

## OREGON'S FOREST PRACTICES

ACHIEVING A SUSTAINABLE BALANCE THROUGH LAW,  
SCIENCE AND COLLABORATION



Oregon Forest  
Resources Institute

# RULES TO LIVE BY



# SEEKING BALANCE

An ever-changing work in progress



**TOM IMESON** Chair of the Oregon Board of Forestry and former aide to U.S. Sen. Mark Hatfield; has worked with three Oregon governors

On these pages you'll meet 11 dedicated Oregonians, a few among thousands who work to help balance ecology, economy and society in Oregon's forests. As chair of the state Board of Forestry, I'm grateful to have a role, too — through the board's duty to develop the rules of the Oregon Forest Practices Act.

This law states that growing and harvesting trees is the "leading use" of private forestland in Oregon. It also requires that we protect soil, air, water and wildlife for future generations. In other words, it directs us to find a sustainable balance among sometimes competing objectives.

It's no easy task. Science and forest professionals continually give us new insights. Public priorities shift. And people disagree. That's true on the Board of Forestry — and also in this publication. Yet, the more of these stewards I meet, the more I'm impressed by their passion, skill and sincere desire to solve problems.

I'm convinced Oregon is doing as well as any state to produce a sustainable supply of wood, while safeguarding our environment. That doesn't mean our work is done. Ultimately, Oregon's Forest Practices Act is more than a mere set of rules. It's an ongoing process — and our collective responsibility.

A handwritten signature of Tom Imeson in black ink.

As Oregon began implementing the Forest Practices Act in 1971-72, Mark Edlen arrived as a student at the University of Oregon. He got involved in the Outdoor Program, took up kayaking and developed a deep concern for the environment.

Today his property development firm has completed some 60 LEED projects, including some that are hallmarks of



**MARK EDLEN** CEO of Gerding Edlen, a Portland firm focused on sustainable property development; Ecotrust board member

# WHY WOOD?

## Can Portland's urban development be an economic boost for rural Oregon?

Portland's new vibrancy. In the past he built mostly with concrete and steel. A new project, a six-story Portland building, relies on glulam timber (large beams made by gluing together small boards).

Edlen has long harbored concerns about logging's effects, but he says he is intrigued by the renewable, sustainable qualities of wood and by new ways to build larger wood buildings. He likes the idea of local wood, harvested responsibly. And he hopes his new project creates an intersection between Oregon's sometimes distinct urban and rural economies.

"I'm a city person," he says. "I don't know a lot about timber. But our rural economy is a big concern. Is it possible forward-looking buildings like this can create jobs in our woods? That's a big deal for rural Oregon."

### WOOD AS A GREEN BUILDING MATERIAL

- LEED, which stands for Leadership in Energy & Environmental Design, is a commercial green-building certification system. There's been disagreement about how LEED awards points for "certified" lumber. Still, LEED's governing body, the U.S. Green Building Council, notes that "Wood is a sustainable and renewable building material that has a low impact on the environment," and "use of wood as a building material is among the most highly incentivized strategies in LEED."
- Trees absorb carbon dioxide from the atmosphere as they grow, and carbon remains stored in the wood after harvest. Jim Bowyer of Minneapolis-based Dovetail Partners, which specializes in helping people understand the environmental tradeoffs of decisions such as choosing building materials, has written: "Even when carbon emitted in all the steps of processing (wood products) is considered, the net result is carbon storage rather than emission of carbon; this is not the case for any other construction material."
- Despite the controversy over LEED recognizing or not recognizing various wood certification systems, Bowyer notes that of all major construction materials, wood is the only one that has any effective third-party verification and standards regarding responsible, sustainable production.



# A HISTORY

The first law of its kind in the U.S.  
has been anything but static



Photo: Jim Rivers, Oregon State University College of Forestry

**BASED ON SCIENCE** Ongoing research in Oregon is exploring how songbirds, such as this white-crowned sparrow, respond to a range of management practices in regenerating young forests. It's the kind of scientific work that has informed changes in the Forest Practices Act over the years.

