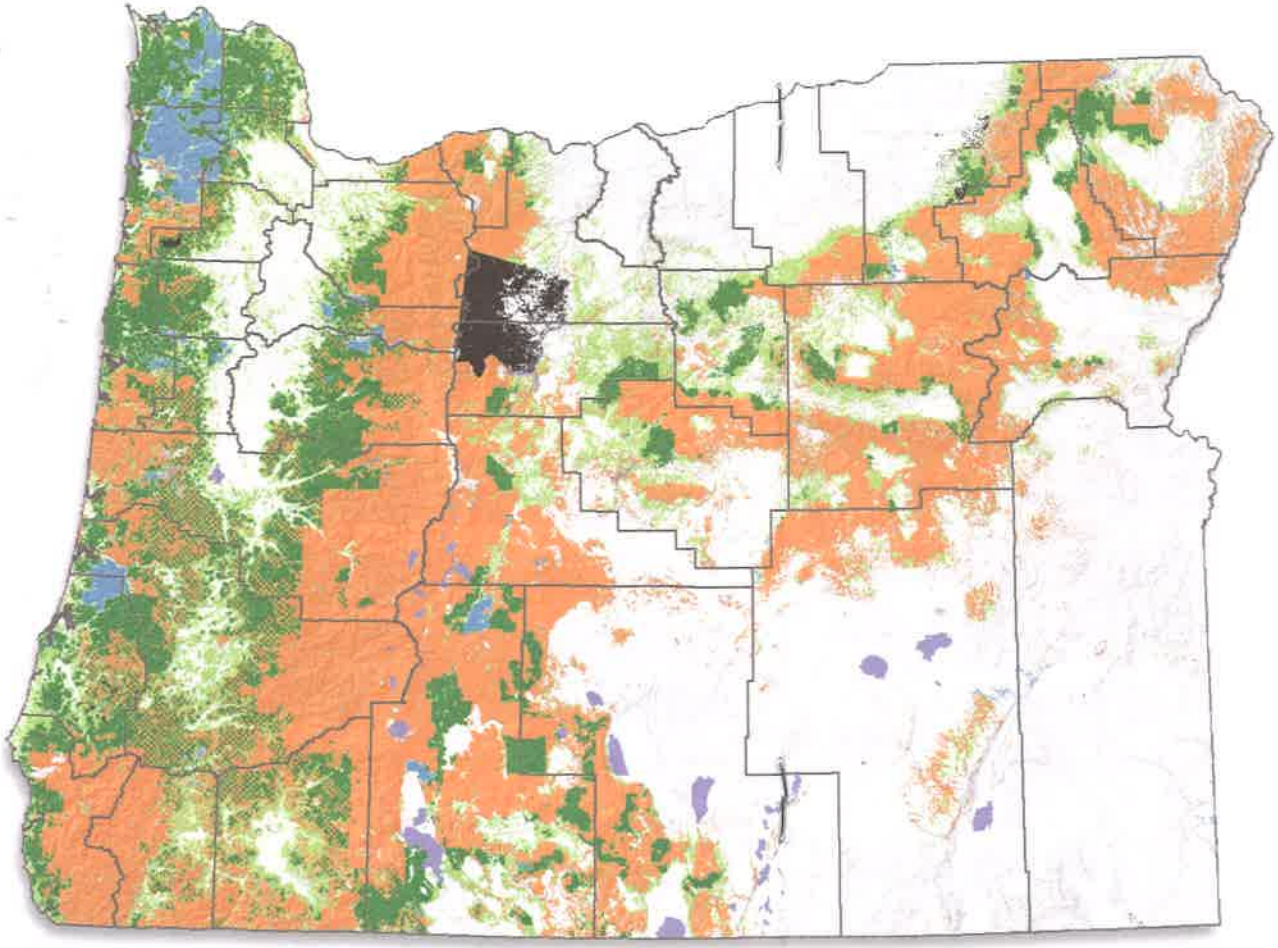
Seventy-eight percent of Oregonians believe Oregon forests should be managed for both environmental and economic values.

GROWTH OF CONGRESSIONALLY WITHDRAWN AREAS [15]

Since passage of the Wilderness Act in 1964, Congress has authorized the creation of more than 2.4 million acres of wilderness in Oregon. No timber harvest is allowed in wilderness areas.

