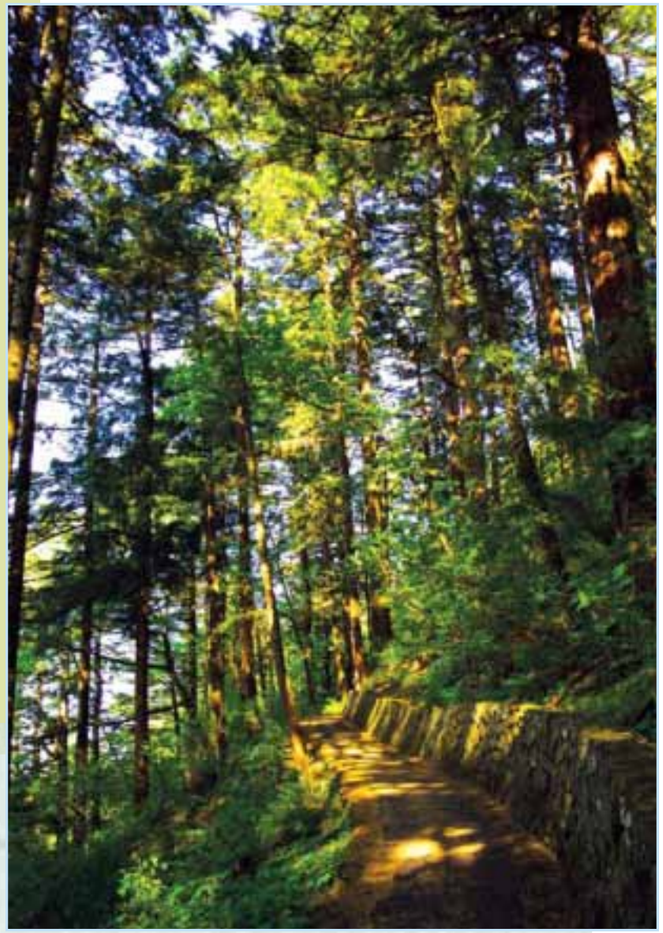
The Oregon Forest Book:

Ecology, Economy and Society

OREGON FOREST
RESOURCES INSTITUTE

The Oregon Forest Book

The Oregon Legislature created the Oregon Forest Resources Institute (OFRI) in 1991 to improve public understanding of forests, forest products and forest management and to encourage sound forestry through landowner training. In keeping with this mission, OFRI sponsors classroom and field programs for K-12 students and teachers and produces educational publications such as this.



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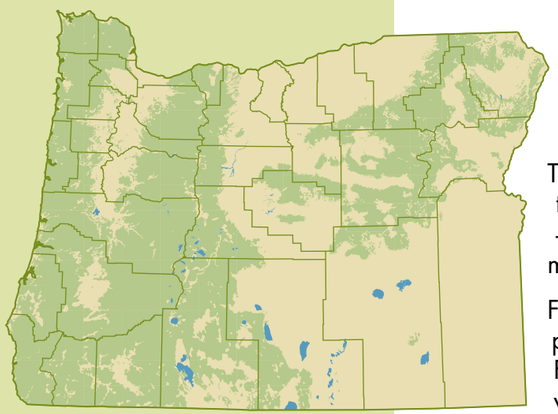
Oregon's Forest Resource

for-est (fôr'ist) n.

A dense growth of trees, plants and underbrush covering a large area. Historically used as a term in England to define a royal hunting ground.



Oregon Department of Forestry

Forest*
Non-forest

* Excluding juniper woodlands and urban forests

Forests cover almost half of all Oregon land. The first thing you may notice about a forest is that it is dominated by trees. But a forest is really a complex ecosystem that consists of many interacting communities of living organisms. These include:

- trees
- shrubs
- vines
- grasses
- herbaceous (non-woody) plants
- mosses
- algae
- fungi
- insects
- mammals
- birds
- reptiles
- amphibians
- microorganisms
- worms

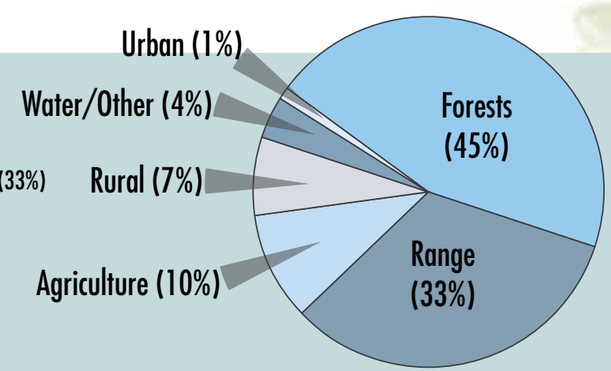
These interact with one another and with the non-living part of their environment - including the soil, water and minerals - to make up what we recognize as a forest.

Forest ecosystems benefit more than the plants and animals that call them home. Forests offer people recreation opportunities, wildlife viewing and scenic buffers between human developments. Forests are economic engines for neighboring communities, providing commercial products, jobs and tax support for local governments and community services.

Land Uses in Oregon

FORESTS: dominated by tree canopy (45%)
RANGE: grassy open lands used for animal grazing (33%)
AGRICULTURE: farmlands (10%)
RURAL: semi-developed landscapes (7%)
WATER/OTHER: lakes and rivers (4%)
URBAN: houses, streets and buildings (1%)

Data from Natural Resources Conservation Service (USDA)



Sustainability

Ecological, social and economic benefits of forests are all important to Oregon's citizens. Using our forests sustainably, so they continue to provide these important benefits far into the future, requires us to recognize the interdependent relationship among these various uses and to acknowledge the need for balance among them.

Ecological Value The forest floor provides food, shelter and habitat for animals, from the simplest worm to the biggest bear. Tree roots help stabilize the soil and prevent erosion. The roof of the forest, called the "canopy," helps regulate forest temperature and moisture. Forests also capture carbon dioxide (a greenhouse gas), produce oxygen and filter water to keep it clean. These are all important ecological functions of forests.

Social Value Forests provide places for people to relax, rejuvenate and have fun. Each year, thousands of Oregonians visit our forests to go hiking, camping, hunting, fishing and to view wildlife. Another reason forests are important to society is that they provide all of the wood products that we use on a daily basis, such as housing, furniture, newspaper, books and cardboard.