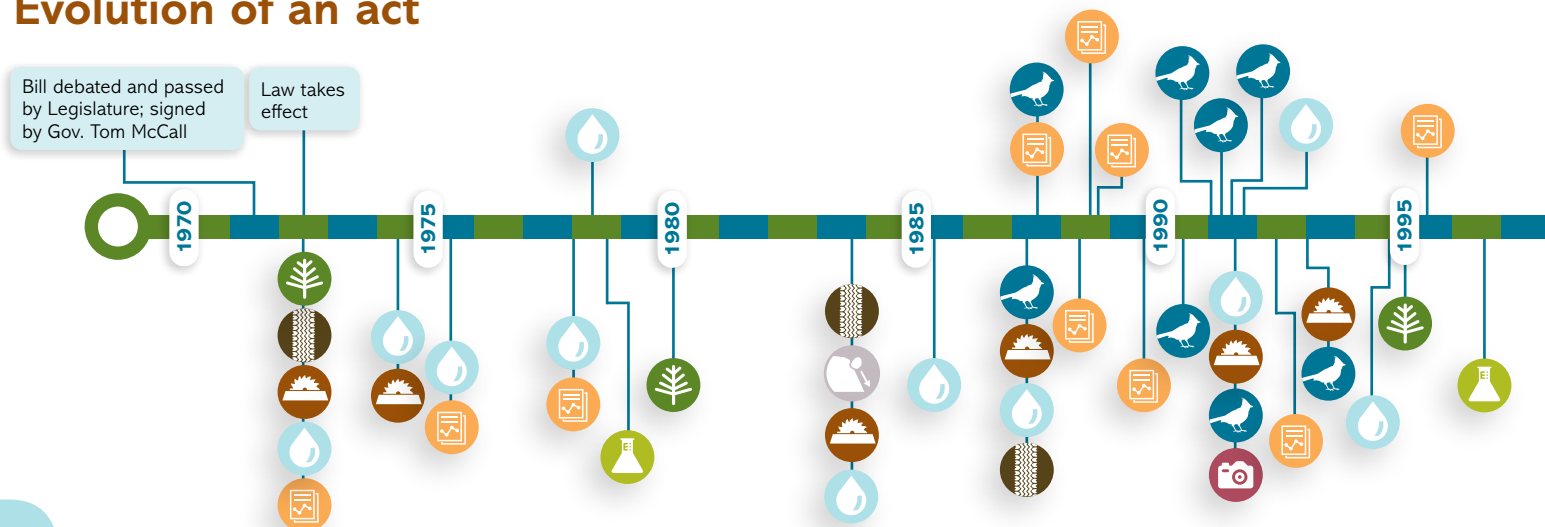
As the Oregon Forest Practices Act wound its way through the Legislature in the spring of 1971, it wasn't big news. House Bill 1624 passed the Senate, 27-0. It passed the House, 49-9. Gov. Tom McCall signed it into law on June 7. Reports in *The Oregonian* were brief, buried in the newspaper's back pages – perhaps because landowners and foresters were supportive.

Today, the event is seen as a milestone. It was the first law of its kind in the nation, requiring that timber harvests' economic benefits be balanced with environmental protections.

Since then, the law and its rules have been amended more than 30 times. This was by design. The law gave the state Board of Forestry responsibility for adopting and amending rules based on “available scientific information.”

“The question of whether we're managing forests sustainably is one we must continually ask,” says State Forester Doug Decker. “There's not an endpoint. But the Forest Practices Act is relevant, valid, alive and well positioned to evolve. And to be healthy over time, it needs to evolve. Looking back, I think the original proponents would be proud of what we've done with their legacy.”

## Evolution of an act



## The science of growing a new forest

Fresh out of Yale's forestry school, Mark Triebwasser landed in Coos Bay, managing reforestation of harvested land. The Forest Practices Act had been in effect only a few years. At the time, foresters expected half the seedlings they planted to die. To meet requirements, they planted as many as 800 trees per acre.