PUBLIC FORESTLAND WITH RETRICTIONS ON TIMBER HARVEST AND ROAD BUILDING [16]

Status for Harvest and Road Building	Acres	% of Timberland
No timber harvest; no new road building (Wilderness areas, administratively withdrawn areas)	2,208,852	7.9%
No timber harvest; limited road building (National parks, national monuments, wildlife refuges)	424,323	1.5%
Limited timber harvest; no new road building (Key watersheds)	3,126,878	11.2%
Limited timber harvest and new road building (Late-successional reserves, adaptive management areas)	2,670,598	9.5%
Total	8,430,651	30.1%



FORESTLAND OWNERSHIP [17]

- FEDERAL GOVERNMENT
- LARGE PRIVATE
- SMALL PRIVATE
- STATE AND OTHER PUBLIC
- TRIBAL

OREGON'S FOREST PROTECTION RULES [18, 19]

Oregon was the first state to enact comprehensive rules governing forest practices and protecting forest resources including water, fish, wildlife, soil and air. With strong support from forest sector leaders, the Oregon Legislature enacted the Oregon Forest Practices Act in 1971. Applying to all state and private forestlands, the act and its accompanying rules are updated periodically to reflect new scientific research and changing citizen preferences, with most revisions targeting increased protection for water quality and habitat enhancement.

OREGON'S FOREST PRACTICES ACT REQUIRES:

REFORESTATION

Landowners must complete replanting within two years after harvest. On average, 30 to 40 million new trees are planted each year in Oregon's forests.

PROTECTION OF WATER RESOURCES

Timber harvesting, road building and chemical use are restricted near streams to protect fish and keep water clean.

PROTECTION OF WILDLIFE HABITAT

To provide nesting sites and habitat for birds, mammals and other animals, foresters and loggers must leave live trees or snags plus down logs in harvest units larger than 25 acres. Additionally, they must avoid or modify harvesting near sensitive bird nesting, roosting or watering sites.

LIMITS ON CLEARCUTS

Clearcuts cannot exceed 120 acres within a single ownership, including the combined acreage of any clearcuts within 300 feet of each other. Once the trees reach four feet tall, the young forest is no longer considered a clearcut.

PROPER ROAD CONSTRUCTION AND MAINTENANCE

Strict regulations govern the location, construction, maintenance and repair of roads on state and private forestland. This limits mud and sediment from washing roads into streams.

SUSTAINABILITY CERTIFICATION PROGRAMS [20]

Oregon forestland owners meet some of the strictest environmental standards in the world through compliance with the Oregon Forest Practices Act. But they may also voluntarily meet additional standards to gain recognition from forest sustainability certification systems. These private programs apply independent, third-party standards to wood and wood products from the forest through manufacturing. This level of transparency gives consumers, architects, engineers and builders credible evidence to judge whether the products have been produced through responsible forestry practices. Certified products earn the right to display an "ecolabel" seal of approval. Certification may also lead to acceptance by green-building architectural standards such as the U.S. Green Building Council's LEED program and the U.S. Green Building Initiative's Green Globes program.

America's three largest certification programs are the Sustainable Forestry Initiative (SFI), the American Tree Farm System (ATFS) and the Forest Stewardship Council. Both SFI and ATFS are endorsed by the internationally recognized, European-based Programme for the Endorsement of Forest Certification.

OREGON ACRES CERTIFIED IN THE THREE MAJOR FOREST CERTIFICATION SYSTEMS

Sustainable Forestry Initiative	2,900,665 acres [21]
American Tree Farm System	807,508 acres [22]
Forest Stewardship Council	560,289 acres [23]
Total certified	4,268,462 acres

FSC

Three of four Oregonians believe it's important that wood products are certified by an independent organization as coming from a well-managed forest.