Economic Value Oregon harvests more conifers (cone-bearing evergreens) than any other state, and is the leading producer of softwood lumber in the nation. More than 85,000 people in Oregon earn a living by working directly with the state's forest sector. The forest sector provides about 4 percent of all jobs in the state. Forestry is especially important to rural economies, with over 80 percent of forestry-related jobs located in communities outside of the Portland metropolitan area.

Did you know?

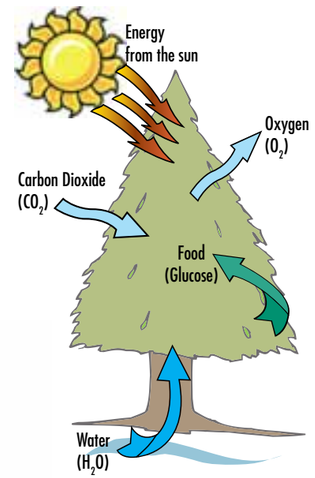
Spending time in a forest could be good for your health! Scientific research has shown that when people view trees, their heart rate slows, their blood pressure lowers and they show relaxed brain wave patterns.

Ulrich, Simons, Losito, Fiorito, Miles, and Zelson, 1991

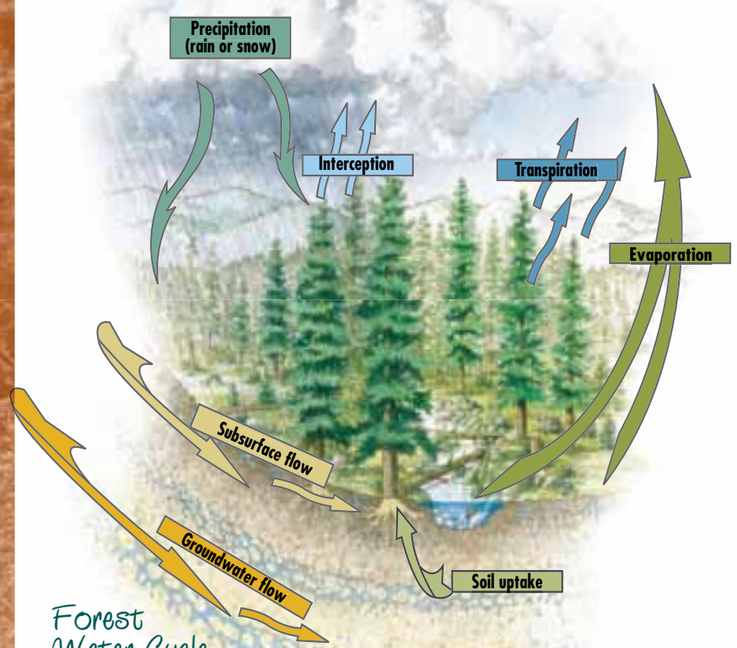
Forests Help Make the Earth Livable

Forests help provide the earth with oxygen necessary for life. Green plants take in energy from the sun and use that energy in their cells to transform water and carbon dioxide into oxygen and glucose, a carbon-based molecule. This process is called photosynthesis.

High levels of carbon dioxide and other gases in the atmosphere contribute to global warming. Forests help to cool and regulate the earth's climate by removing carbon dioxide from the atmosphere. The carbon-based molecules that result from photosynthesis are stored in trees' trunks, stems and leaves. Because of this, planting trees and choosing wood products as an alternative to fossil fuel-based products are strategies to help address global climate change.



$$CO_2 + H_2O \xrightarrow{\text{sunlight}} O_2 + CH_2O \text{ (glucose)}$$



Forest Water Cycle

Interception Vegetation catches and deflects rain, snow and fog.

Evaporation Some water, in the form of vapor, returns to the atmosphere.

Subsurface flow Most water seeps into soil and streams.

Groundwater flow Some water seeps deeper, reaching underground aquifers.

Soil uptake Roots take in water from the soil.

Transpiration Water moves through the tree and evaporates from the surface of leaves or needles.

From Forest to Faucet

Oregon has excellent drinking water. Before water reaches your faucet, it flows through a watershed. This is an area of land that catches rain and snow, which drain into marshes, streams, rivers, lakes or groundwater beneath the surface.

Healthy forest watersheds help keep fresh water clean. As rain or snow falls on forests, healthy forest soils absorb most of it. They then filter and slowly release it into nearby water bodies or the water table. Tree roots and other vegetation stabilize the forest soil, keeping this natural filter system intact.

Trees and Forests Have Dynamic Life Cycles

Trees and forests change over time. As forests mature, the ecosystem changes to become suitable for different communities of plants and animals. This is called succession. After fire or a timber harvest opens up an area of forest, grasses and small shrubs are usually the first to grow back, along with tree seedlings that germinate (sprout) naturally or are replanted. As tree seedlings grow and mature, new trees and other vegetation germinate on the forest floor, making up what we call the understory.

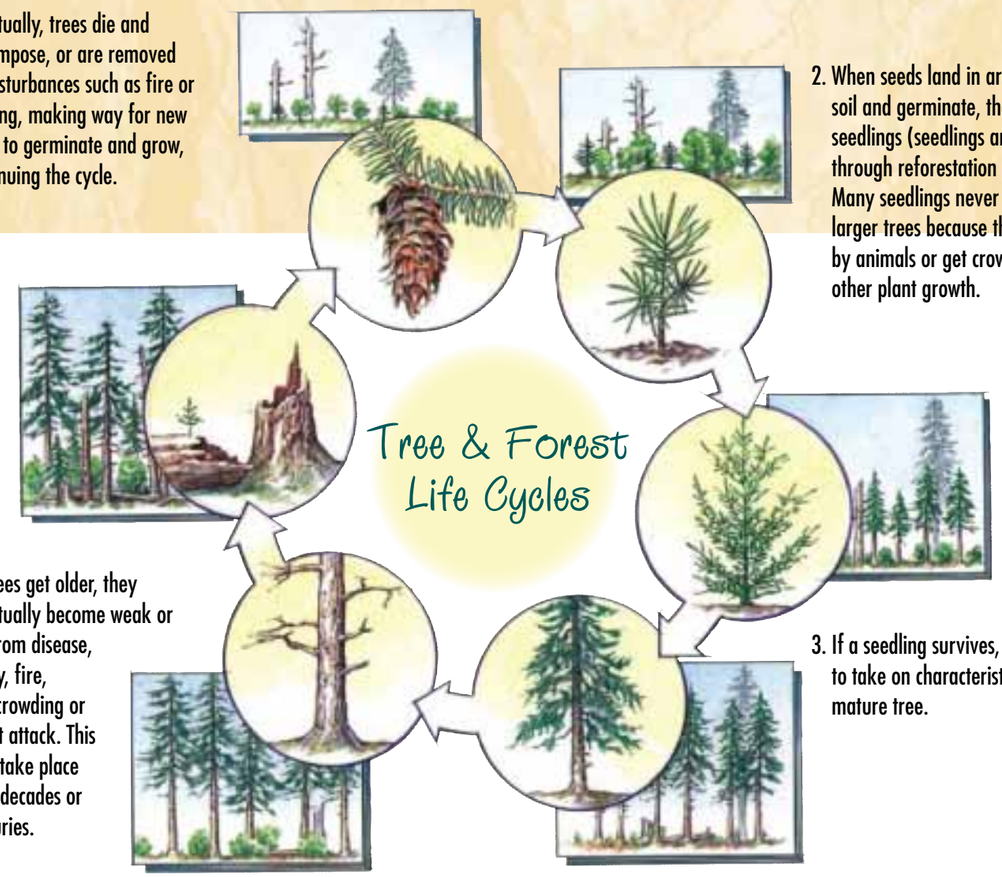
1. Trees grow from seeds. These seeds are produced by broad-leaf trees like alder, maple and oak, or in cones on evergreen conifers like fir, pine and cedar. Most seeds never germinate or are eaten by birds, insects or other animals.