Triebwasser moved on to a research job, studying how cold affected trees and figuring out how to grow seedlings faster. Now he manages a tree nursery that ships 16 million seedlings, of 40 species, every year. Those seedlings are essential to landowners meeting reforestation rules.

Today – because of better seedlings, improved planting methods and other changes – more than 90 percent of seedlings survive, so foresters can plant fewer trees per acre to regrow a thriving forest. New trees may be 4 or 5 feet tall within two or three years after planting.

A few years ago, Triebwasser returned to Coos Bay and drove out to one of the first plots he'd reforested. The trees were nearly 35 years old and big enough to harvest. "I've seen the whole cycle," he says.



**MARK TRIEBWASSER**  
Manager of Weyerhaeuser  
tree nursery, Aurora

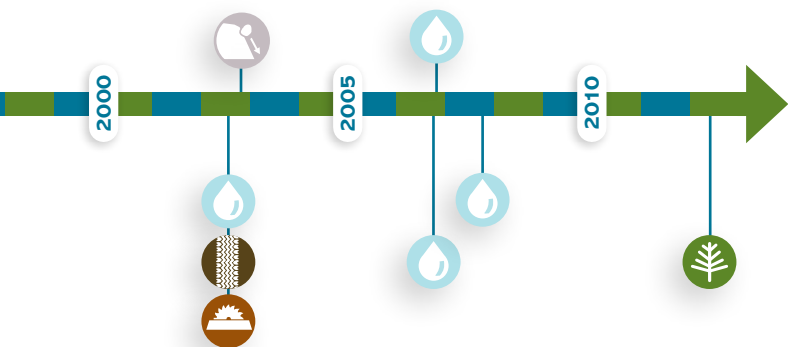
## OREGON FOREST PRACTICES ACT: KEY RULES

To ensure new forests are promptly established and growing after harvest:

- **Planting:** Landowners must complete replanting of harvested ground within two years.
- **Ensuring success:** Within six years of harvest, the young trees must be “free-to-grow.” That means they are vigorous and tall enough to out-compete grass and brush and grow into a new forest.
- **Trees per acre:** Depending on site productivity, the rules require a minimum of 100 to 200 well-distributed trees per acre that must survive following replanting.
- **Selective harvest or thinning:** Even after a partial harvest, a landowner may be required to replant additional seedlings to ensure a sufficient number of trees per acre.

40 million

## Seedlings planted each year in Oregon's forests



## Rule changes by topic



## FISH HABITAT & WATER QUALITY



## REFORESTATION



WILDLIFE



## CHEMICALS



SCENIC



## ROADS



ADMINISTRATIVE\*



LANDSLIDE



## CLEARCUTS & HARVESTING

\*Administrative changes include landowner and operator reporting requirements, the makeup and processes of the Board of Forestry, enforcement procedures, public access to documents, appeals of rulings, etc.



## HERMAN BIEDERBECK

Wildlife biologist, Oregon  
Department of Fish & Wildlife,  
Tillamook

# WILDLIFE

## Forest openings are necessary, but not all openings are equal

### OREGON FOREST PRACTICES ACT: KEY RULES

When a harvest is larger than  
25 acres:

- **Standing trees:** Crews must leave standing live trees or snags, at least two per acre of harvest, each at least 30 feet tall and 11 inches in diameter.
- **Down logs:** Crews must leave at least two logs on the ground, each at least 10 cubic feet.
- **Location:** Trees and down logs don't have to be left in each acre. Logging safety is often a factor. The trees left behind may be combined into small groves and are often located near water.

Forest openings — created by wind, fire or timber harvest — are necessary to many animals.

“If you look at how nature creates openings,” says Herman Biederbeck, who advises landowners on wildlife, “outcomes are random and varied,” with standing dead trees, patches of live trees and down logs.

Dozens of vertebrate species live in snags and logs. That’s why forest practice rules require loggers to leave some trees and logs after harvest. Biederbeck appreciates these provisions, and he says many animals such as elk, bear and songbirds are doing well in working forests.