PROTECTING SALMON AND WATERSHEDS [24]

In response to listings of salmon species under the federal Endangered Species Act, the Oregon Legislature and governor joined with landowners in 1997 to create the Oregon Plan for Salmon and Watersheds. The Oregon plan seeks to restore salmon runs, improve water quality and achieve healthy watersheds statewide through the joint efforts of government, landowners and citizen volunteers. It is unique among state protection plans for its emphasis on landowners voluntarily exceeding regulations, and for its engagement of communities to restore their watersheds. Combined efforts have restored more than 5,400 miles of stream banks and opened an additional 4,150 miles of streams to fish passage, due to stream-crossing improvements.

KEY ELEMENTS OF THE PLAN

- voluntary restoration activities by private landowners (especially forest landowners), supported by local citizens, students, businesses and government
- coordinated tribal, state and federal agency actions
- continued monitoring of watershed health, water quality and salmon recovery
- rigorous scientific oversight by independent scientists

WATERSHED RESTORATION OUTCOMES [25]

	2004	2005	2006	2007	2008	2009	Total*
Riparian miles treated	454	368	537	508	694	245	5,463
Miles of road closures and decommissionings	133	97	129	282	42	50	2,572
Miles of road improvements	723	836	440	1083	104	61	9,064
Fish passage: number of stream crossings improved	199	150	167	102	172	133	2,746
Miles made accessible to fish due to stream-crossing improvements	314	308	339	230	254	167	4,150
Funding for completed and reported restoration (in millions)	$58.3	$39.3	$66.0	$78.7	$92.4	$59.2	$667.6

*Yearly amounts do not add up to totals, because program began in 1997.

OREGON FORESTS AND WATER

Streams originating on forestlands supply water for Oregonians to drink, use in their homes and businesses, irrigate their fields and run industrial processes. Healthy forests promote soils that provide natural filtration to keep streams clean and water quality high.

A 2008 U.S. Forest Service study [26] found relatively minor effects of forest harvest activities on peak flows and channel form and structure in the Pacific Northwest. The study compared forest harvest activities with other human-caused changes to streams and watersheds such as dams, urbanization and other direct modification of channels.

OREGON WATER QUALITY INDEX [27]

The Oregon Department of Environmental Quality (DEQ) regularly measures water quality in major rivers and streams throughout the state. DEQ developed the Oregon Water Quality Index using eight measures to express water quality as a number between 10 (worst) and 100 (ideal). There are currently 144 monitoring sites in the DEQ network. The areas with the highest water quality measurements generally are found in upland forested watersheds.

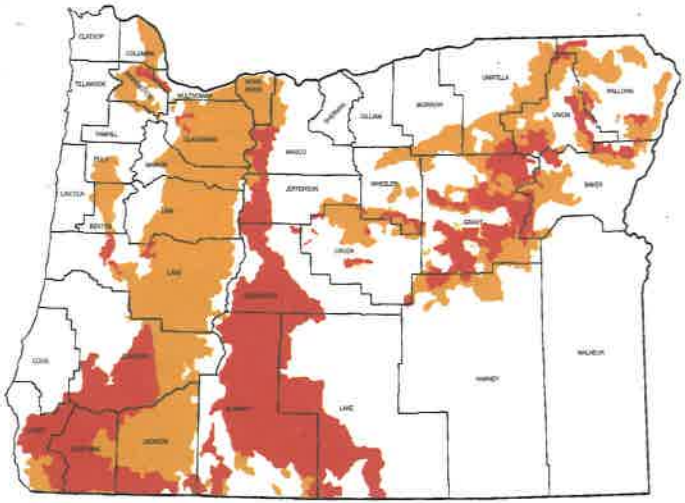
Oregonians rank water quality and fish habitat as two of their top forestry concerns. More than 70% believe that significant improvements to fish habitat and streams have been made in the past 15 years.

FORESTS AT RISK: FIRE AND INSECTS

FIRE RISKS ON OREGON FORESTLAND [28]

Fire is a natural force in Oregon's forests. A policy of fire exclusion and passive management on federal forests, however, has disrupted the natural fire cycle. Forest ecosystems have grown more susceptible to the risk of catastrophic wildfire.

Active management can restore threatened forests. Restoration options include thinning, prescribed burning and mechanical understory treatments. Most areas need thinning or mechanical treatments, or both, before prescribed burning can be used.



FIRE CONDITION CLASS 2 (missing one historic fire return interval)
FIRE CONDITION CLASS 3 (missing two or more intervals)

Today, most of Oregon's forestland is considered at risk for fire. This includes nearly 40 percent categorized as Class 3 – at high risk of uncharacteristically intense fire.