2. When seeds land in areas with good soil and germinate, they grow into seedlings (seedlings are also planted through reforestation programs). Many seedlings never grow into larger trees because they are eaten by animals or get crowded out by other plant growth.

3. If a seedling survives, it begins to take on characteristics of a mature tree.

4. As trees get older, they eventually become weak or die from disease, injury, fire, overcrowding or insect attack. This may take place over decades or centuries.

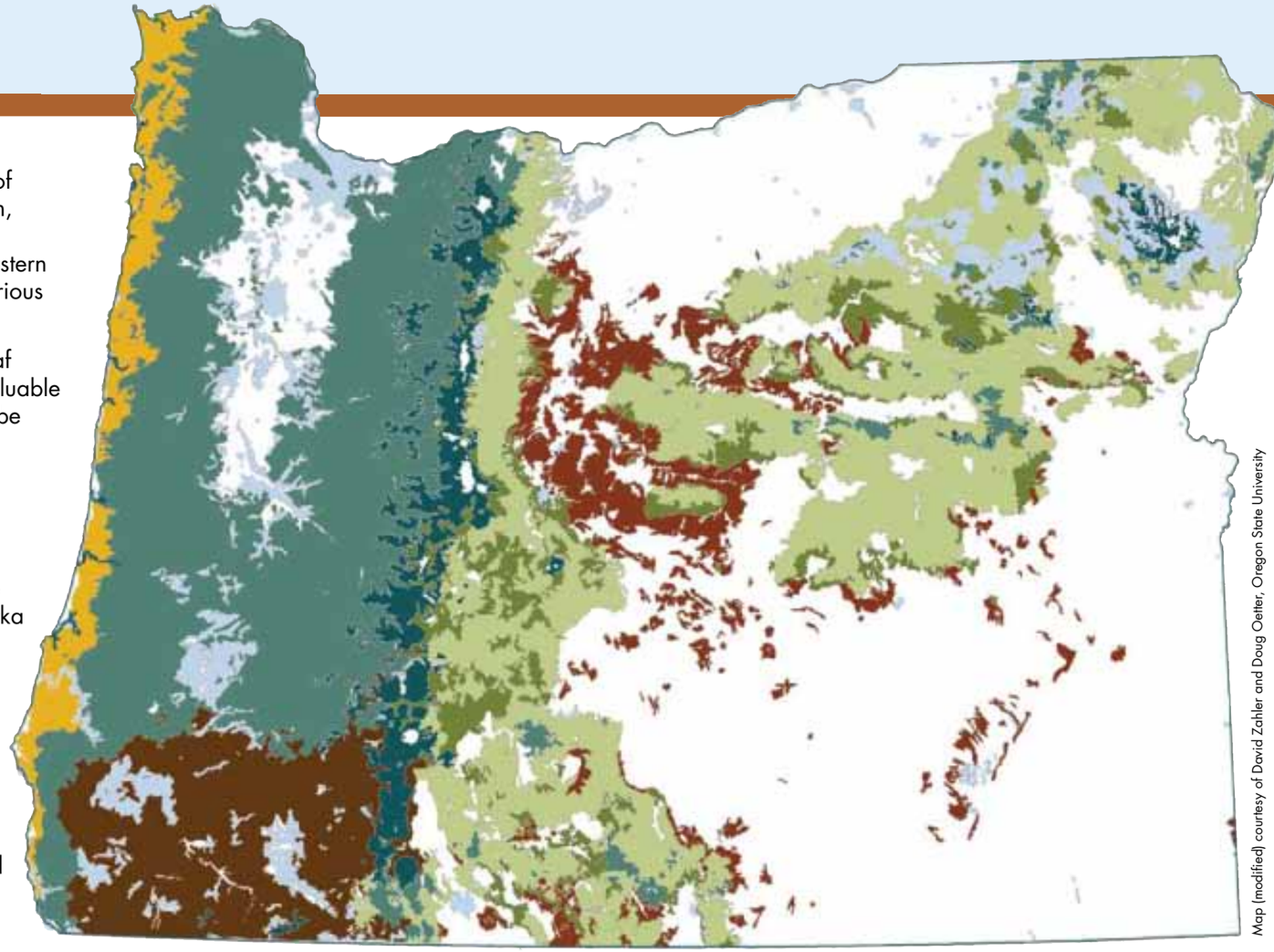
5. Eventually, trees die and decompose, or are removed by disturbances such as fire or logging, making way for new trees to germinate and grow, continuing the cycle.



Forests Vary Across the State

If you traveled around the state, you would see that specific types of plants and animals live in different locations. Differences in soil, elevation, temperature, wind and rainfall contribute to the diversity of forests. On a summer day, the coast might be foggy and cool, while inland parts of eastern Oregon are hot and dry. Plants and animals adapt to survive in these various environments and conditions.

There are 30 species of conifers and 37 species of hardwoods (broadleaf trees) found in Oregon's forests. The most prevalent and economically valuable tree is the Douglas-fir. It's no wonder that the Douglas-fir was selected to be Oregon's State Tree back in 1939!