### HOW ARE WE DOING?

A 2014 study\* of actual harvest units reports:

- Older trees, snags (standing dead trees) and logs retained in young forests have been shown to increase wildlife diversity and abundance.
- Landowners have achieved 97 percent compliance with wildlife tree and down-wood rules.
- The size of trees and down wood left after harvest provided much greater benefit than was required.
- Less than 5 percent of wildlife trees left were standing dead trees, often called “snags.”

\* Oregon Department of Forestry. Compliance with Leave Tree and Downed Wood Forest Practices Act Regulations. April 2014.

Yet he sees some gaps in the rules: For instance, locating wildlife trees to help riparian areas may shortchange animals that prefer upland slopes. “Riparian and upland areas should stand alone, because they meet different habitat needs,” Biederbeck says. He sometimes encourages landowners to position wildlife trees in ways the rules don’t necessarily require.

In general, landowners are receptive. “There are examples of very good work on private land,” Biederbeck says, “but economic considerations weigh heavily.”

There’s new science in the works, he says. “It may prompt another look at the rules.”



# WATER AND FISH

## Collaborating to improve streams and watersheds

On the day in 2006 when Tara Davis interviewed for a job with the Calapooia Watershed Council, she arrived in Brownsville early and decided to drive up the valley to look around. The watershed is 95 percent privately owned. Davis wasn't used to that scale of private industrial forest management. "I almost didn't take the job," she remembers.

But since then the council has joined with landowners and timber companies on 7 miles of voluntary stream improvements. Davis says, "We've built meaningful partnerships, and I've seen how hard they work to manage a balance between economic and ecological health."

The next four years, she says, will be an important test, as one industrial landowner harvests most of the headwaters of the watershed.

### OREGON FOREST PRACTICES ACT: KEY RULES

- **Stream buffers:** Trees and vegetation must be left along streams in which fish live. The buffers shade the stream, keeping water cool. And trees left alongside the stream will someday fall across or into the stream, which improves fish habitat by providing pools of slow water and hiding places for young fish.
- **Additional rules:** Rules for road building (see page 10) and chemical application (see page 12) involve measures to protect water quality and fish habitat.

"I'm going to trust that the harvest design and stream buffers provide good protection, but it will be interesting to see what we learn collectively about the rules," she says. "The landowner's scientists are interested and invested, too. Overall, I feel good about the future."



**TARA DAVIS** Executive director, Calapooia Watershed Council, Brownsville

### HOW ARE WE DOING?

The Watersheds Research Cooperative, housed at the Oregon State University College of Forestry, is conducting 10-year experiments in three Oregon watersheds to test how current forest practices affect streams. Results from the first experiment to be completed, at Hinkle Creek near Roseburg, found that harvest produced minute changes in streams, but that "changes were often difficult to detect, not acute, often subtle." As for fish, few detrimental effects have been detected in the watersheds so far. Learn more at: [watershedsresearch.org](http://watershedsresearch.org)

# HARVESTS AND CLEARCUTTING

Today's techniques increase efficiency and reduce soil disturbance



JIM HALL Stewardship forester, Oregon Department of Forestry, Florence

Jim Hall's been a forester around Florence since the late 1970s. As a state stewardship forester, his job is to make sure landowners comply with forest practice rules.

Hall knows it's difficult to make a clearcut loveable. "People just think they're ugly," he says. And past practices, illegal now, still color public opinion.

He recalls one 700-acre clearcut he encountered in his earlier years as an example. "I knew a guy who used to say a deer would have to pack a lunch to get across it," he quips. The limit today is 120 acres.

"People assume a clearcut means erosion. That's not necessarily the case with the logging that's practiced today," Hall says. "It's different."

In the past, logs were dragged across the ground downhill to roads near creeks. Now cables carry suspended logs uphill to a road on the ridgeline. Less soil is disturbed, and roads, trucks and other equipment are kept away from streams. Skyline logging is not only better for the environment but also more efficient.