SHARED COST OF FOREST FIREFIGHTING [29]

The state of Oregon's fire program protects 15.9 million acres of public and private forestland from wildfire. For a century, Oregon's fire program has been known for its high degree of success, attributable to a higher level of private landowner participation in fire suppression, planning and prevention than in any other Western state. That cooperation includes sharing the cost of maintaining the program.

Basic infrastructure costs (e.g., ensuring readiness and initial attack response at the local district level) have been shared equally by private landowners and the state since 1991. Firefighting costs for large fires are covered through a mix of state and landowner funds plus an insurance policy, an approach unique in the United States.

Whenever a wildfire becomes too large or complex for the capabilities of a local district, a landowner-financed fund provides the first $10 million in extra firefighting costs. During severe fire danger, the Oregon Department of Forestry also draws on a special-purpose appropriation of state funds that provides for the availability of retardant-dropping air tankers, helicopters and other resources that can be placed where the immediate or projected threat is highest.

INSECTS [30]

Insects, diseases and other periodic disturbances often perform a natural and necessary function in healthy forest ecosystems. However, severe droughts, combined with overcrowded and unhealthy forests, have caused deadly insect outbreaks across the West, affecting 762,000 acres in Oregon in 2009. As insect-killed trees fall, dead wood accumulates, fueling the potential for severe fire. In turn, fire-weakened trees become more susceptible to attack by insects and disease.

BARK BEETLES [30]

Bark beetles are native to Oregon forests and include mountain pine beetle (the most common), Douglas-fir beetle, fir engraver and western pine beetle. Mountain pine beetles attacked more than 450,000 acres in 2009, primarily mature lodgepole pine stands in eastern Oregon, particularly on the eastern slopes of the Cascades and large areas of Klamath and Lake counties.

Mountain pine beetle

BIOMASS ENERGY / BIOFUELS [31, 32]

Woody biomass includes the residuals generated from logging or thinning activities in forests. An estimated 4.25 million acres (about 14 percent of Oregon's forestland) have the potential to yield useful woody biomass through thinning, with the bonus of reducing the risk of uncharacteristic forest fires. The Nature Conservancy (TNC) estimates that 25 million acres of Oregon's forests and woodlands are in need of active treatment. Other sources of woody biomass include residuals generated at wood products plants, as well as juniper woodlands, logging slash and discarded wood and yard debris. TNC estimates there may be as many as 6 million acres of western-juniper-dominated rangelands that are candidates for conversion and could yield significant biomass.

SHORT-TERM USE:

The best immediate use for woody biomass may be as a fuel for generating electricity and heat used in wood products manufacturing.

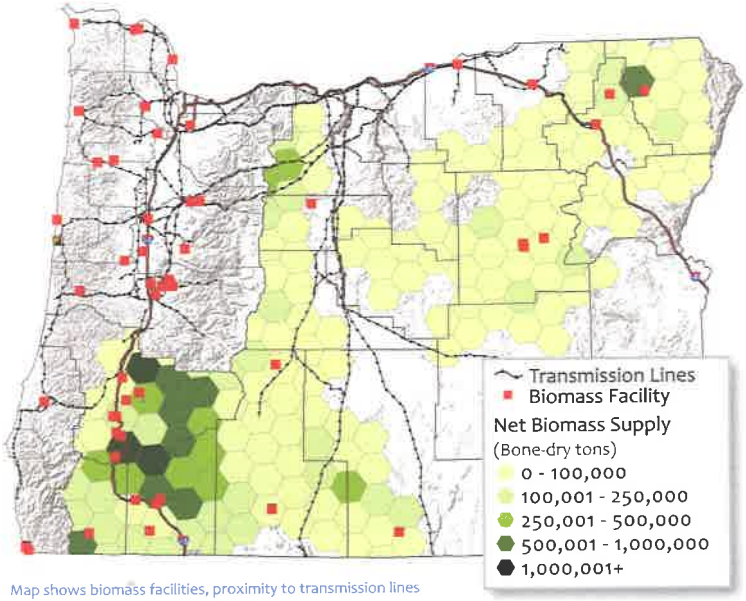
LONG-TERM USE:

A potential long-term use is converting woody biomass to biofuels and bioproducts to replace fossil fuels.

