



Oregon Forest  
Resources Institute

An aerial photograph of a vast, dense green forest. In the center-right, a small, dark blue lake is visible. In the background, a range of mountains is shown under a clear blue sky, with a large plume of white smoke or steam rising from a volcano on the right side.

**OREGON  
FOREST FACTS  
2021-22 EDITION**

# Our greatest resource

Oregonians won't soon forget Labor Day 2020. Thousands were forced to flee their homes under evacuation orders as massive wildfires that exploded over the holiday weekend raged across western Oregon. Entire towns were destroyed, and more than 4,000 homes were lost. Tragically, nine people were killed by fires that ultimately burned more than 1 million acres.

Several factors, including an uncharacteristic wind event, extreme drought conditions and record-low humidity and fuels moisture, came together to make this fire season like no other in recent history. It will take a long time to recover from this series of disasters.

As we continue to take stock of the social, ecological and economic impacts of the 2020 fire season, it's become even clearer just how many ways the forests that cover nearly half of Oregon touch our everyday lives. Oregon's forests provide scenic beauty, recreational opportunities and wildlife habitat. They also sustain the state's forestry and wood products sector, which employs tens of thousands of Oregonians.

Emerging science is helping us better understand two more crucial benefits of our forests: the important role they play in providing the majority of Oregonians with clean drinking water, and how they're a key ally in the fight against climate change.

Here at the Oregon Forest Resources Institute, we strive to help Oregonians better understand these and the many other reasons the state's forests are so important. This 2021-22 edition of *Oregon Forest Facts* is full of information we hope will help you learn more about Oregon's forests, forest management and forest products.

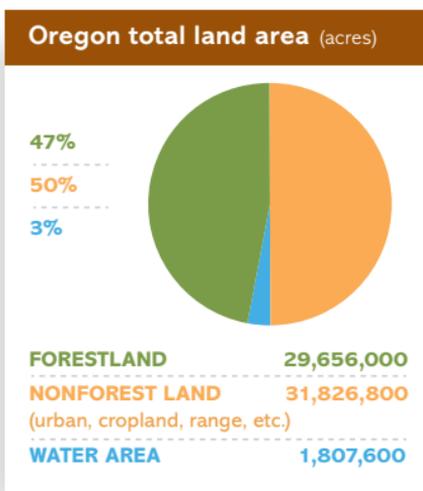
Sincerely,



Mike Cloughesy, Director of Forestry  
Oregon Forest Resources Institute

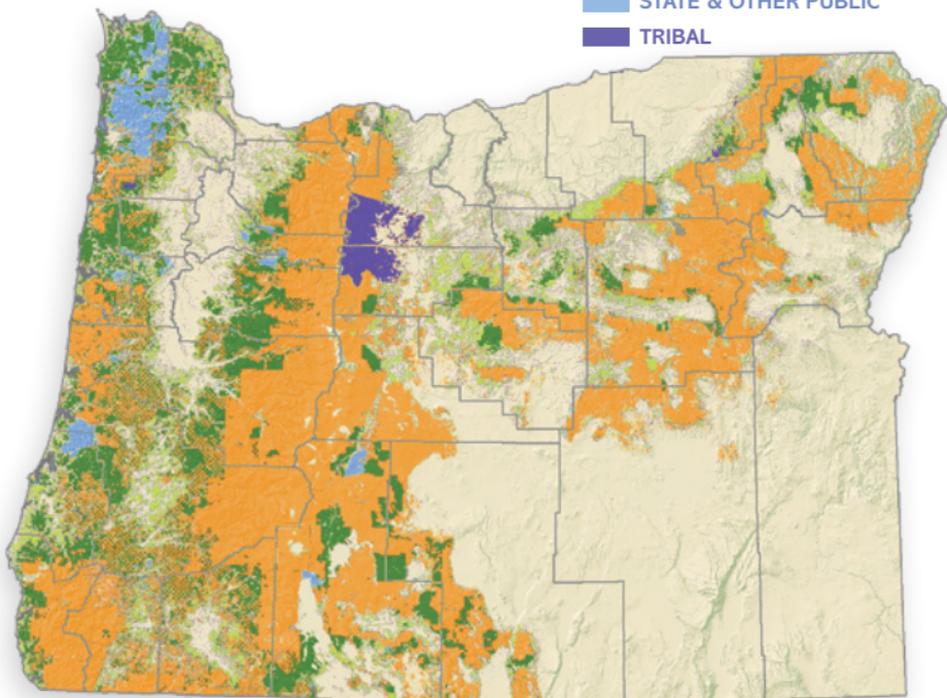
# Forestland area <sup>1</sup>

Nearly half of Oregon is forestland. This forestland has a wide variety of timber productivity levels: high-productivity sites in the Coast Range, which account for 12% of Oregon's forestland; medium-productivity sites in the western Cascades (35% of Oregon forestland); low-productivity sites in eastern Oregon (41% of forestland); and non-productive sites located at high elevations (12% of forestland).



Ownership	Forestland (acres)	Percent of total
U.S. Forest Service	14,093,000	48%
Bureau of Land Management	3,573,000	12%
National Park Service	160,000	1%
Other federal	32,000	<1%
<b>Total federal</b>	<b>17,858,000</b>	<b>60%</b>
State	942,000	3%
County and municipal	187,000	1%
<b>Total state and local</b>	<b>1,129,000</b>	<b>4%</b>
<b>Total government</b>	<b>18,987,000</b>	<b>64%</b>
Large private landowners (>= 5,000 acres)	6,487,000	22%
Small private landowners (<5,000 acres)	3,702,000	12%
<b>Total private</b>	<b>10,189,000</b>	<b>34%</b>
Native American tribal forestland	480,000	2%
<b>TOTAL FORESTLAND, all owners</b>	<b>29,656,000</b>	<b>100%</b>

# Forestland ownership <sup>1</sup>



## FOREST MANAGEMENT STYLES VARY BY OWNER

Oregon's forests are managed to reflect the varied objectives and practices of a diverse array of landowners. These include the federal government, which owns the largest portion of Oregon's forestland, as well as state, county and municipal governments, private timber companies, tribes and small woodland owners, each with a range of goals for their land. Some forests are managed primarily for timber production, while others are set aside as parks, wilderness areas or reserves to protect old-growth, riparian or endangered species habitat. Many Oregon forest landowners try to find a balance between environmental and economic values, managing their forests for multiple uses, including recreation, water, wildlife habitat and timber.