Map (modified) courtesy of David Zahler and Doug Oetter, Oregon State University

Common Forest Types In Oregon

Spruce-Hemlock forests are found in a 10-20 mile wide band along the coast where ocean air and heavy fogs keep trees and soil moist. Both Sitka spruces and western hemlocks can tolerate shade, and Sitka spruces are even resistant to salt spray.

Douglas-fir forests are the most common forest in western Oregon. Douglas-fir trees like open, sunny terrain, but can survive in a wide range of conditions. Hemlocks and cedars grow in the shady understory of these forests.

Mixed Conifer forests dominate the lower elevations of the Cascade and Siskiyou mountains of southwestern Oregon. Douglas-fir, incense-cedar, sugar pine, Pacific madrone and other species of trees are often found mixed with each other in the same ecosystem.

Subalpine forests are found above 4,500 feet in the Cascade, Wallowa or Siskiyou mountains. White fir, noble fir, mountain hemlock, lodgepole pine and quaking aspen are common species, all of them adapted to survive cold and heavy snow pack.

Juniper Woodlands are common in the high deserts of eastern Oregon. Juniper trees often invade open or disturbed areas and are susceptible to fire. Because of fire suppression, juniper is more prevalent than in the past, reducing the amount of water available for wildlife and other plants.

Lodgepole Pine forests of pure and nearly pure stands are occasionally found in central and eastern Oregon. This "pioneer" tree is often the first to colonize areas after harvest or fire. Because these stands are often dense and contain many dead trees, they are susceptible to insect attack and fire.

Ponderosa Pine forests dominate the eastern slope of the Cascade mountain range and southwestern Oregon. These pines like short, dry summers and cold, snowy winters. The understory of a mature ponderosa pine forest is usually open, with scattered small shrubs, ferns and grasses.

Residential and Other Forests are either dominated by broadleaf hardwoods or are found near urban areas.

In the Field

Lodgepole pines like those found in central and eastern Oregon got their common name because their super-straight trunks made great center poles for early lodge construction. These same pines also grow on the Oregon coast, yet you would hardly recognize them. Here, they are called shore pines, and despite their twisted, lopsided form, are the very same species as the lodgepole pine. This explains why the lodgepole pine's scientific name is *Pinus contorta*. At the coast, look for these strange, contorted trees and try to identify the environmental conditions that cause them to grow this way!

Animals Take Up Residence in Different Forest Environments

As forests change over time, so do the plants and animals that make the forest their home. Some animals are most successful in the grassy, open clearings of a young forest, while others need the snags or downed logs found in older mature forests to survive. All three forest habitats are necessary for biodiversity.

Young open forest stands are open to sunlight just after fire, logging or other disturbance. The leafy shrubs, herbaceous plants, grasses and tree seedlings that characterize these stands provide easy food sources for animals.

Typical animals: fox sparrow, deer mouse, striped skunk, black bear

Middle-aged forest stands are characterized by more densely crowded trees and less light. Weaker trees that can't compete die, opening up the canopy to allow light to filter down to the ground. This supports different kinds of understory vegetation than in younger stands.

Typical animals: long-toed salamander, Pacific tree frog, snowshoe hare, Roosevelt elk

Older forest stands contain large trees, a dense canopy and a highly developed understory with downed wood and mature shrubs.

Typical animals: marbled murrelet, Northern spotted owl, pileated woodpecker, hoary bat, Northern flying squirrel

In the Field

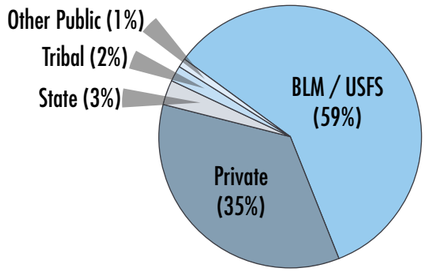
In the 1960s, people noticed that large living or decaying trees left behind in clearings after a timber harvest often became homes to cavity-nesters such as woodpeckers. Foresters leave some of these trees or snags standing in order to provide nesting sites. Next time you see a forest clearing, look for this type of tree and any evidence of the cavity-nesting animals!

Who Owns Oregon's Forests?

Most of Oregon's forests are owned by all of us - the general public. The federal government holds 59 percent of Oregon forestlands. Two main federal agencies, the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS), manage the majority of Oregon's public forestlands.

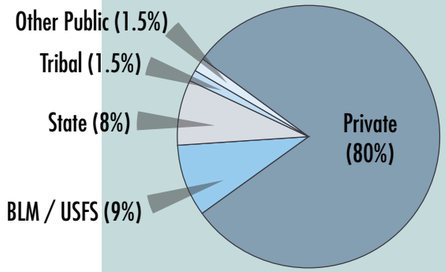
Private landowners hold about 35 percent of forestlands. These range from forest products companies to family landowners, groups of investors, community land trusts and individuals. Collectively, they contribute about 80 percent of the state's timber harvest.

Forestland Ownership



Source: Oregon Department of Forestry, 2007

Harvest by Ownership



Source: Oregon Department of Forestry, 2005

Forest Management Practices

Compared with past decades, when people thought of forests as an endless resource, we now recognize that all forests need to be managed in order to achieve the ecological, economic and social benefits desired. Different owners manage lands based on a variety of considerations such as age, condition, location, fire risk and the land's intended future use. The three kinds of management and the percent of Oregon forestland that they represent are:

Reserve Forests Older habitat for wilderness and conservation with limited harvesting. Mostly federal, with some state, tribal and private ownership (31%).

