WILDLIFE
in managed forests

FORESTS WORKING FOR WILDLIFE

Photo: Jon Cox

Celebrating intentional habitat management on privately owned forests.

Oregon Forest Resources Institute

Photo: Jordan Benner

The Oregon Forest Resources Institute started its Wildlife in Managed Forests (WIMF) program nearly 20 years ago. The program provides private landowners and managers with information about the latest scientific research and science-based management practices to benefit the many species of native wildlife that rely on Oregon's forests. Over the years, the program has grown to include a series of publications, fact sheets and reference guides that include management recommendations for species such as marten and fisher, deer and elk, amphibians, native bees, songbirds, and lots more.

A steering committee of wildlife and forestry experts representing private forest landowners, government agencies and other wildlife or forestry-related organizations helps inform and provide guidance to the program.

The WIMF program focuses on the following core themes:

- **Forests of all ages provide habitat for wildlife.**
- **A mosaic of habitats across the landscape provides for many species of wildlife.**
- **There are lots of management actions managers can implement to help keep common wildlife species common.**
- **Robust research is critical for understanding the interaction between forestry and wildlife, which in turn informs forest management decisions.**

We're grateful to be part of the legacy of the WIMF program. We're proud of Oregon's forest managers and stewards who have embraced taking actions on their land that benefit wildlife, participating in research and providing public benefits — all while continuing to produce wood products and other resources society needs.

At our core, Oregonians care deeply about wildlife and the lands we live on. In this publication, we highlight a few examples of success (we know there are many more) and hope readers will learn even more about how privately owned working forests contribute to wildlife habitat in Oregon.

Julie Woodward, Deputy Director,
Oregon Forest Resources Institute

Fran Cafferata, Certified Wildlife Biologist®,
Cafferata Consulting

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Photo: Nick Winner

Elk are commonly found in managed forests. They often use young forests where food is abundant.

OREGON'S FOREST HABITAT

Forests are dynamic ecosystems

Forests are dynamic ecosystems and the habitats they provide are constantly changing. Trees start as tiny seedlings and grow into tall trees providing for wildlife in different ways throughout their life cycles. Some trees die from wildfire, insects or disease. Others are cut down to make building materials, and new seedlings are planted in their place.

Throughout our natural history, disturbances such as fires, landslides, earthquakes, windstorms, volcanic eruptions, climate changes and diseases have resulted in a dynamic forest landscape. Natural disturbances, along with human activities in the form of agriculture, logging and urban growth, have profoundly affected forest wildlife and their habitats.

Photo: Jim Rivers

Photo: Bonny Glendenning

Advances in our understanding of forest ecosystems, both through research and the practical experience of forestry and wildlife professionals, have informed sustainable forest management practices that consider the impact of human activity on forest-dependent wildlife. Scientists and land managers have developed and continue to refine research-based strategies for managing wildlife populations, protecting threatened or endangered species, and enhancing wildlife habitat, all while managing forests for the social, environmental and economic benefits they provide. A common thread among land managers is the belief that stewarding wildlife and their habitats is an integral part of responsible forest management.

Left: **Oregon's working forests are dynamic and change over time.**


Photo: Mark Penninger


Photo: Jessica Homyack


Photo: Jason Mack

From previous page, left to right:

Biologists work with foresters to understand and manage for wildlife.

Great gray owls occupy habitat in some managed forests in Oregon.

Ensatina salamanders are commonly found in Oregon's forests and rely on down wood.

Mule deer in eastern Oregon use a variety of forested habitats.

FAQs

What is sustainable forest management?

Sustainable forest management is commonly defined as practicing forest management that meets the needs of the present generation for environmental, social and economic benefits from our forests without compromising the ability of forests to provide these same benefits to future generations.

By this definition, modern sustainability principles call for managing forests for multiple objectives, including providing wildlife habitat, increasing forest resilience to disturbances and climate change, protecting water quality, and providing recreation opportunities.

What is a working forest?

A working forest, also known as a "managed forest" or "production forest," is managed primarily to produce renewable wood products such as lumber, plywood, pulp and fuelwood. In this publication, we use this term to describe forests that are actively managed for an array of benefits including forest products, clean water, recreation and wildlife habitat.

What is wildlife habitat, and where is it?