BENEFITS OF USING WOODY BIOMASS:

- restores forest health, fire resiliency and wildlife habitat
- helps meet Oregon's renewable energy goals
- provides jobs and revitalizes rural economies

Unnaturally crowded dry-side forest



Map shows biomass facilities, proximity to transmission lines and potential biomass supply in dry-side forests.

- **Seventy-seven percent of Oregonians believe that dense, overstocked forests in eastern and southwest interior Oregon should be thinned to reduce the risk of severe wildfire.**
- **Seventy-four percent of Oregonians believe the development of the biomass energy industry in Oregon is important.**

FORESTS, CARBON AND CLIMATE CHANGE [33]

Carbon is the fourth-most-abundant element in the universe and comprises the chemical basis of all known life. Carbon and oxygen combine to form carbon dioxide, a chemical compound required by plants during photosynthesis. In turn, green plants and trees use energy from the sun to transform carbon dioxide, water and minerals into food for their growth. As the plant or tree grows, it releases oxygen into the atmosphere.

Carbon dioxide is also produced by burning organic matter and fossil fuels such as coal, petroleum products and natural gas. Carbon dioxide is known as one of the "greenhouse gases" because it traps heat in the atmosphere and contributes to global climate change. Scientists generally agree that human contributions to global climate change are increasing, and they are concerned about its implications for the future.

BENEFITS AND RISKS

As trees grow, they absorb carbon dioxide and store it as carbon in biomass (tree trunks, branches, foliage and roots). This is known as carbon sequestration. When trees attain maturity, they reach a saturation point for carbon, and additional sequestration stops. Wood products also store carbon, and manufacturing them emits less carbon dioxide than fossil-fuel-intensive materials such as concrete, plastic and steel. Wood from forest and mill residuals and thinning also can be turned into biofuels to displace fossil fuels. Bioenergy and biofuels are considered "carbon neutral."

Climate change may warm climates in some areas. A warmer climate makes dense, overstocked forests even more vulnerable to wildfire. Forest fires release huge amounts of carbon into the atmosphere. The significant loss of forests worldwide – particularly tropical forests – to farming and other uses has affected world climate. Keeping forestland in forest uses is crucial to capturing and storing atmospheric carbon in the future.

CARBON STORAGE AND REDUCTION

Forest sector techniques to increase carbon storage or reduce carbon emissions include:

- thinning forests to keep trees healthy and minimize fire risk and insect problems
- reforesting quickly after disturbance, such as fire and windstorms
- keeping forests in forestland use
- reforesting unused or marginal agricultural land (known as afforestation)
- using forest management strategies to enhance carbon storage
- substituting wood-derived products and energy for fossil-fuel-derived products and energy
- reusing paper and wood products

More than half of Oregonians are concerned about global climate change's potential to affect Oregon's forests.

AT-RISK PLANT AND ANIMAL SPECIES [34]

One of the most important indicators of Oregon's forest health is biological diversity – the natural variability of life at genetic, species and ecosystem levels. Biological diversity contributes to ecosystem function, and is difficult to recover or replace once it has eroded. Good forest management conserves and protects habitats for native plants and animals that live in or use the forests.

The Oregon Department of Forestry tracks forest plants and animals that are "at risk." Species may be at risk before becoming candidates for listing under the federal Endangered Species Act. These data and other indicators of sustainable forest management measure progress toward achieving the plant, animal and habitat strategy for the *Forestry Program for Oregon*.

NATIVE OREGON SPECIES

	Total*	At Risk
Vertebrates	595	62
Mammals, birds, fish, reptiles, amphibians		
Plants	3,500	180
Flowers, ferns, bushes, trees		

* Numbers are estimates.

OREGON CONSERVATION STRATEGY [35]

The Oregon Conservation Strategy charts a course for the long-term conservation of Oregon's fish and wildlife. It emphasizes proactively conserving declining species and habitats to reduce the possibility of future federal or state listings and regulations. It is a strategy for all of Oregon, offering potential roles and opportunities for residents, agencies and organizations.