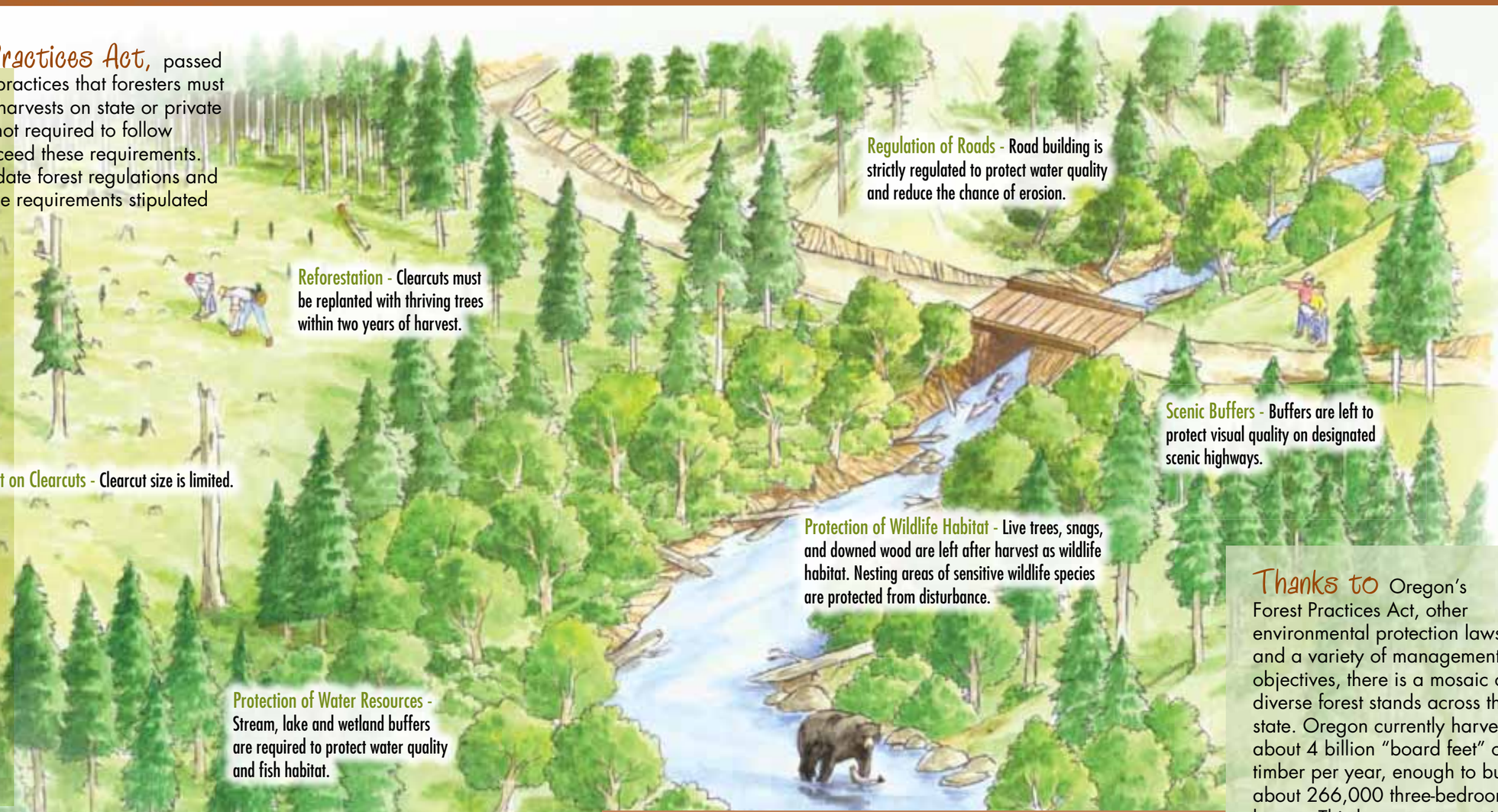
Multi-Resource Environmental, social and commercial harvest goals co-exist. Mostly state and tribal, with some private and federal ownership (33%).

Wood Production Actively managed for forest products. Mostly private industry and family landowners with some state and tribal ownership (36%).

All three kinds of management together help create long-term forest sustainability for Oregon.

Oregon's Landmark Forest Laws

The Oregon Forest Practices Act, passed in 1971, outlines management practices that foresters must consider when planning timber harvests on state or private lands. Federal agencies, while not required to follow Oregon law, usually meet or exceed these requirements. Scientific research is used to update forest regulations and practices as needed. Some of the requirements stipulated by the Forest Practices Act are:



In the Field

"Riparian" refers to the area on or near the banks of a river or other body of water. When looking at a landscape from above, the riparian zone often looks like a bright green ribbon of bushes and broadleaf trees running along both sides of a river or stream. Next time you are near a river, see if you can find the "green ribbon" of riparian area!

Oregon Grows More Timber Than it Cuts

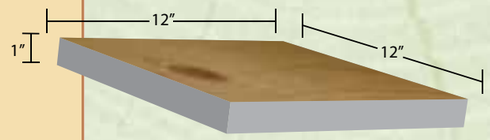
Growth and Mortality on Oregon Timberland,* 1990-2004

	WESTERN OREGON	EASTERN OREGON	TOTAL
Total Growth (growth in live trees)	8,019	2,275	10,294
Timber harvests	-3,175	-723	-3,898
Death (due to fire, insects or age)	-1,139	-872	-2,011
Net Growth	**3,705**	**681**	**4,385**

** Rounded numbers in millions of board feet.*

Source: USDA Forest Service, Pacific Northwest Research Station; BLM, Oregon State Office; E.D. Hovee & Company

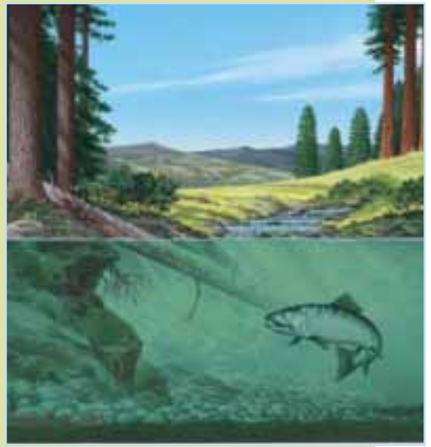
Thanks to Oregon's Forest Practices Act, other environmental protection laws and a variety of management objectives, there is a mosaic of diverse forest stands across the state. Oregon currently harvests about 4 billion "board feet" of timber per year, enough to build about 266,000 three-bedroom homes. This harvest amount is less than half the total growth in forest timber each year.



One Board Foot

Protecting Salmon

Mighty Pacific salmon have long been a symbol of the Pacific Northwest. For centuries, Native Americans have honored and depended on salmon for food, commerce and spiritual sustenance. Salmon are also a staple of Oregon's modern commercial fisheries and are increasingly promoted as a healthy source of protein and essential nutrients. Scientists consider salmon to be an important species, using them to monitor overall habitat health, including Oregon's forests and waterways.



Many Oregonians are working to restore the salmon. Jim Johnson, a retired middle-school science teacher, and his wife, Bonnie, planted trees on their property along the Nehalem River to reduce erosion and provide shade, doing their part to restore the salmon populations.

Populations of Pacific salmon have declined significantly in the past four decades. Salmon populations are affected by the amount of fishing (by humans and wildlife), the quality and quantity of habitat and ocean conditions. There is growing awareness of the effect that development, fishing, dams, logging, agriculture and other human activities have on salmon habitat. Today, only about 10 percent of the historic wild salmon population remains. To help salmon populations stabilize and recover, specific practices are being put into action.