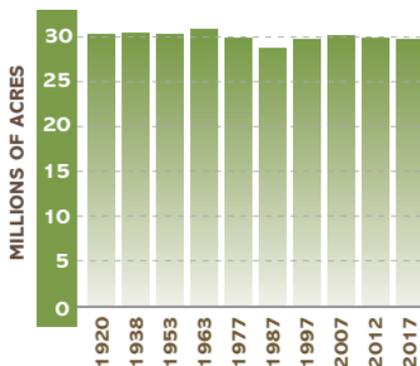
# Historic forestland changes <sup>2</sup>

The amount of total public and private forestland in Oregon has held mostly steady, at about 30 million acres, for nearly 100 years. In fact, it's estimated to have been about 30 million acres in the 1600s, as well.

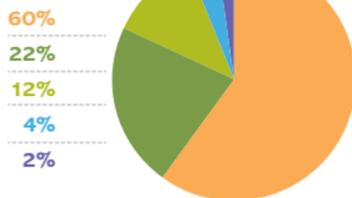
## FORESTLAND OWNERSHIP AND TIMBER HARVEST

While the federal government manages most of the forestland in Oregon, only a fraction of Oregon's timber harvest happens on federal land, and most of that is from thinning. About 76 percent of the total state harvest comes from private timberlands.

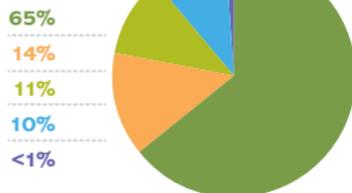
### Oregon forestland acreage



### FORESTLAND ACREAGE BY OWNER (2017) <sup>1</sup>



### TIMBER HARVEST BY OWNER (2019) <sup>3</sup>



FEDERAL GOVERNMENT

LARGE PRIVATE

SMALL PRIVATE

STATE/COUNTY & MUNICIPAL

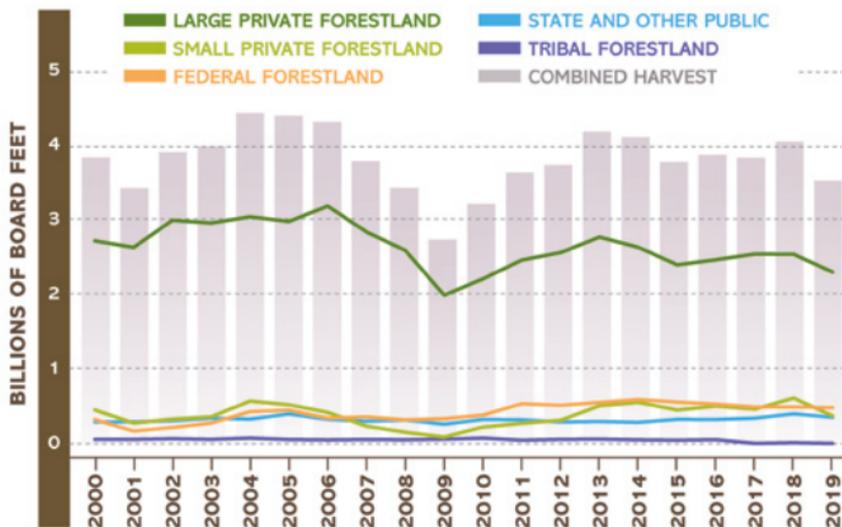
TRIBAL

# Oregon timber harvest levels<sup>3</sup>

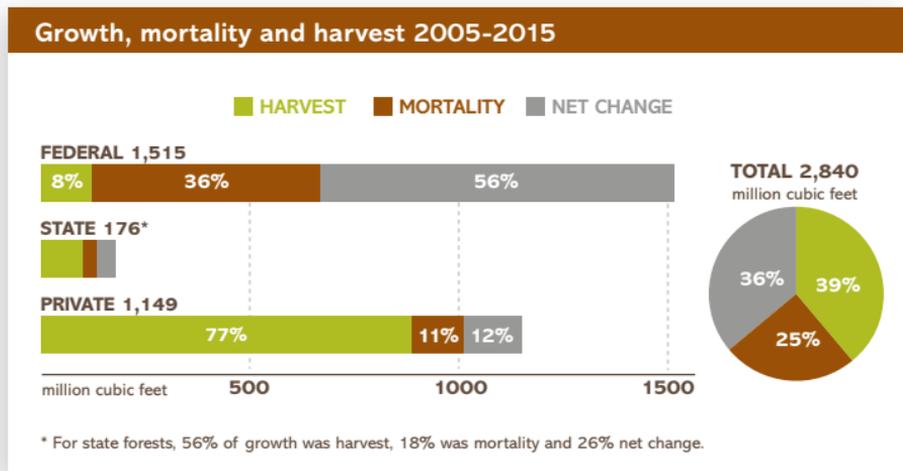
Timber harvest levels from public and private forestlands over the past 20 years have remained relatively stable, although the Great Recession (2007-09) and the related collapse of the housing market brought a severe contraction in the U.S. demand for lumber. Consequently, Oregon's timber harvest reached a modern-era low in 2009, the smallest harvest since the Great Depression in 1934. By 2013, the harvest had rebounded to roughly pre-recession levels.