Oregonians rank wildlife habitat as one of their top forest concerns.

Endnotes – Sources of Information

1 USDA Forest Service, "Pacific Northwest Forest Inventory and Analysis, Oregon Annual Inventory 2001-2005 5-year Report Database:" www.fs.fed.us/pnw/fia/statewide_results/or.shtml

2 USDA Natural Resources Conservation Service, *National Resources Inventory - Oregon:* www.or.nrcs.usda.gov/technical/nri/

3 USDA Forest Service. 2009. *Forest Resources of the United States*, 2007. General Technical Report WO-78. Washington, DC.

4 Oregon Department of Forestry *Annual Timber Harvest Reports (1985-2009):* egov.oregon.gov/ODF/STATE_FORESTS/FRP/RP_Home.shtml#Annual_Timber_Harvest_Report

5 Azuma, D., S. Campbell, G. Christensen, J. Donnegan, J. Fried, A. Gray, S. Jovan, O. Kuegler, V. Monleon, K. Waddell, J. Brandt and T. Morgan. 2008. *Oregon's Forest Resources, 2001-2005, Five-Year Forest Inventory and Analysis Report.* USDA Forest Service Pacific Northwest Research Station, PNW-GTR-765. Portland, OR.

6 Oregon Wood Innovation Center: owic.oregonstate.edu/

7 Western Wood Products Association. 2010. Portland, OR: www.wwpa.org

8 Craig Adair. 2010. *Structural Panel and Engineered Wood Yearbook.* APA – The Engineered Wood Association, APA Economics Report E176, Tacoma, WA.

9 E.D. Hovee and Company. 2004. *Oregon Forest Sector Contributions and Potential.* Published by the Oregon Forest Resources Institute. Portland, OR.

10 Oregon Employment Department. *Oregon Statewide Covered Employment and Wages Summary Reports (2005-2009):* www.qualityinfo.org/olmisj/OlmisZine

11 Oregon Board of Forestry: egov.oregon.gov/ODF/BOARD/index.shtml

12 Oregon Department of Forestry. 2007. *Forest Facts – Oregon Indicators of Sustainable Forest Management.* Salem, OR: www.oregon.gov/ODF/PUBS/docs/Forest_Facts/FF_Indicators.pdf

13 Oregon Department of Forestry, *2011 Forestry Program for Oregon*: egov.oregon.gov/ODF/BOARD/fpfo2011.shtml

14 Oregon Forest Resources Institute. 2002. *Protecting Oregon's Forestlands: A Graphical View – How Oregon is Protecting and Enhancing the Diverse Values of its Forestlands.* Portland, OR.

15 Oregon Department of Forestry, Oregon Indicators of Sustainable Forest Management. *Data Information and Reporting for Indicator E. b.*: www.oregon.gov/ODF/indicators/indicatorEb.shtml

16 Oregon Department of Forestry, *Oregon Indicators of Sustainable Forest Management. Data Information and Reporting for Criterion 4, Indicator 19*: www.oregon.gov/ODF/indicators/index.shtml

17 Oregon Department of Forestry. *Oregon's Forest Atlas 2010*: www.oregon.gov/ODF/RESOURCE_PLANNING/forestatlas.shtml

18 Oregon Legislative Assembly. Oregon Forest Practices Act, Oregon Revised Statutes, ORS 527.610 to 527.770, 527.990: www.leg.state.or.us/ors/527.html

19 Oregon Forest Resources Institute. (Undated). *Protecting Oregon's Forests – Landmark Law Responds to Changing Values, New Knowledge.* Portland, OR.

20 Fletcher, R., P. Adams and S. Radosevich. 2002. "Comparison of Two Forest Certification Systems and Oregon Legal Requirements." Paper in Forest Policy, Forest Research Laboratory, Oregon State University. Corvallis, OR.