Salmon require shallow gravel bars to breed, and need pools created by downed logs in streams and consistently cool temperature ranges to survive. The Oregon Forest Practices Act regulates logging practices to protect and improve salmon habitat. Logging can only take place at specified distances from rivers. This maintains shady riparian zones of trees and leafy brush, which help provide cool stream temperatures necessary for salmon survival.

In 1997, The Oregon Plan for Salmon and Watersheds was adopted, calling for habitat improvement and protection across all land uses. Stream beds have been enhanced by drainage improvements, placement of in-stream structures like downed logs, and protection and improvement of riparian growth along their banks. As of 2005, 2,349 miles of roads were closed or decommissioned, and 3,131 miles of rivers and streams were made accessible to fish due to habitat improvements. Forest landowners were leaders in making these improvements.

Forestland Fire Risk

Although fire can be a powerful, destructive force, it is also a natural part of healthy forest ecosystems. Over thousands of years, forests have adapted to survive and even benefit from natural wildfires. When forest ecosystems burn, some invasive plant species, parasites, diseases and insects are kept under control, and the remaining ashes provide needed nutrients to the soil. Some species of trees even require the high temperatures of fire to open their cones so that seeds may be dispersed, growing new trees and continuing the forest life cycle.

Historically, fires started both naturally by lightning and intentionally by Native Americans burned regularly across Oregon's forests. These frequent, seasonal fires helped to remove "fuel" from the forest such as dead trees, twigs and needles. In drier forests, where fires burned more frequently, the reduction in fuel resulted in smaller, less severe wildfires. Wetter forests in the western part of the state burned less frequently, building up more fuels, resulting in severe, high-intensity wildfires.

For the past 100 years, fires have been aggressively suppressed, resulting in an unnatural buildup of dead trees, brush and other fuels. Wildfires in recent years are larger and burn hotter than they did historically, destroying vast ecosystems and often threatening rural landscapes where people live. Thinning, controlled burning or both are needed to restore these forests to healthy conditions.

Fire Characteristics in Selected Oregon Forest Types

Map modified from Oregon Department of Forestry

Hemlock-Spruce
Historic burn cycle:
400+ years
Historic fire severity: high

Douglas-fir
Historic burn cycle:
100-230 years
Historic fire severity: high

Mixed Conifer
Historic burn cycle:
40-80 years
Historic fire severity: moderate

Ponderosa Pine
Historic burn cycle:
5-25 years
Historic fire severity: low

During burn

After burn

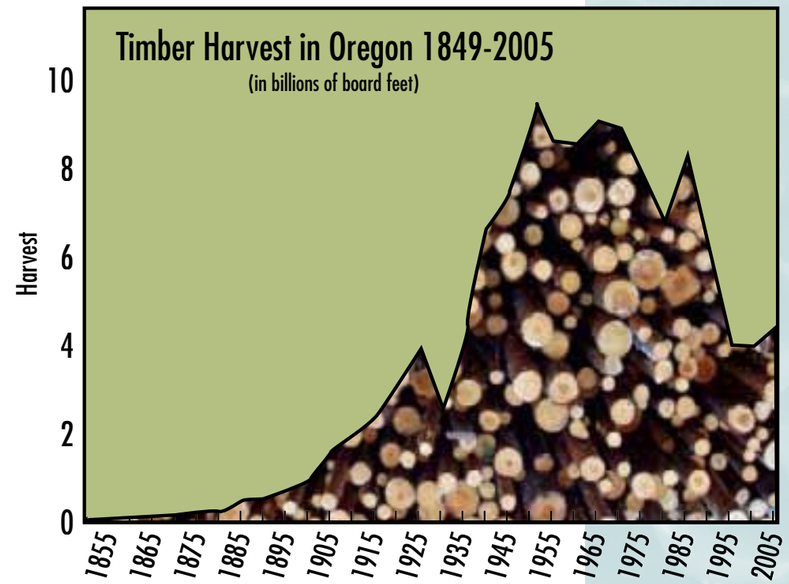
Forest managers today model thinning and controlled burning based on the varying degrees of intensity and frequency of historic fire patterns. This reduces fuels in the forest which in turn reduces the risk of unnaturally severe and destructive fires and improves forest health.

Wood: A Keystone of Human Culture

Early humans burned wood to cook and stay warm, and carved wood for weapons and tools. In the Pacific Northwest, Native Americans developed sophisticated cultures closely aligned with natural resources, especially forests and rivers. Wood provided the primary resource for shelter; for transportation by cedar canoe; for everyday objects such as hunting and fishing tools, cooking utensils and containers; and for ceremonial objects like masks, drums and rattles.

To the early pioneers who journeyed west on the Oregon Trail during the 1800s, Oregon's forests were seen as both a resource and a hindrance. Settlers cleared and burned forests to create fertile agricultural land. Log cabins gave way to houses made of sawed and milled timber, and in 1827, the famous Hudson Bay company set up its first western sawmill on the Columbia River. By mid-century, there were 29 sawmills in the Oregon Territory. Shortly after statehood in 1859, the first legislation related to forestry was enacted to control fires on private property. In 1938, Oregon assumed the lead in softwood timber production among U.S. states, a position it still holds today.

The birth of modern forestry occurred around the turn of the 20th century, as the nation's first college-level forestry programs emerged, shaping forestry as a technical profession. The first half of the 20th century was a time of great timber extraction, followed by a period in the latter half of the century focused more on environmental protection and sustainable forest management. Since the 1960s, forestry has become more interdisciplinary, embracing a broader set of ecological, social and economic goals.



Source: Oregon Department of Forestry

The sharp decline in Oregon's timber harvest since the early 1990s resulted from federal forests being managed for old-growth habitat and other non-wood priorities. Harvest levels on private lands have remained consistent, and forest growth today significantly exceeds harvest.

Forest Products of the Future

At Oregon State University's College of Forestry, scientists are using cellulose from trees in medical applications, improving skin grafts and synthetic bones. A wood chemist has developed a new soy-based adhesive to replace less safe formaldehyde-based resins in plywood and veneers. Another promising innovation is the use of wood biomass for creating renewable energy. Each new discovery and innovation redefines the value of Oregon's forest resources today and far into the future.

Oregon's 20th Century Forest Milestones

1905 Theodore Roosevelt establishes U.S. Forest Service. It assumes the management of the forest reserves, later to be known as National Forests.

1906 Oregon State University introduces its professional forestry programs.

Use of gasoline-powered saws began in the 1930s.