Wildlife habitat matches the needs and habits of a particular wildlife species. A species' habitat is an area with the combination of necessary resources (e.g., food, cover, water and space) and environmental conditions (e.g., temperature, precipitation, and presence or absence of predators and competitors) that are ideal for that species, allowing its members to survive and reproduce.

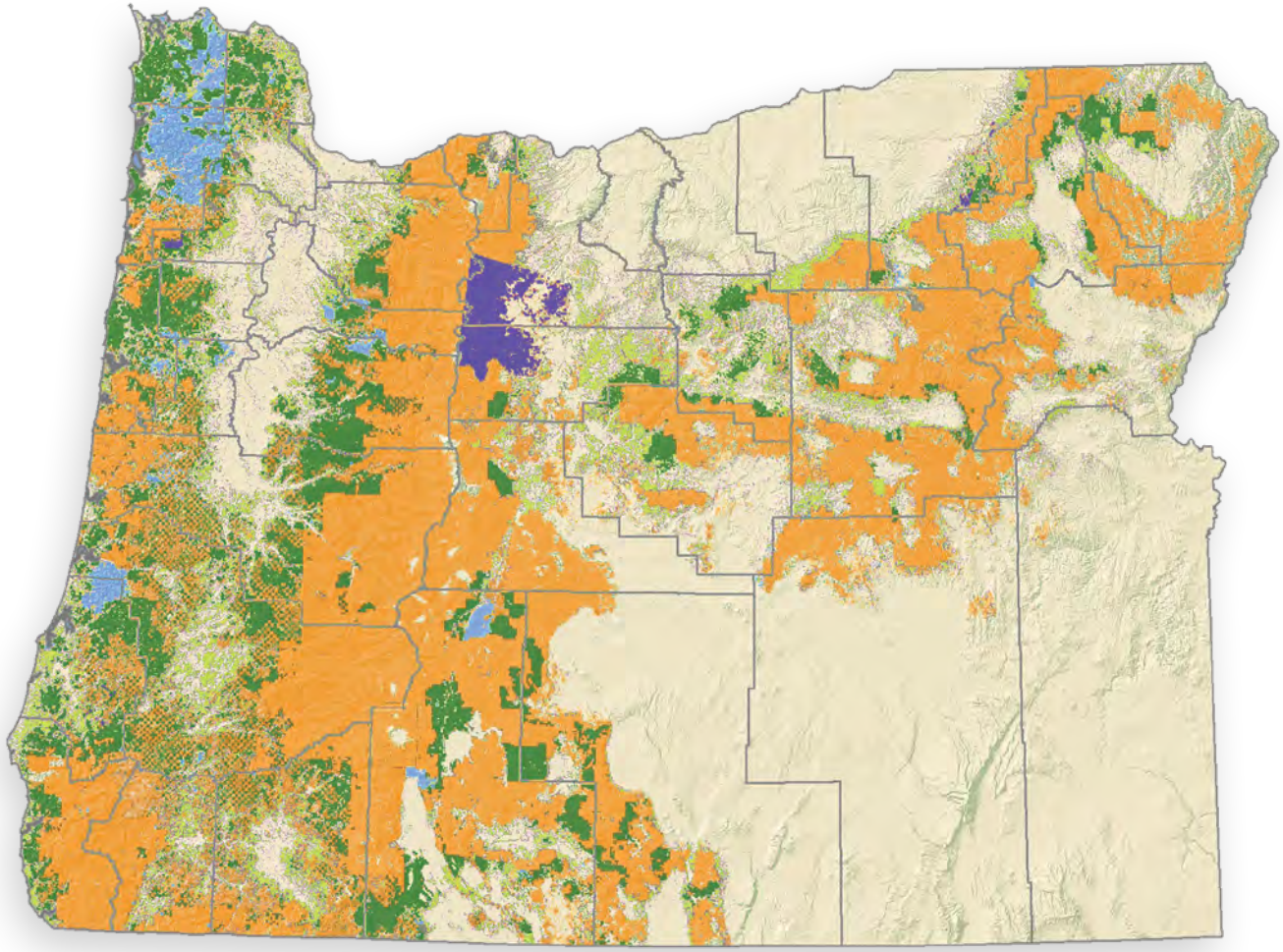
The arrangement of these habitat resources and features to meet the biological needs of a species provides a framework for the ecological roles or functions that individual species plays within the environment — in other words, the species' niche.