"It's a win-win," Hall says. "Most of the loggers and landowners I work with

## WHY CLEARCUT?

- It limits the disturbance and presence of machinery to just a month or two every 40 years or so.
- It's an economically efficient way to harvest wood and establish the next forest.
- Native Douglas-fir seedlings will not grow well if planted after a thinning – they need full sunlight to thrive and grow into a new forest.
- Historically, Douglas-fir forests were established in large openings created by natural disturbances such as wildfires.



know the importance of environmental protections. They understand the social license. They saw things like their grandfathers not bothering to reforest and the consequences of that. There's a generational change, definitely. I've seen the Forest Practices Act become a way of life, and it's continually changing for the better."

## OREGON FOREST PRACTICES ACT: KEY RULES

- **Acreage:** Clearcuts cannot exceed 120 acres within a single ownership, including the combined acreage of any clearcuts within 300 feet of each other.
- **When is a clearcut no longer a clearcut?** Once replanted trees reach 4 feet tall, the young forest is no longer considered a clearcut, for the purposes of harvesting adjacent areas.
- **Related rules:** Rules related to reforestation (see page 5), wildlife habitat (see page 6) and landslides (see page 11) might apply.



**WILDLIFE TREES** Older trees and snags provide habitat in a replanted young forest.



# FOREST ROADS

## Careful siting and construction reduce effect on streams

When Jennifer Beathe joined the timberland company Starker Forests in 1998, one of her duties was driving and walking hundreds of miles of its forest roads. She documented their condition and looked for signs of problems that might allow muddy water to enter a stream.



JENNIFER BEATHE  
Forest engineer, Starker  
Forests, Corvallis

### OREGON FOREST PRACTICES ACT: KEY RULES

- **Where and how:** The location, construction, maintenance, use and drainage of forest roads must prevent sediment from getting into streams. Rules encourage roads to be built away from streams.
- **Stream crossings:** The number of times a road crosses a stream must be minimized. Where crossings do occur, fish must be able to pass through the crossing.
- **Wet-weather hauling:** Log trucks may not use some forest roads during wet weather.
- **Related rules:** Additional rules related to landslides may apply (page 11).

“We don’t harvest timber until it’s 50 to 80 years old. So some old roads may not have been used much for decades,” she says. “Our standards are much different now. We understand more about the environmental impact – and how to reduce it.”

While essential for getting timber to the mill and fighting wildfire, forest roads – especially older, “legacy” roads – were a challenging source of water quality problems. The way roads are built, and where they are built, has been revolutionized in the past 20 or 30 years.

“We can’t eliminate all sources of human-caused sediment,” Beathe says. “But we can minimize and isolate them in a way that gives me confidence we can continue to grow and harvest trees while protecting the water and the fish.”

### AN EXAMPLE OF RULE EVOLUTION

In the early 2000s, the Department of Forestry looked at whether log trucks using forest roads during heavy rain caused sediment to muddy streams. The study\* found some concerns and helped inform a change to forest practice rules in 2002, requiring use of higher quality rock or the suspension of log hauling during very wet weather.

\* Oregon Department of Forestry. *Wet Season Road Use Monitoring Project Final Report*. June 2003.



## OREGON FOREST PRACTICES ACT: KEY RULES

- **Public safety:** The state can prevent private timber harvest on a steep slope if homes or busy roads lie in the path of a potential landslide that could begin in the harvest area.
- **Fish habitat:** ODF can suggest or require that trees be left near some smaller stream channels, so if a landslide occurs, trees are carried downstream. That's because large wood in streams improves fish habitat, so slides can be ecologically beneficial in the long term.



JOHN SEWARD

Geotechnical specialist,  
Oregon Department of  
Forestry, Roseburg

# LANDSLIDES

## Two major rule changes help reduce risk of landslides

In 1996, two drenching storms pounded western Oregon. More than 6 inches of rain fell in one day in some places. Thousands of landslides resulted. On the one hand, slides are a natural geological event on rain-drenched steep slopes. On the other, human activities can have an impact.