1911 State legislature enacts law creating a Board of Forestry, a Department of Forestry and the position of State Forester.

1930s Use of gas-powered chainsaws, bulldozers and trucks become common in harvest operations, replacing crosscut saws, steam engines and locomotives.

1933 The Tillamook Burn sweeps through more than 260,000 acres of mostly private forestland. This was followed by the nations's first massive reforestation project.

1938 Oregon assumes the lead in lumber production among all states.

Trucks eventually replaced horses and oxen as a means of transporting logs.

1941 Oregon's first forest protection law passed, the Oregon Forest Conservation Act.

1952 Oregon has its biggest harvest year ever, feeding the demand for wood in the post World War II building boom.

1964 Passage of the National Wilderness Act protects wilderness, now at 2,000,000 acres in Oregon.

1970s Forest harvest operations and mills adopt new technologies increasing efficient use of timber resources.

1971 Oregon becomes the first state to adopt a comprehensive set of forest protection laws, known as the Oregon Forest Practices Act.

1981 Economic recession leads to a steep decline in home construction, forcing closure of many Oregon mills.

1994 The Northwest Forest Plan is adopted to reserve old growth federal forests preferred by the Northern spotted owl in western Oregon.

1997 Oregon Legislature adopts The Oregon Plan for Salmon and Watersheds.

2002 The Biscuit Fire in southwestern Oregon burns 450,000 acres, becoming the state's largest forest fire in more than a century. Fire management and timber salvage become hot public issues.

2000s Oregon is a national leader in the forestry field with high-tech advances, wood product innovations and new scientific research on forest ecology and management.

From Tree to Table: Wood Processing Today

It takes a lot of technology, ingenuity and hard work to convert a tree into a fine piece of furniture. Just what happens to a tree after it has been harvested? Follow this wood processing journey to find out.

Once a tree is harvested, limbs are trimmed, it is cut into log lengths, loaded and transported to a mill.

At the mill, logs may be conditioned by soaking in water to soften them for processing. Once the bark is removed, a computerized machine sorts the logs by shape and size.

Logs are then cut into boards, and lasers and scanners sort them by quality. For the next one to seven days (depending on the type of wood), huge kilns dry the stacks of rough-cut lumber.

After drying, the boards are made smooth to the touch, and marked according to their quality so they can be distributed to manufacturers and lumber yards.

Finally, milled lumber is used to build homes, furniture and other wood products.

Forest "Treevia"

Wood can last a long time, which is one of the reasons it is a good choice as a building material. One of Japan's most famous temples, the Todaiji (Great Eastern Temple) was originally constructed in 752 A.D. Even more amazing is that this ancient temple is also the world's largest wood building!

Since the early 1990s, as timber harvests declined in Oregon, there have been dramatic advances in mill technologies that improve efficiency and reduce waste. Computer-aided manufacturing employing lasers and other high-tech tools measure and cut wood with greater precision. Wood chemists have discovered new compounds in wood pulp that are now extracted for use in a surprising variety of everyday products. Mills employ metallurgists to design sharp, thin saws that help get the most from each log. Waste products like saw dust that were once swept away are now recovered and engineered into particle board. Wood waste can even be converted into energy for heat and electricity. Along with increased efficiency, computer-controlled drying and finishing processes also have enhanced wood product quality and durability.

Wood and New Materials Science

Wood Science and Engineering are booming areas of research and product development. Scientists from Oregon State University are studying ways to make hybrid molecules that are half wood and half plastic. Wood-plastic composite materials are in demand because they use both recycled wood (such as discarded wood pallets) and recycled plastic (such as used milk jugs). The wood adds strength and stiffness, yet the plastic is lightweight, easy to manufacture and longer lasting. Look for this material in park benches that appear to be wood but feel like plastic!

Everyday Wood

Different types of trees lend themselves to different kinds of wood products. "Hardwood" broadleaf trees such as oak, cherry and walnut provide dense, durable wood – the kind commonly used to make flooring and furniture. "Softwood" cone- and needle-bearing trees such as pine, fir, spruce and cedar produce lumber that is less dense and lighter weight. It is often used in building construction and to make paper. Beyond the "hardwood" and "softwood" distinction, the different characteristics of dozens of tree species, such as flexibility, straightness, tightness of grain and so on, make for a wide range of applications.

Wood is a source for 5,000 different products, many of them not as easily recognizable as a baseball bat or table. While some products are made directly from hardwood or softwood lumber, there are many engineered wood products made of combinations of sawdust, shavings and other waste materials. A wide range of products come from wood pulp and plant chemicals extracted from wood pulp.

Solid Wood Products

- Furniture
- Violins
- Lumber for building houses

Engineered Wood Products

- Plywood
- Laminated veneer lumber

Wood Pulp Products

- Paper
- Lamp Shades
- Egg cartons

Products from Wood Chemicals

- Glues and adhesives
- Chewing gum
- Textiles (Rayon)
- Cosmetics
- Medicines

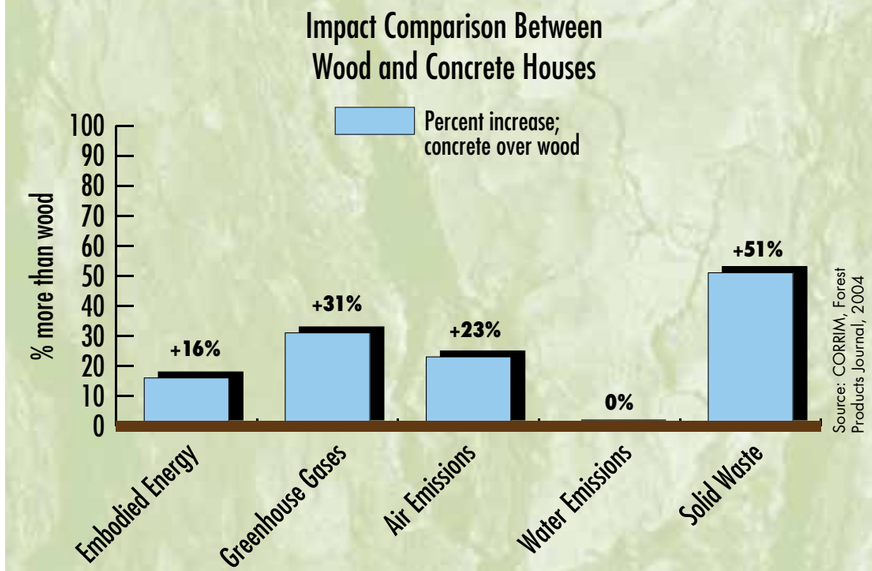
Forest "Treevia"

Cellulose gum from wood is one of many ingredients found in processed food products. Foods appeal to us based not only on how they taste, but also based on how they feel: sticky or creamy, thick or watery, soft or hard. In foods like ice cream, cellulose is added to thicken, smooth and bind different ingredients (water, sugar, milk fat and milk proteins) together to create a pleasing texture. Think of wood next time you order a creamy ice cream cone!