How much habitat is enough, and which forest characteristics are needed? This varies greatly among wildlife species and across the seasons of the year. Because of this variability, the concept of "habitat" literally covers a lot of territory. In fact, the entire landscape may be considered habitat, because different wildlife species and communities interact with the land and with one another at multiple scales — from a drainage basin to a river valley, to a watershed within the valley, to a riparian area associated with a single stream.

Many species will use a variety of forest growth stages and structures (habitat types) to complete the functions of their daily lives (e.g., foraging and nesting may utilize two or more habitat types); and, more broadly, species may migrate or expand their territories during certain times of the year or as part of their life cycles. Not every wildlife species is, or can be, present on every acre at any point in time, because each has unique needs when it comes to the type of habitat it needs to survive and reproduce.

Because of the variety of wildlife we have in Oregon, it's important to maintain a balance, or a mosaic, of different habitat types across the landscape. In forested environments, that means it's just as important to have young forests as it is to have older forests, because different species depend on different ages of forests.

FOREST OWNERSHIP AND WILDLIFE HABITAT



FORESTLAND OWNERSHIP

- FEDERAL
- LARGE PRIVATE
- SMALL PRIVATE
- STATE & COUNTY
- TRIBAL

Nearly half of Oregon is forestland that provides varied habitat for a wide array of wildlife. Across the landscape, you'll find young, middle-aged and mature forests. Depending on the climate, amount of rainfall and other growing conditions, certain trees dominate some forests. Others feature a mix of species. In each type of forest, you'll find wildlife.

Another way Oregon's forests vary is that they are managed to reflect the objectives and practices of a diverse array of landowners. These include the federal government, which owns the largest portion of Oregon's forestland; state, county and municipal governments; large and small private land owners/managers; nonprofits; and tribes (see map). Each has a range of goals for the lands they manage, but providing wildlife habitat is a common goal among all ownership types.

Oregon's private timberlands — which produce about three-quarters of the state's total timber harvest — are actively managed for forest products, clean water, recreation and wildlife habitat. Recognition is increasing about

Photo: Jon Cox

Left: **Orange-crowned warblers rely on young forests for nesting and foraging.**

Right: **Young forests are important for a variety of species, including many pollinators.**

All forest ages are habitat for wildlife. Actively managed forests include forests from tiny seedlings to mature timber in a mosaic across the landscape.

Photo: Jim Rivers

the contributions these forests make to the conservation of biodiversity. This is especially true for species that rely on clearings with young trees and an abundance of flowering and fruit-producing plants, which are often created through disturbance to the forest. These areas, known as "early seral" and "mid-seral" forests, support a variety of species, such as the white-crowned sparrow, orange-crowned warbler, and many bee and other pollinator species. Additionally, young forests provide habitat for deer and elk. Timber harvest, especially clearcutting, can resemble larger or more severe natural disturbances that damage or kill many mature trees and create habitat in young, open forests that return following disturbance.

While the federal government manages most of the forestland in Oregon, a relatively small portion of Oregon's timber harvest happens on federal land, and most of that is from thinning. This means federal forests tend to be older forests (mid-seral and "late seral") with mature trees that support habitat for a different set of wildlife species, such as the northern goshawk, northern spotted owl and Humboldt flying squirrel.

Since not all wildlife use forests the same way, it's important to have a mosaic of different forest ages across the landscape. In the following sections, we'll highlight how Oregon's working forests are important to wildlife, as well as explore how forest landowners manage these forests to produce timber and provide wildlife habitat.

All forest ages are important to wildlife

Because of the variety of wildlife we have in Oregon, it's important to maintain a balance, or a mosaic, of different habitat types across the landscape. In forested environments, that means it is just as important to have young forests as it is to have older forests, because different species depend on different ages of forests.

Illustration: Heidi Schultz

CASE STORY

Supporting forest pollinators

When most people think about forest wildlife, bees aren't typically their first thought.

Until recently, bees weren't top of mind for Oregon's forest management companies, either. But with strong scientific evidence showing that private forests support a diversity of native bees, that perception is changing.

In 2016, David Hampton, co-owner of Portland-based Hampton Lumber, attended a forestry conference that discussed the decline of pollinators. Knowing that the flowering plants that attract bees and other pollinators thrive in sunny forest clearings, he asked the company's foresters if they could spread wildflower seeds in recent clearcuts.