“We do understand timber harvest can exacerbate the risk,” says John Seward, a geotechnical specialist with the Oregon Department of Forestry.

The 1996 storms prompted a rule change that gave the Department of Forestry authority to prohibit timber harvest on steep slopes when homes or busy roads lie in the path of a potential slide. Seward’s job is to assess that risk and decide whether harvest is safe or not.

Another major rule change dates back to 1983. It prohibits a crude type of road construction that was prone to slides. That’s when ODF started hiring geotechnical specialists. Seward joined in 1985.

“We’ve come a long way. Forest landowners are much more cooperative and collaborative,” Seward says. “They understand they are allowed to operate through a social contract with the people of Oregon. Most of the landowners I work with try hard to do the right thing.”

### HOW ARE WE DOING?

Research\* shows that roads built using the 1983 road rules are less likely to experience landslides than older roads.

\* Oregon Department of Forestry. *Storm Impacts and Landslides of 1996: Final Report*. June 1999.

Now retired from a 30-year career teaching grade school in Corvallis, Nancy Hathaway, along with her husband, manages about 1,000 acres of forestland. Some she inherited from her forester father; some she bought herself.

While she acknowledges ongoing public concern – especially about aerial spraying near homes – she’s been carefully using herbicides, similar to those homeowners use, for 30 to 40 years and says they have been a tremendous innovation in getting young forests growing.

“Remember that harvested land has to be successfully reforested within six years of harvest,” she says. “That’s harder when seedlings are buried under a mat of blackberry or scotch broom.”

She adds that herbicides are typically applied on any piece of ground just two or three times in 40 or 50 years. After a harvest but before planting, herbicides clear the site of fast-growing, often invasive species, such as blackberry. In the spring, after planting, herbicides are sprayed to kill plants that would compete with the new seedlings. Sometimes a landowner will spray again the following spring. But that’s usually the last spray until the next harvest decades later.



**NANCY HATHAWAY**  
Retired teacher and family  
forestland owner, Corvallis

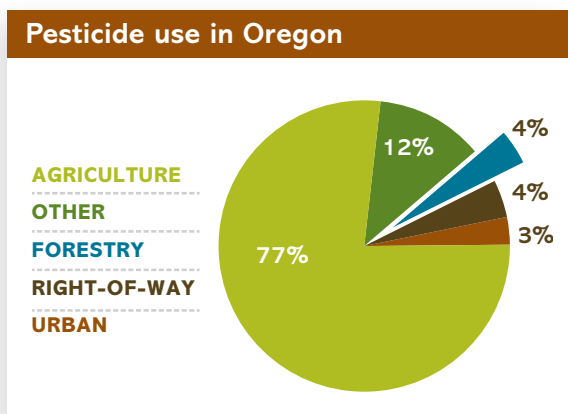
# CHEMICALS

## Landowners use herbicides to control unwanted vegetation

Most pesticides used in forestry are herbicides, which are a class of pesticides and are relatively low in toxicity to people, animals and fish.

The table breaks down pesticide and herbicide use reported in Oregon in 2008, the most recent data available.\* The total **does not include residential use** of chemicals by consumers, for which there is no reliable data.

\* Oregon Department of Agriculture. *Pesticide Use Reporting System Annual Report 2008, 2009.*



## OREGON FOREST PRACTICES ACT: KEY RULES

- **Buffers:** It is illegal to spray herbicides in or near streams, where they might impact vegetation or insects, which are food sources for fish. Aircraft must not spray within 60 feet of fish and domestic use streams. Ground spraying requires staying at least 10 feet away.
- **Weather:** Chemicals may not be applied if weather might carry them offsite.
- **Other:** Landowners must notify state officials of chemical use and keep daily records. Federal and state laws and label directions must be strictly followed.



# SCENIC HIGHWAYS

## Tourism industry benefits from roadside buffers

From the beginning, the Forest Practices Act required protection of water, air, soil, fish and wildlife.