How "Green" is Wood?

The world has become more conscious of how human activities impact the health of the planet. People from all walks of life are asking about the environmental costs and benefits of lifestyle choices they make, including the products they use.

Every building product comes from a natural resource, whether wood from trees, steel from mined iron ore or bricks from earthen clay. Building designers study materials to determine which choices make the least impact on the environment. For example, over the course of an average 75-year life, a house made of wood has fewer impacts than a concrete house. It consumes less energy, emits less greenhouse gases, releases less pollutants into the air and creates less solid waste in landfills.



Besides being a good building choice, wood is recyclable and biodegradable, and the Oregon Forest Practices Act requires reforestation after a harvest. So Oregon wood ***is*** truly a renewable resource.

Wood Use in a Global Context

U.S. wood consumption per person has increased 40 percent since 1960. Much of this demand has been met by imports from around the world. Across the globe, about 50 percent of all forests have been converted to other land uses (compared to 33 percent in the U.S. and 8 percent in Oregon). Timber harvests in countries without strong forest practice laws often destroy critical habitat, such as tropical rainforests, and impact endangered species. Individual consumer choices help shape the forests, ecosystems and communities, not only in Oregon, but across the U.S. and around the globe.

Forest Sector Careers Make a Difference

A career in forestry or wood products offers an exciting chance to benefit people, the environment and the economy. Forestry professionals are engaged in the practice of creating, managing, using and conserving forests and wood products in a sustainable manner to meet needs, goals and values. They care for trees and other forest resources including soils, water and wildlife and make innovative products.

Eric Geyer, Forester, Roseburg Forest Products Company

Some people are drawn to forestry because they want to work in the outdoors. Many forest sector careers involve working in the forest, but there are other forest-related jobs that might surprise you: writing policy papers, managing timber investments, using satellite mapping technology, managing product quality and educating the public are just a few of these. Examples of job responsibilities for forest sector professionals are:

- Grow trees for wood products
- Manage water quality
- Protect endangered wildlife
- Ensure healthy forests
- Plan recreational uses
- Research tree genetics
- Plan and supervise timber harvests
- Develop mill technologies
- Create new wood products
- Research global markets
- Produce renewable biomass energy

Forest sector professionals have completed at least a four-year college degree, while technicians can work in the field with a two-year technical degree. The 85,600 forest sector jobs in Oregon provide a higher than average wage of $40,050 per year, compared to $34,417 across all occupations in Oregon (2006 data).

Liz Dent, Forest Hydrologist
Oregon Department of Forestry, Salem

Specialization in the Forest Sector

Forest Engineers are primarily concerned with soil stability and logging road placement.

Wildlife Biologists collect and analyze data to plan for the health of forest wildlife.

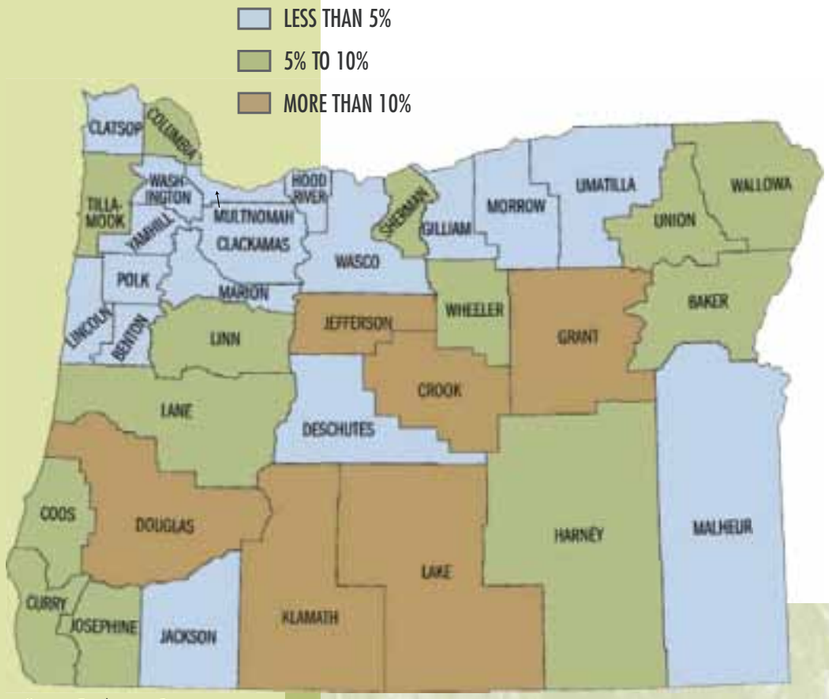
Hydrologists study the distribution of underground and surface waters for maintaining watershed health.

Mill Managers focus on sourcing timber supplies, technological efficiency in processing and lumber markets.

The forest sector is a dynamic field, informed by science, technology and changing public policy. New developments such as increased fire danger, listing of endangered species, onset of disease in the forest, new mill technologies and changing global markets make forest sector careers exciting and rewarding.

Phil Cruz, District Ranger
U.S. Forest Service

Forest Sector Employment Percentages, by County



Oregon Employment Department

Forest "Treevia"

Eight out of ten forest sector jobs are in rural areas of Oregon.

For additional information about Forest Practices and Forest Careers, visit these sites:

- *Oregon Forest Resources Institute* — *www.oregonforests.org*
- *Society of American Foresters* — *www.safnet.org*
- *Temperate Forest Foundation* — *www.forestinfo.org*
- *Oregon Department of Forestry* — *egov.oregon.gov/ODF*
- *US Forest Service* — *www.fs.fed.us*
- *Oregon State University College of Forestry* — *www.cof.orst.edu*
- *Idaho Forest Products Commission* — *www.idahoforests.org*
- *California Forest Products Commission* — *www.calforests.org*
- *Associated Oregon Loggers* — *www.oregonloggers.org*
- *World Forestry Center* — *www.worldforestry.org*
- *Bureau of Land Management* — *www.blm.gov*

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