In the five most recent years where data is available (2015-2019), Oregon timber harvest averaged around 3.8 billion board feet. But the coronavirus pandemic and subsequent economic slump in 2020, as well as the heavy impact the year's Labor Day fires had on Oregon forests, are likely to affect the state's future timber harvest, especially with an uptick in post-fire salvage logging on private land.

Oregon timber harvest by owner (2000-2019)



# Sustainability of Oregon's timber harvest<sup>1</sup>



On Oregon's private forestland, where most timber harvest happens in the state, the amount of wood harvested each year is about 77 percent of the annual timber growth. About 11 percent of that growth is offset by trees that die from causes such as fire, insects and disease.

On federal lands, only about 8 percent of the annual timber growth is harvested each year. The amount of timber that dies offsets annual growth by 36 percent. The remainder of the growth, a net change of 56 percent, adds to the volume of standing timber in those forests.

High net change in growth isn't always beneficial, however. For example, in federal ponderosa pine and mixed conifer forests in eastern and south-central Oregon, it has created unusually dense forests with stressed trees that are more prone to insect infestation, disease and uncharacteristically severe fire.

## Careers in forestry

Having a “forest job” doesn’t just mean working as a logger or a park ranger. Tens of thousands of Oregonians are employed in a variety of forest-related jobs, from forestry, logging, millwork and cabinetmaking to engineering, hydrology, business management and academic research. (For a complete breakdown of the job figures, see the back cover.) These forest professionals help care for our forests, conserve fish and wildlife habitat, protect water, sustain forests for future generations and make innovative forest products.



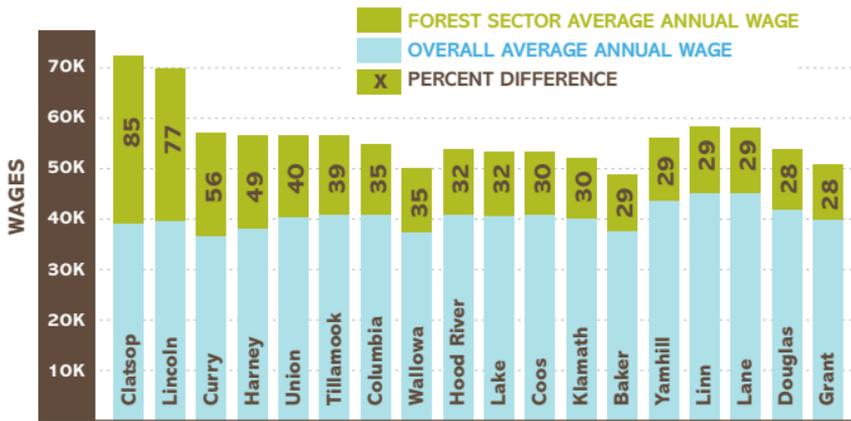
Thomas Boyd, AHM Brands

The forest sector encompasses a diverse array of career paths that includes firefighters, ecologists, foresters, wildlife and fish biologists, and more. Forest sector jobs are present in each of Oregon’s 36 counties. In some rural counties, the sector is responsible for nearly a third of the economic base.<sup>4</sup>

Although there are many well-paying career opportunities in the sector that can be pursued straight out of high school, technology advances in wood products manufacturing, forest management and digital forest mapping often require specialized training and education that typically earns workers higher wages.



## Oregon counties with greatest forest sector wage differences (2019)



## Forest sector employment and wages <sup>5</sup>

Forest-related employment in Oregon totaled 61,556 jobs in Oregon in 2019, according to the Oregon Employment Department. This is about 3% of the total jobs in Oregon. However, in four rural Oregon counties, Grant, Douglas, Crook and Lake, forest sector jobs account for more than 10% of total jobs.

The average annual wage of those jobs was \$56,500, roughly 3 percent more than the average wage of \$55,000 for all Oregon employment. In

some Oregon counties, especially rural ones, forest sector jobs have significantly higher-than-average wages. Forest sector wages in Clatsop County, for instance, are 85 percent higher than the county average.



# Oregon is number one

Oregon has led the nation in the production of softwood lumber and plywood for many years.

## Top softwood lumber-producing states (in millions of board feet)<sup>6</sup>

	2014	2015	2016	2017	2018	2019	% of U.S. total for 2019
<b>Oregon</b>	<b>5,275</b>	<b>5,307</b>	<b>5,613</b>	<b>5,705</b>	<b>6,031</b>	<b>5,644</b>	<b>16%</b>
Washington	4,298	3,785	3,581	3,834	4,011	4,217	12%
Georgia	2,546	2,670	2,791	2,866	3,086	2,929	8%
Alabama	2,195	2,344	2,394	2,407	2,818	2,887	8%
TOTAL U.S.	31,496	31,644	32,535	33,779	34,907	35,163	

## Top plywood-producing states (in millions of square feet, 3/8" basis)<sup>7</sup>

	2014	2015	2016	2017	2018	2019	% of U.S. total for 2019
<b>Oregon</b>	<b>2,589</b>	<b>2,534</b>	<b>2,512</b>	<b>2,518</b>	<b>2,475</b>	<b>2,395</b>	<b>28%</b>
Louisiana	1,191	1,195	1,180	1,250	1,258	1,274	15%
Mississippi	611	582	659	818	818	834	10%
Texas	700	671	693	695	670	654	8%
Washington	760	756	666	604	610	575	7%
TOTAL U.S.	8,895	8,749	8,805	9,026	8,869	8,557	

## A LEADER IN ENGINEERED WOOD

Oregon is also a leader in producing value-added engineered wood products such as cross-laminated timber (CLT), glue-laminated timber (glulam) and mass plywood panels (MPP).