"Our silviculture foresters gave him this deadpan look, like you want us to do what? We grow trees, now you want us to plant flowers?" says Lindsay Davis, community engagement and stewardship coordinator with Hampton Lumber.

Despite the initial shock he heard from the foresters, Hampton persisted, and the company established its first wildflower plot for pollinators in 2017 on a site on the northern Oregon Coast. Hampton Lumber's pollinator project has since expanded to cover about 450 acres in Oregon and southwest Washington, providing an important food source for native bee species and inspiring the Oregon Department of Forestry and other companies to adopt similar efforts.

Davis oversees the project, coordinating wildflower seed planting in conjunction with the company's logging plans, and ensuring the pollinator plots are maintained until replanted trees grow large enough to shade out the flowering plants. At that point, she'll have already established another nearby plot of flowers where the bees can forage instead.

"I call it a choreographed dance between (logging) operations and pollinators," she says. "Naturally, we're able to marry the two because we can get a pollinator plot established on a recently harvested and planted unit, then establish flowering pathways and corridors to the next open area before the canopy closes on that unit. We are excited to find established nests on some of our pollinator sites in Oregon. It is such a rewarding feeling to be able to see success with this project. It's working!"

Through trial and error, Davis has figured out which native plants will not only grow well but also provide the highest-quality food and shelter for the bees Hampton is trying to help. She's learned the best place to plant the flower seeds is where piles of branches, sticks and other woody debris left after logging have been burned.

"We throw the seeds down in burned piles, and then as the flowers grow they reseed outside of that pile, so we're not having to seed an entire unit," Davis says.

Photo: Jordan Benner

LINDSAY DAVIS
Community Engagement and Stewardship Coordinator, Hampton Lumber

Photo: Jim Rivers

Photos: Corinne Walters-Finster

Left: **Young forests, where the trees are just starting to regrow after disturbances, provide important habitat for pollinators, including bees, moths and butterflies. Knowing this, many private forest management companies and public agencies are taking intentional action to provide for pollinators on working forests. One way of doing this is by seeding recently harvested areas with wildflowers that are known to provide high-quality food for pollinators.**

Because she's using native wildflowers that are adapted to the climate where they're being planted, they're extremely easy to grow and require almost no maintenance, Davis says. "That's the beauty of this program. We use native seed, and native seed doesn't require intervention."

Each spring and summer, Davis visits the plots she's planted to observe, count and catalog pollinators, and she shares the information with researchers from Oregon State University who are studying native bees. Even more rewarding than spreading seeds and coming back the following spring to a thriving meadow of blooming wildflowers, she says, is seeing the bees move in:

"You feel like you're doing something good because you're contributing to what Mother Nature is already doing for wildlife and for pollinators, and you're just giving that extra helping hand."

Following the research and Hampton's lead, and using the information found in OFRI's *Native Bees* publication, many private forest landowners are establishing their own programs to provide native seed for pollinators.

Photo: Lindsay Davis

Previous page: **Davis' seeding efforts result in habitat for many pollinators, including this Clodius Parnassian butterfly, across Hampton's ownership.**

Left: **Native seed is used because it is adapted to our forests and because it provides high-quality forage for native pollinators.**

RESEARCH INFORMS EFFORTS TO SUPPORT FOREST POLLINATORS

Many private forest landowners are committed to participating in scientific research to learn and understand the interaction between forest management and wildlife. A collaborative research project published in the *Journal of Forestry* and led by the University of Oregon, the National Council for Air and Stream Improvement and private landowners found that planting native wildflowers in burned slash piles was a highly effective way to boost pollinator-friendly plants, offering far more flowers and attracting more species of native bees than other planting methods.

Scientific research has also helped private forest landowners determine the best native wildflower seed mixes to plant on their lands to support pollinators.

CASE STORY

A collaborative approach to growing wildlife habitat on working forests

For Port Blakely, a sixth-generation family-owned forest management company that owns forestlands in Oregon and Washington, growing trees also involves growing habitat for a variety of wildlife species.

"We like to grow large-sized trees that most commonly require a longer growing period, and so with that comes potential habitat conditions that might be attractive to different kinds of wildlife," says Claudine Reynolds, Port Blakely's director of wildlife and environmental policy.