In 1991, the Oregon Legislature passed a major amendment that, among other things, added “scenic resources” to that original list. The amendment defined 26 state highways and four interstate highways as “visually sensitive corridors,” where buffers of standing trees would have to be left along the road.

Samara Phelps, whose business is marketing travel and tourism, says, “Our biggest asset is the geography of Oregon itself – the coast, the trees, the mountains. Visitors say, ‘It’s so green!’ We hear that over and over, all the time.”

She’s certain the scenic buffers enhance travelers’ experiences, and she hears very few comments about logging. When people do ask, it’s usually just curiosity about timber as an industry, she says.

“We literally get people who want postcards of the highway,” she says. “There’s a ton of value in the buffers. They’re working – and they are very much appreciated. Those trees that are standing are providing an economic impact.”

### OREGON FOREST PRACTICES ACT: KEY RULES

Along any designated scenic highway:

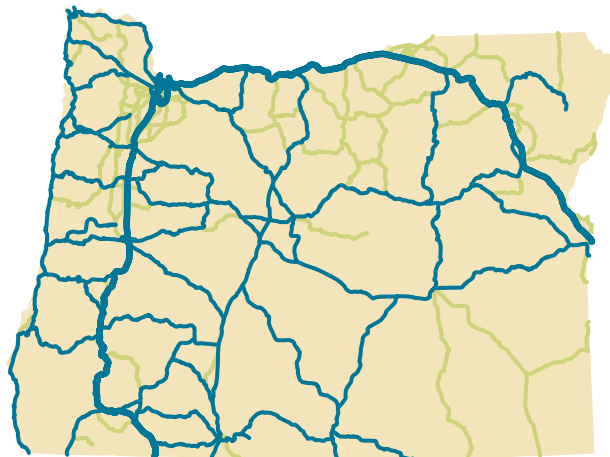
- **Buffers:** A harvest must include a buffer of trees 150 feet wide along the roadside. When new trees behind the buffer have grown to at least 10 feet tall, trees in the original buffer may be harvested. The Oregon Department of Transportation may make exceptions to this rule for highway safety.
- **Debris:** Major debris from harvest must be removed quickly.
- **Reforestation:** Replanting of a harvest site must happen within one year of harvest, rather than the usual two years.



**SAMARA PHELPS**

Director of visitor services,  
Travel Lane County

### Which are the scenic highways?



Blue lines show visually sensitive highways that are protected by Oregon law.

# MONITORING

## How Oregon keeps track of rule compliance and rule effectiveness

### PAUL CLEMENTS

Compliance/training coordinator, Oregon Department of Forestry, Salem

The Oregon Forest Practices Act has more than 280 enforceable rules. For the past couple years, Paul Clements has been one of those working on a statewide audit to figure out how well loggers and landowners comply with the rules.



“There are opponents of the Forest Practices Act, and there are proponents. I like to think of myself as a component,” he says.

Without information about how well the rules are accomplishing their goals and how well people are complying with the rules, it would be hard to make constructive changes or know what kind of education is needed. That’s why the Oregon Department of Forestry monitors both compliance and effectiveness.

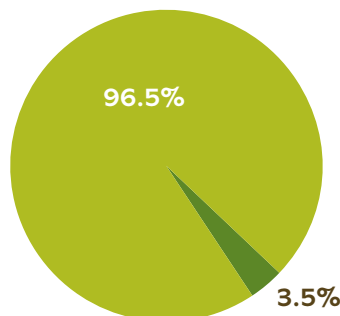
An example of effectiveness monitoring is an ODF study that measured stream temperature changes after timber harvest. The Board of Forestry is deliberating on whether the results merit a rule change.

Then there is the compliance audit that Clements works on. In 2013, for example, it looked at landowner compliance with rules regarding roads, harvest and riparian areas. It found 96.5 percent compliance overall.

Where the results show lower compliance, ODF can then focus its education and enforcement efforts with landowners and other forest professionals. Subsequent audits will help show trends over time.