### States with most engineered wood plants in 2018<sup>8</sup>

	Glulam	CLT & MPP	I-joist	Structural composite lumber	Total plants
<b>Oregon</b>	<b>7</b>	<b>2</b>	<b>3</b>	<b>6</b>	<b>18</b>
Alabama	2	-	2	2	6
Louisiana	-	-	2	3	5
Washington	3	-	1	-	4
TOTAL U.S.	31	4	15	20	70

## A range of forest products

Oregon's wood products industry is a traded sector, with close to 75% of all products made here sold outside the state. This generates revenue that supports mill jobs in Oregon timber towns.

Here are some of the many types of products that can be made from trees harvested in Oregon:

- **softwood lumber**
- **plywood**
- **hardwood** lumber and plywood
- **engineered wood products**
- **composite wood products**, such as particleboard, hardboard and fiberboard
- **posts, poles and timbers**
- **pulp and paper products**
- **millwork**, including products such as cabinets, furniture and fencing
- **biomass energy** from mills burning wood waste to generate heat and electricity
- **heating** uses such as pellets and bricks, made from sawdust and mill residue
- **other wood products**, including shipping pallets, pencils and musical instruments

# Sustainable forestry

Oregon forest landowners must meet certain environmental standards through compliance with the Oregon Forest Practices Act (see page 18). Many also choose to meet additional standards to gain recognition from independent, third-party forest sustainability certification systems.

America's three largest certification systems are the American Tree Farm System (ATFS), the Forest Stewardship Council (FSC) and the Sustainable Forestry Initiative (SFI).

Forest certification gives wood product consumers, architects, engineers and builders an added level of assurance that the products were produced using responsible and sustainable forestry practices.

## Oregon acres certified by the three major forest certification systems (as of June 2020)

Certification system	Acres
American Tree Farm System <sup>9</sup>	725,852
Forest Stewardship Council <sup>10</sup>	189,545
Sustainable Forestry Initiative <sup>11</sup>	3,815,743
TOTAL	4,731,140



## FOREST PRACTICES ACT AND SUSTAINABILITY

Sustainable forestry requires following best management practices to protect water and other natural resources. In Oregon, the Oregon Forest Practices Act mandates the use of best management practices. An independent third-party audit commissioned by the Oregon Department of Forestry found that Oregon-grown wood meets the Leadership in Energy and Environmental Design (LEED) credit for wood used in a building project if it comes from forestland that is subject to the rules and best management practices outlined in the Oregon Forest Practices Act.

# Fire in Oregon's forests

Fire has always been part of the forest ecosystem, although Oregon has different kinds of forests that have been shaped by different kinds of fires.<sup>12</sup>

## DRY FORESTS

In the dry ponderosa pine forests of central and eastern Oregon, fire historically burned through any given area every two to 25 years. But the fires generally were not intense. Understory plants were burned off, but large trees usually survived.

## WET FORESTS

In the wet Douglas-fir forests on the west side of the Cascades and in the Coast Range, fire in any given stand is much less frequent, occurring every 100 to 450 years. The historic record shows numerous instances of large, intense fires that killed most of the forest.

## SOUTHWEST OREGON FORESTS

Interior southwest Oregon forests experience some of the dryness of east-side forests, but with productivity more like west-side forests. They are intermediate in fire behavior, and historically burned with mixed severity every 25 to 50 years.