As one of Port Blakely's staff wildlife biologists, Reynolds helped develop a plan in collaboration with federal wildlife protection agencies that outlines strategies over the next 50 years to conserve wildlife habitat on the company's Oregon forestland, near Molalla, for 20 species ranging from birds and bats to amphibians and fish.

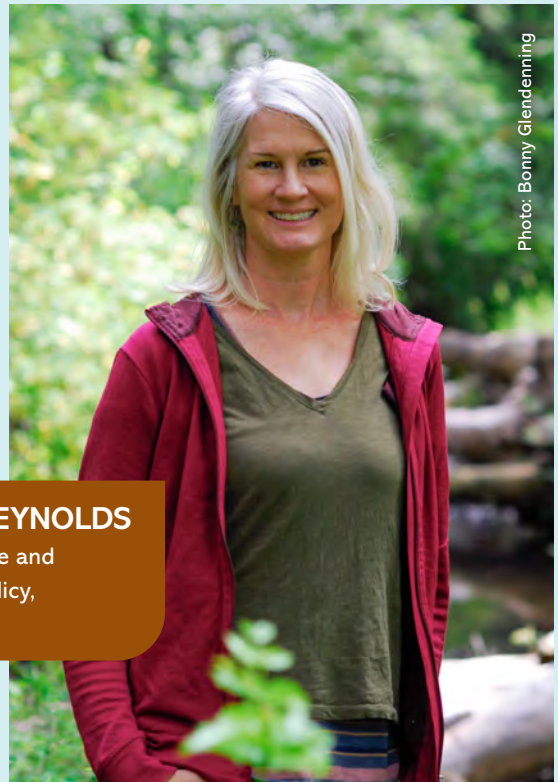


Photo: Bonny Glendenning

CLAUDINE REYNOLDS
Director of Wildlife and Environmental Policy, Port Blakely

"Some of them are listed (under the Endangered Species Act), like the spotted owl, gray wolf and several runs of salmon; and so we decided to pursue an agreement where we can proudly develop habitat for those species while retaining our ability to manage our forestland into the future," Reynolds says.

Port Blakely developed a Habitat Conservation Plan (HCP), a voluntary tool authorized by the Endangered Species Act, in partnership with the U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration Fisheries. It allows private landowners to enter long-term agreements with federal agencies to conserve habitat for federally listed threatened, endangered and at-risk wildlife. In exchange, landowners receive regulatory assurances that they will not be subject to additional restrictions for any species covered by their HCP that becomes newly listed or receives increased protections in the future.

"We identified what protective measures would be most meaningful to steward the wildlife, based on our unique location on the landscape and using the most current science," Reynolds says. "We wanted to establish our own conservation measures so we could grow and develop habitat without being penalized if listed species decided to make it their home. It's a tool that can incentivize landowners to be part of a broader habitat solution."

The Molalla property HCP is Port Blakely's third federal conservation agreement, following two that have already been approved in Washington. Advancing the strategies outlined in the Molalla HCP, which was approved by the federal government in 2023, aligned naturally with the company's values and long-term objectives, Reynolds says. To ensure the conservation of important habitats, staff wildlife biologists were already conducting habitat surveys in advance of any forest management activities, such as logging or road building, to map streams, wetlands and any other special habitats that benefit from protection. Company foresters use this information to plan timber harvests that will minimize impact on wildlife. This plan goes further, by including actions to improve and restore habitats that are lacking or have been degraded by past practices.

"It functions as a biodiversity plan for both terrestrial and aquatic species," she says. "It's about being thoughtful about creating or maintaining important habitat features across the landscape and taking efforts to reduce our impact as much as possible."

In addition to committing to various habitat conservation measures on their lands through the

Photo: Merlin Tuttle

plan, Port Blakely set up a grant program administered through the Oregon Wildlife Foundation that helps fund stream habitat restoration projects, on their forests or neighboring forestlands, to the tune of $25,000 a year for the life of the plan.

As a pilot project while the plan was undergoing the federal approval process, Port Blakely worked with various partners, including the Molalla River Watch Watershed Council, the Oregon Department of Fish and Wildlife, the Oregon Watershed Enhancement Board, Greenup Enterprises Inc. and the Bureau of Land Management, to improve fish habitat on Woodcock Creek as it passes through their Molalla property. "It's been gratifying to see salmon return to improved spawning habitat on the creek thanks to these efforts," Reynolds says.