### How well are they working?

**COMPLIANCE**  
**NON-COMPLIANCE**



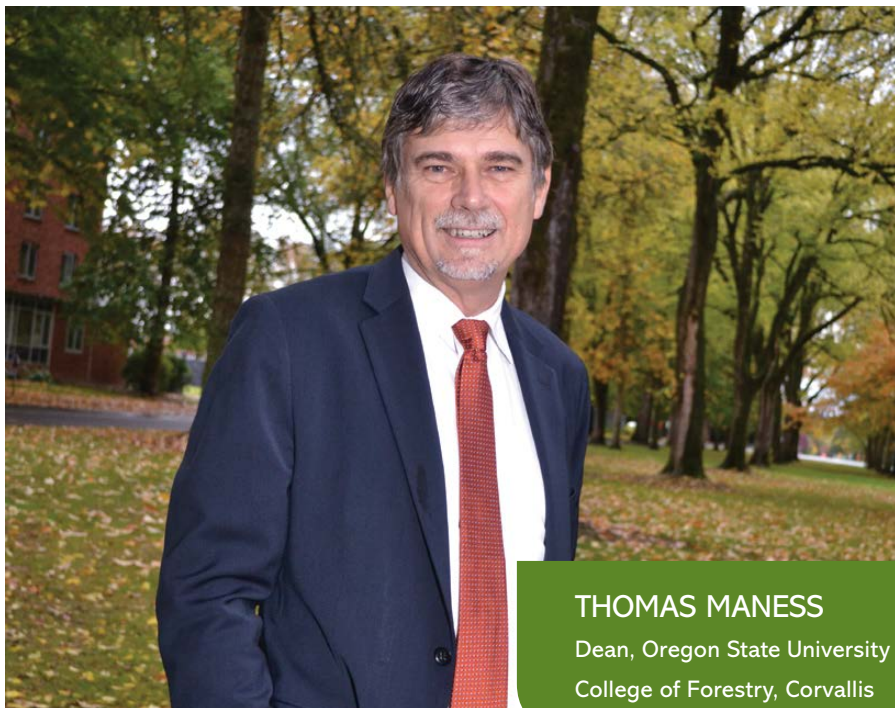


What might the next few decades of the Forest Practices Act look like?

“Looking 20 years out, we’re going to realize we need to build with sustainable materials, like wood,” says Thomas Maness, OSU’s College of Forestry dean.

The public is becoming better acquainted with the benefits of wood compared to other materials such as concrete, steel and plastic, he believes.

And while the Forest Practices Act sometimes is seen as balancing society,



**THOMAS MANESS**  
Dean, Oregon State University  
College of Forestry, Corvallis

# THE NEXT 40 YEARS

## A big-picture look to the future

economy and environment, Maness suggests that they are all interrelated, and there may be ways to improve all three at the same time. For instance, healthier rural communities can grow from better economies, which might require the manufacture of value-added products, which will mean using science and technology to create innovative wood products. The focus on value changes how forests are managed.

In 2013, Maness launched the Institute for Working Forest Landscapes to pursue strategic, interdisciplinary research on ideas like these and on advanced science to inform the future of the Forest Practices Act.

“The Forest Practices Act is an evolutionary document. And it’s not necessarily the case that it just gets more restrictive,” Maness says. “It’s about improving our understanding so we’re controlling the things we need to control to protect the important things – instead of trying to protect everything because we don’t understand what’s happening.

“Oregon’s environmental values are extremely high. People really care. We want to have the best system we can possibly have. Along with our natural strength as one of the best places in the world to grow trees, that’s Oregon’s competitive advantage.”





## RENEWABLE RESOURCE

A private working forest in the Oregon Coast Range shows a mosaic of diverse age classes and species

## ACKNOWLEDGMENTS

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## ABOUT OFRI

The Oregon Forest Resources Institute was created by the Oregon Legislature in 1991 to advance public understanding of forests, forest products and forest management and to encourage sound forestry through landowner education. A 13-member board of directors governs OFRI. It is funded by a dedicated forest products harvest tax.



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