### How fire historically behaved in Oregon forest types

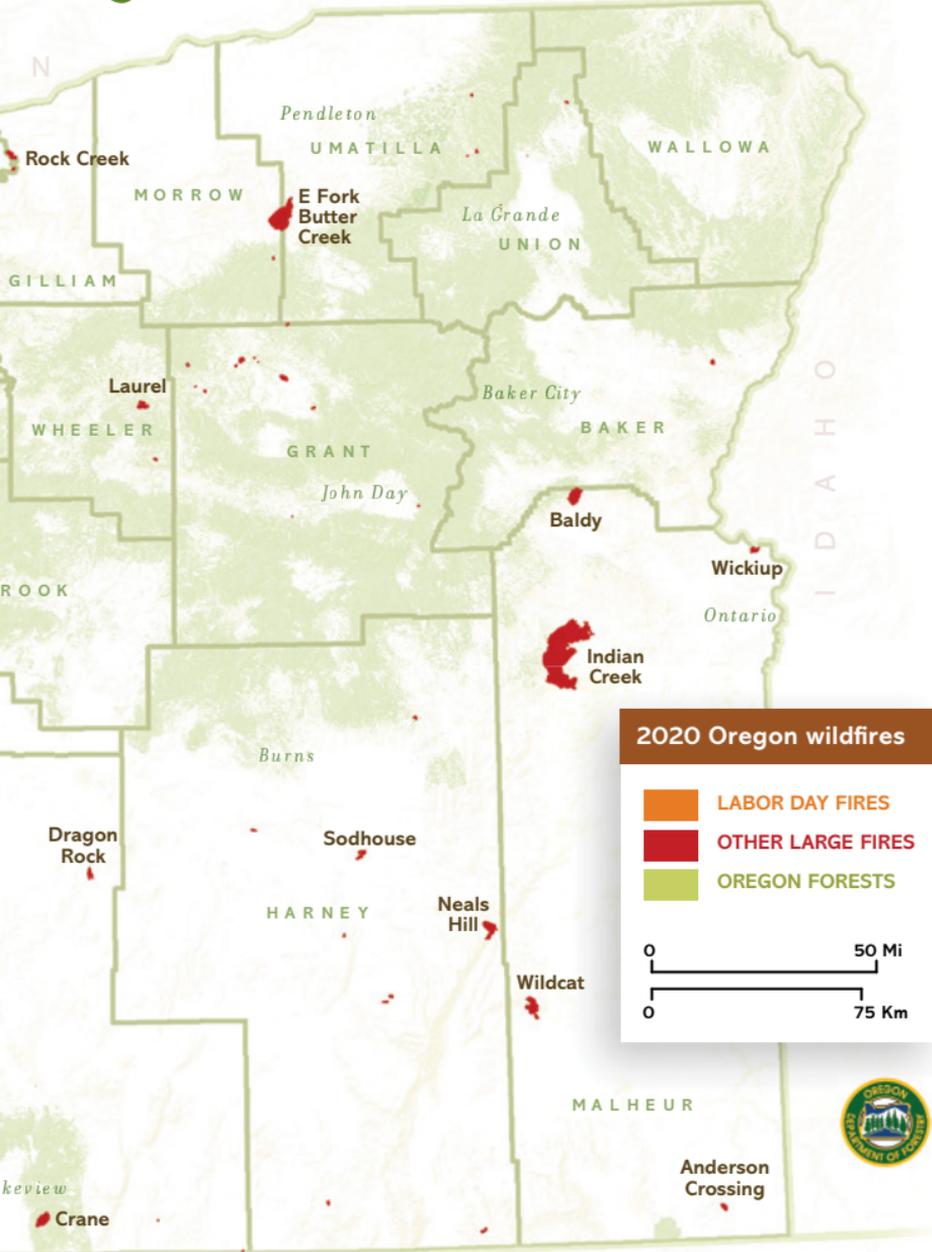


- Fire frequency: every 100 to 450 years.  
Fire severity: high
- Fire frequency: every 25 to 50 years.  
Fire severity: moderate/mixed
- Fire frequency: every 2 to 25 years.  
Fire severity: low/mixed

# Major wildfires during



# Oregon's 2020 fire season



**2020 Oregon wildfires**

- LABOR DAY FIRES
- OTHER LARGE FIRES
- OREGON FORESTS

0 50 Mi  
0 75 Km



# 2020 Labor Day fires<sup>13</sup>

Over Labor Day weekend 2020, unusually high winds and extended dry weather caused the rapid expansion of multiple wildfires in Oregon. Over a million acres were burned, with the worst fires concentrated in the heavily populated western part of the state. About

## Major Oregon wildfires in 2020<sup>13</sup>

Fire name	Location (county)	Acres burned	Fatalities
<b>LABOR DAY MEGAFIRES</b>			
Lionshead	Jefferson, Linn, Marion, Wasco	204,586	
Beachie Creek	Clackamas, Linn, Marion	193,573	5
Holiday Farm	Lane and Linn	173,393	1
Riverside	Clackamas	138,054	
Archie Creek	Douglas	131,598	
<b>OTHER LABOR DAY FIRES</b>			
Brattain	Lake	50,951	
Slater	Josephine	45,369	
South Obenchain	Jackson	32,671	
Two Four Two	Klamath	14,473	
Thielsen	Douglas	9,975	
Almeda Drive	Jackson	3,200	3
North Cascade Complex	Clackamas	2,692	
Echo Mountain Complex	Lincoln	2,552	
Chehalem Mountain-Bald Peak	Washington	924	
Pike Rd.	Tillamook	391	
N. Bank Rd.	Coos	347	
Powerline	Washington	112	
<b>Totals</b>		<b>1,004,861</b>	<b>9</b>

\*Data available as 11/23/2020, Oregon Department of Forestry

40,000 people were evacuated because of fire danger. The cities of Blue River, Detroit, Gates, Phoenix, Talent and Vida were substantially damaged in the Labor Day fires. Statewide, nine people died and more than 4,000 homes were destroyed. Hazardous smoke from the fires blanketed the state, posing a public health risk in the midst of a pandemic.

Following Labor Day weekend 2020, Oregon simultaneously had five “megafires” – fires greater than 100,000 acres in size – and eight other large fires of about 1,000 acres or more. Four other smaller fires that burned less than 1,000 acres also broke out. All 17 of these fires either started or blew up between Sept. 7 and 9, 2020.



### Acres burned in 2020 Labor Day fires

by ownership type

Federal acreage	<b>594,298</b>
State acreage	<b>27,294</b>
Private industrial acreage	<b>276,815</b>
Private non-industrial acreage	<b>97,559</b>
Municipal/other acreage	<b>8,895</b>

### Structures destroyed

### Firefighting personnel assigned

280	1,193
1,323	592
768	886
139	647
111	1,094
	437
	659
89	880
48	428
	329
3,000	107
	363
293	548
	200
	unavailable
	unavailable
	unavailable
<b>6,051</b>	<b>8,363</b>

## Recent fire seasons

Oregon had two very different fire seasons in 2019 and 2020. The 2019 season was relatively quiet, while 2020 was one of the worst the state has ever experienced. The increasing number of catastrophic fire seasons such as Oregon experienced in 2020, 2018 and 2017 are due to a number of factors, including climate change. A warming climate has led to longer, hotter and drier fire seasons, and contributed to more drought and insect outbreaks that weaken or kill trees and make forests more susceptible to wildfire damage.



### Total fires and acres burned in Oregon<sup>14, 15</sup>

The total number of Oregon wildfires per year has remained fairly stable, but the total number of acres burned has increased dramatically in recent years. In 2020, the acreage burned on Oregon Department of Forestry (ODF) protected lands (see page 17) was nearly 10 times the average of the previous 10 years. This is because of the large amount of private land that burned in the Labor Day fires.