21 Sustainable Forestry Initiative, "Certification Database." November 2010: http://64.34.105.23/PublicSearch/SearchSFIForests.aspx

22 American Tree Farm System. November 2010: www.treefarmsystem.org/

23 Forest Stewardship Council. "Certificates in U.S., Certified Forests." November 2010: www.fscus.org/certified_companies/

24 Oregon Watershed Enhancement Board. 2010. *Oregon Plan for Salmon and Watersheds, 2007-2009 Biennial Report*: www.oregon.gov/OWEB/biennialreport_0709.shtml

25 Oregon Watershed Enhancement Board. 2010. "Oregon Watershed Restoration Inventory:" www.oregon.gov/OWEB/MONITOR/OWRI.shtml#Get_Data_from_OWRI

26 Grant, G., S. Lewis, F. Swanson, J. Cissel and J. McDonnell. 2008. *Effects of Forest Practices on Peak Flows and Consequent Channel Response: A State-of-Science Report for Western Oregon and Washington.* USDA Forest Service Pacific Northwest Research Station, PNW-GTR-760. Corvallis, OR.

27 Oregon Department of Environmental Quality. 2008. *Oregon Water Quality Index Summary Report, Water Years 1998-2007*, DEQ 09-LAB-008: www.deq.state.or.us/lab/wqm/docs/09-LAB-008.pdf

28 Oregon Forest Resources Institute. 2002. *Fire in Oregon's Forests – Assessing Risks, Effects and Treatment Options.* Portland, OR.

29 Oregon Department of Forestry. 2007. "ODF Backgrounder: Protecting forests from fire." Salem, OR: www.oregon.gov/ODF/PUBS/docs/Backgrounder_Fire_Program.pdf

30 Flowers, R., A. Kanaskie, M. McWilliams, R. Mathison and B. Hostetler. 2010. *Forest Health Highlights in Oregon – 2009.* USDA Forest Service and Oregon Department of Forestry. R6-NR-FID-TP-02-2008. Portland, OR: www.fs.fed.us/r6/nr/fid/health/2009highlights-or.pdf

31 Oregon Forest Resources Institute. 2007. *Woody Biomass Energy - A Renewable Resource to Help Meet Oregon's Energy Needs.* Portland, OR.

32 Macdonald, C., S. Buttrick and M. Schindel. 2006. *The Condition of Oregon's Forests and Woodlands: Implications for the Effective Conservation of Biodiversity.* The Nature Conservancy. Portland, OR.

33 Oregon Forest Resources Institute. 2006. *Forests, Carbon and Climate Change: A Synthesis of Science Findings.* Portland, OR.

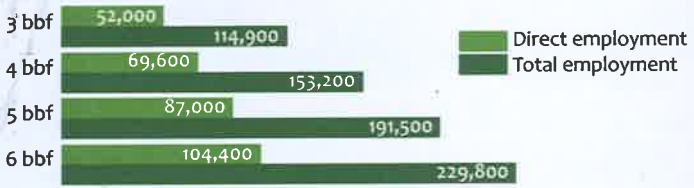
34 Oregon Department of Forestry. *Oregon Indicators of Sustainable Forest Management, Data Information and Reporting for Indicator E.c.*: www.oregon.gov/ODF/indicators/indicatorEc.shtml

35 Oregon Conservation Strategy: www.dfw.state.or.us/conservationstrategy/contents.asp

THE FUTURE OF FOREST SECTOR EMPLOYMENT

As the recession ends, the forest sector looks forward to a time of renewed timber harvest and employment. Forest *growth* in Oregon exceeds 10 billion board feet. This table shows potential forest-sector jobs with various timber harvest rates*.

POTENTIAL FOREST SECTOR EMPLOYMENT FOR A RANGE OF TIMBER HARVEST LEVELS (measured in billion board feet)



** Using ratios of 17.4 direct jobs per million board feet of timber harvest and 38.3 indirect plus direct jobs per million board feet (total employment) from 2009 Oregon Employment Department and Oregon Department of Forestry data. (4,10)*

The future level of forest sector employment in Oregon depends in part on economic recovery, especially as shown in national and Western housing starts. However, forest policy choices made in Oregon and in Washington, D.C., will have a large impact on harvest levels, which in turn will drive forest sector employment.

OREGON FOREST RESOURCES INSTITUTE

Oregon Forest Resources Institute
317 SW Sixth Ave., Suite 400
Portland, OR 97204
971-673-2944
1-800-719-9195
Oregonforests.org

This publication is available online. Go to Oregonforests.org and visit the publications page. 01/11