Year	Total Fires	Total Acres	ODF Fires	ODF Acres
2010	1,973	91,888	693	6,121
2011	1,787	260,744	699	2,637
2012	1,599	1,290,527	689	17,547
2013	2,848	350,786	1186	104,167
2014	3,087	984,629	1120	53,387
2015	2,588	685,809	1079	86,849
2016	1,245	219,509	832	5,661
2017	2,049	714,520	1091	47,162
2018	2,019	897,263	1112	76,774
2019	2,293	79,732	1020	17,077
2020	~2,101	~1.3M	976	546,726
Average (2010-19)	2,149	557,541	952	41,738

\*Data available as of 11/23/2020, Oregon Department of Forestry

## Oregon's complete and coordinated firefighting system<sup>13</sup>

The Oregon Department of Forestry (ODF) serves as the fire department for 16 million acres of private and public forestland, including state forests and, by contract, federal Bureau of Land Management forests in western Oregon. The U.S. Forest Service maintains its own system to suppress fires on national forests, but collaborates with ODF on firefighting efforts.

ODF strives to put out fires quickly and at the smallest possible size, to protect human lives and property as well as timber-producing forests that support Oregon's economy. This is accomplished through a complete and coordinated system that brings together personnel and resources from other public agencies, private forest landowners and contractors to help ODF fight fires.

## GOVERNOR'S COUNCIL ON WILDFIRE RESPONSE<sup>16</sup>

In early 2019, Gov. Kate Brown created the Governor's Council on Wildfire Response to review Oregon's current model for wildfire prevention, preparedness and response, analyzing whether the current model is sustainable given the state's increasing wildfire risks. Later that year, the Council identified the need for comprehensive change and released a set of recommendations aimed at helping Oregon achieve the goals of creating fire-adapted communities, restoring and maintaining resilient landscapes, and responding safely and effectively to wildfire.

## RESTORING FEDERAL FORESTS' FIRE RESILIENCE<sup>17</sup>

The state and federal government, in partnership with local stakeholders, are working to accelerate restoration work aimed at improving the health and fire resiliency of Oregon's federal forests. Since 2016, an agreement known as Good Neighbor Authority has allowed ODF to assist with accomplishing forest restoration projects on federal lands. In 2019, Gov. Kate Brown signed a shared stewardship agreement with the U.S. Forest Service to increase this type of forest restoration work.

# The Oregon Forest Practices Act<sup>18</sup>

In 1971, Oregon became the first state to pass a comprehensive law to regulate forest practices and safeguard water, fish and wildlife habitat, soil and air. The rules of the Oregon Forest Practices Act are continually reviewed and updated to keep pace with the most current scientific research. Here are some of the law's key requirements:

## IMPORTANT RULES

- **Reforestation:** Landowners must complete replanting within two years after a timber harvest. Within six years, the harvest area must contain healthy trees that can outgrow competing grass and brush on their own.
- **Water and stream protection:** Timber harvesting, road building and chemical use are restricted close to streams, to protect fish and safeguard the source of much of Oregon's drinking water.
- **Wildlife habitat protection:** Live trees, standing dead trees (snags) and fallen logs must be left after a timber harvest, to provide wildlife habitat.
- **Limits on clearcutting:** Clearcuts cannot exceed 120 acres within a single ownership, including the combined acreage of any clearcuts within 300 feet of each other.
- **Chemical application:** Forest protection laws limit chemical use. Foresters must follow a variety of state and federal regulations when using herbicides to slow down the growth of invasive plants and other vegetation that compete with newly planted seedlings for water, sunlight and nutrients. This helps the young trees survive and become established enough that herbicides are no longer needed until the next replanting.



## LATEST CHANGES TO FOREST PRACTICES ACT

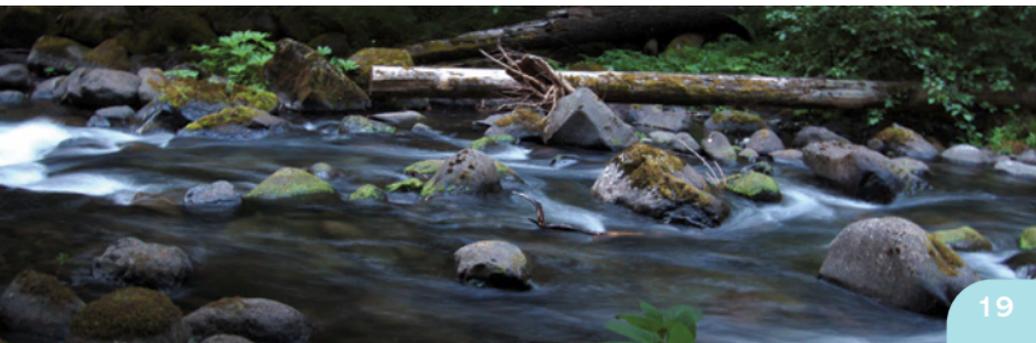
Recent updates include increasing the size of no-spray buffers for herbicide use around homes, schools and water intakes, and requiring wider shade buffers of trees along streams inhabited by salmon, steelhead and bull trout. A state law passed in 2020 mandated the

development of an electronic notification system for helicopter herbicide application to improve communication among landowners, helicopter operators, neighbors and water users.

## Other Oregon forestry laws

Beyond the Oregon Forest Practices Act, there are a number of other state and federal laws and regulations that help protect Oregon's forests and natural resources. These include land-use laws that help keep forests as forests, and federal laws aimed at protecting drinking water sources and critical wildlife habitat. Here are some examples of other forest-related laws:

- **Land-use laws:** Less private forestland in Oregon is converted to other uses such as low-density housing than in neighboring states. That's largely due to how Oregon's land-use and forest-protection laws work in tandem to keep forestland and farmland in forest and farm uses.
- **Fire protection laws:** During fire season, Oregon limits certain logging activities that could spark a wildfire and, if conditions are hazardous enough, the state can shut down all forest operations.
- **Federal chemical laws:** In addition to state forestry laws, the Environmental Protection Agency and Occupational Health and Safety Administration also regulate the use of herbicides and other chemicals in Oregon's forests. All laws regarding chemical use in forests must be followed responsibly for the health and safety of people, aquatic life and drinking water.
- **Other federal laws:** Numerous federal laws and regulations interlace with Oregon laws to protect the quality of drinking water sourced from Oregon's forests, including rules set by the Clean Water Act and the Safe Drinking Water Act. Threatened and endangered wildlife species that live in Oregon's forests also get special protections under the federal and state Endangered Species Acts.



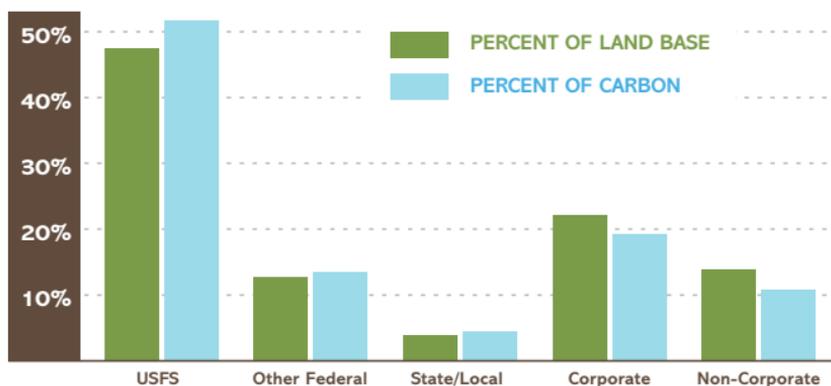
# Forests, carbon and climate change <sup>19</sup>

By absorbing carbon dioxide, a greenhouse gas that's a major contributor to global warming, forests are a key ally in the fight against climate change. Through photosynthesis, trees turn carbon dioxide into solid carbon that's stored in wood, and they release oxygen as a byproduct. As a result, Oregon's forests store significant amounts of carbon, sequestering it from the atmosphere. Part of that carbon remains sequestered even after trees are harvested and made into wood products.

In fact, the total carbon sequestered in Oregon by the state's forests and wood products made here is estimated to be 49.5 million metric tons of carbon dioxide equivalent each year, according to the Oregon Forest Resources Institute report *Carbon in Oregon's Managed Forests*. Oregon's forests also annually sequester about 30.9 million metric tons of carbon dioxide equivalent. This forest carbon sequestration rate is the highest of the western states, and one of the highest in the country.

Learn more at [OregonForests.org/Carbon](http://OregonForests.org/Carbon)

Percent of forest land base and forest carbon by ownership



There is a close relationship between the proportion of Oregon forestland that falls under each type of ownership and how much carbon is stored there. For instance, the national forests, which are managed by the U.S. Forest Service and account for just under half of Oregon's forests, are storing slightly more than half of the state's forest carbon.

## POTENTIAL FOREST SECTOR CARBON SOLUTIONS

There are many ways Oregon's forest sector – the part of the state economy that's derived from forests – can be part of the solution in the fight against climate change.

### Enhance carbon sink

- Plant more trees.
- Increase carbon density/stocks in existing forests.
- Allow trees to grow to peak carbon storage age before harvest.
- Increase wood product carbon storage.



### Reduce emissions from forest

- Reduce deforestation/degradation from wildfire, etc.



### Reduce fossil fuel emissions

- Use biomass for energy, replacing fossil fuel.
- Use wood products in place of steel or concrete alternatives, when possible.



## *Trees to Tap*<sup>20</sup>

In Oregon, more than 300 public water providers rely on surface water from rivers, lakes or reservoirs to supply about 75 percent of Oregonians with safe drinking water. Since nearly half of Oregon is forested, much of this surface water comes from forested watersheds. Some are publicly owned and managed as a water resource. Others are privately owned and managed primarily for timber production.

The Oregon State University Institute for Natural Resources, with the support of funding from the Oregon Forest Resources Institute, published a report in 2020 called *Trees to Tap* that examines the effects of forest management on drinking water in Oregon. Written by faculty from the OSU College of Forestry, the report found that forested watersheds, whether managed or unmanaged, produce higher-quality source water than any other type of surface water source. Although forest operations can impact drinking water sources, the report found that best management practices, laws, regulations, monitoring and scientific research are all means to protect against these risks and safeguard the quality of source water.



Here are some of the key findings and recommendations in *Trees to Tap*:

- **Sediment from forestry operations:** The *Trees to Tap* authors reviewed scientific studies and found little direct quantitative evidence that forestry activities and forest roads impact community drinking water in Oregon. However, forest operations can affect drinking water quality or quantity in areas with steep, landslide-prone terrain, more erodible soil or rock types, or where past operations have left significant amounts of sediment in streams.
- **Forest chemicals:** According to the studies reviewed for *Trees to Tap*, traces of herbicides can reach streams during strong storms. Ten-foot vegetated buffers are required on headwater streams that still contain water in mid-July, but these buffers do not always contain large trees. Studies show that including larger trees in buffers can slow or stop the drift of herbicides into protected stream reaches during application, especially during and immediately following post-application storm events.
- **Water quantity:** Water quantity, or “water yield,” following timber harvest is a concern for water system managers who need a reliable source of raw water. According to *Trees to Tap*, study results on this topic vary widely, with some watersheds showing large increases in water yield after logging occurred there and others showing little to none. More research is needed to better determine the relationship between timber harvest and water quantity.

Learn more at [OregonForests.org/TreestoTap](https://OregonForests.org/TreestoTap)



## ENDNOTES – SOURCES OF INFORMATION

1. Palmer, Marin; Kuegler, Olaf; Christensen, Glenn, tech. eds. *Oregon's Forest Resources, 2006-2015; Ten-year Forest Inventory and Analysis Report*. General Technical Report PNW-GTR-971. USDA Forest Service, Pacific Northwest Research Station, Portland, Ore. 2018. 54 p. <https://www.fs.usda.gov/treearch/pubs/57274>
2. Oswalt, Sonja N.; Smith, W. Brad; Miles, Patrick D.; Pugh, Scott A. *Forest Resources of the United States, 2017*. General Technical Report WO-97. USDA Forest Service, Washington, D.C. 2019. <https://www.fs.usda.gov/treearch/pubs/57903>
3. Oregon Department of Forestry, Partnership and Planning Unit. Personal Communication. <https://www.oregon.gov/odf/aboutodf/pages/programs.aspx>
4. Latta, Greg; Watson, Philip; Nadreu, Tim; Kuusela, Olli-Pekka; Rossi, David. Oregon Forest Resources Institute. *The 2019 Oregon Forest Report*. 2019. <http://theforestreport.org>
5. Johnson, Anna. *Oregon's Forest Sector Employment Totals 61,600 in 2019*. Oregon Employment Department, in cooperation with the Oregon Department of Forestry and the Oregon Forest Resources Institute. December 2020. <https://www.qualityinfo.org/-/oregon-s-forest-sector-employment-totals-61-600-in-2019>
6. Forest Economic Advisors LLC. Personal communication. 2020. <http://www.getfea.com>
7. The Engineered Wood Association. Personal communication. 2020. <https://www.apawood.org>
8. Elling, Joe. *Structural Panel and Engineered Wood Yearbook*. APA – The Engineered Wood Association. Tacoma, Wash. 2019. <https://www.apawood.org>
9. American Tree Farm System. <http://www.treefarmssystem.org>
10. Forest Stewardship Council. <https://us.fsc.org>
11. Sustainable Forestry Initiative. <http://www.sfiprogram.org>
12. Oregon Forest Resources Institute. *State of Fire*. 2014. [https://oregonforests.org/sites/default/files/2017-05/OFRI\\_2014\\_Fire\\_Report\\_0.pdf](https://oregonforests.org/sites/default/files/2017-05/OFRI_2014_Fire_Report_0.pdf)



13. Oregon Department of Forestry, Fire. Personal Communication. 2020. <http://www.oregon.gov/odf/fire>
14. Northwest Interagency Coordination Center, U.S. Bureau of Land Management, Predictive Services Unit, Portland, Ore. 2020. <http://gacc.nifc.gov/nwcc/admin/publications.aspx>
15. Oregon Department of Forestry, fire reports: <http://www.oregon.gov/odf/fire/Pages/default.aspx> (Annual Fire Season Reports)
16. Governor's Council on Wildfire Response. *November 2019: Report and Recommendations*. 2019. [https://www.oregon.gov/gov/policy/Documents/FullWFCReport\\_2019.pdf](https://www.oregon.gov/gov/policy/Documents/FullWFCReport_2019.pdf)
17. Oregon Department of Forestry. *Good Neighbor Authority in Oregon – Program Update*. 2018. <https://olis.leg.state.or.us/liz/2018R1/Downloads/CommitteeMeetingDocument/144692>
18. Oregon Forest Resources Institute. *Oregon's Forest Protection Laws: An Illustrated Manual – Revised – Third Edition*. 2018. [https://oregonforests.org/sites/default/files/2018-02/OFRI\\_IllusManual\\_full.pdf](https://oregonforests.org/sites/default/files/2018-02/OFRI_IllusManual_full.pdf)
19. Oregon Forest Resources Institute. *Carbon in Oregon's Managed Forests*. 2020. <https://oregonforests.org/pub/carbon-oregons-managed-forests-science-review>
20. Oregon State University Institute for Natural Resources. *Trees to Tap: Forest Management and Community Drinking Water Supplies*. 2020. <https://inr.oregonstate.edu/treestotap>

# An array of jobs

Oregon's forest sector includes a wide variety of employment, from forestry, logging, millwork and cabinetmaking to engineering, hydrology, business management and academic research.

Here's a rundown of Oregon's forest sector jobs by type of employment in 2019.<sup>4</sup>



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## Oregon's forest sector jobs - 2019

### Forest Management

Company management	1,026
Forestry and environmental consultants, researchers, academics	318
Bureau of Land Management	941
State of Oregon	852
U.S. Forest Service	3,661
<b>Subtotal</b>	<b>6,798</b>

### Forestry Support

Forestry support (nurseries, machinery manufacturing, firefighting)	6,151
Logging	6,603
<b>Subtotal</b>	<b>12,754</b>

### Primary Forest Products

Pulp and paper manufacturing	4,036
Sawmills and wood preservation	6,255
Veneer, plywood and engineered wood	9,528
<b>Subtotal</b>	<b>19,819</b>

### Secondary Forest Products

Millwork (doors, windows, custom)	5,762
Wood kitchen cabinets and countertops	3,854
Other (manufactured homes, wood buildings, pallets, furniture, etc.)	3,031
<b>Subtotal</b>	<b>12,647</b>

### Distribution, Transportation and Other

Wood products wholesalers	2,828
Paper products wholesalers	832
Transportation of logs, chips, goods	5,107
Other (biomass electric power, airport operations, marine cargo handling, etc.)	771
<b>Subtotal</b>	<b>9,538</b>

**TOTAL** **61,556**