Photo: Bonny Glendenning

WILDLIFE CONSERVATION INITIATIVE

Habitat Conservation Plans offer one way for private companies to collaborate with regulatory agencies. Another example of forestry and wildlife professionals coming together for the benefit of wildlife is the Wildlife Conservation Initiative (WCI). The WCI is a partnership between the National Alliance of Forest Owners, the U.S. Fish and Wildlife Service and the National Council for Air and Stream Improvement to conserve wildlife and fish species. The WCI's goal is to protect common, endangered, threatened and at-risk species on private, timber-producing forests. They do this by:

- Identifying wildlife that need private forests for habitat
- Collecting data on how forest management affects wildlife to fill information needs for the U.S. Fish and Wildlife Service
- Using data to determine how to improve and maintain habitat for wildlife on private working forests

Learn more about the WCI on their website: **wildlifeconservationinitiative.org**

Port Blakely's Habitat Conservation Plan considers both listed and unlisted species. *Pictured from previous page, left to right:* **Townsend's big-eared bat, coastal tailed frog, northern spotted owl and northwestern pond turtle.**


Photo: Brome McCreary


Photo: Eliana Pool


Photo: Jon Cox

Photo: Jon Cox

PROTECTING STREAMS

Oregon law requires landowners to protect forest streams, wetlands and other riparian habitat. This includes mandatory no-cut buffers along most streams to keep the water shaded and cool for fish.

Photo: Jordan Benner

REPLANTING TREES

Replanting new trees after logging is not only required by Oregon law; it's also fundamental to ensuring wood-producing forests continue to provide vital habitat for an array of wildlife species, now and into the future.

CREATING HABITAT PILES

Many forest landowners are creating "habitat piles" for wildlife using woody debris left behind after logging. A variety of animals, including birds, small mammals, and even carnivores such as fisher, bobcat and marten, use these piles of small logs for resting, hiding, denning, foraging or hunting.

Actions to help wildlife

There are many ways to enhance wildlife habitat in Oregon's wood-producing forests.

Photo: Jon Cox

PROVIDING DOWN LOGS

Oregon law requires private forest landowners to leave a certain number of down logs on the ground after logging to provide habitat for salamanders, insects, woodpeckers, small mammals and the many other species that use these logs for food or shelter.

Illustration: Heidi Schultz

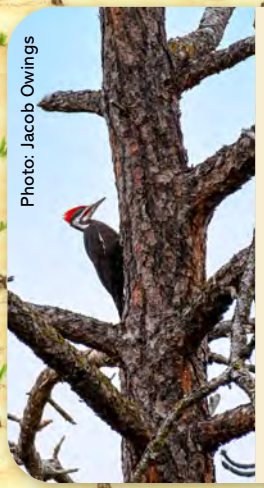


Photo: Jacob Owings

LEAVING SNAGS

Oregon's forestry regulations require landowners to retain a certain number of standing dead trees (snags) because they are important to wildlife. Snags provide habitat such as perches for raptors to hunt from, foraging and nesting opportunities for cavity-nesting birds, and roosts for bats. Snags are also an important food source for invertebrates.

Photo: Jon Cox

PLANTING FLOWERS

An increasing number of Oregon's forest landowners are planting wildflower seed mixes to provide food for pollinators such as bees and butterflies. Landowners spread native flower seeds in clearcut areas where they've burned piles of logging debris called slash.

Photo: Jon Cox

Photo: Jacob Owings

STEWARDING HABITAT

Photo: Jessica Homyack

Photo: Jason Mack

Photo: Jacob Owings

Wildlife on private lands

Private forests in Oregon contribute to overall forest and wildlife health in many ways. For example, as part of their commitments to sustainable forestry, many forest management companies have staff wildlife biologists or hire wildlife experts to help them manage their lands to maintain habitat for a diversity of wildlife species. According to the National Woodland Owner Survey, providing habitat for wildlife is among the top forest management priorities for small woodland owners.

Modern forest management practices include considerations for wildlife conservation. Through partnerships, cooperation and hard work, many are striving to provide for all the wildlife that call Oregon's forests home. The following case stories highlight a few examples of how this happens.

Keeping common species common is part of forest stewardship. *Clockwise from top left:* **Pacific chorus frog, Roosevelt elk, western garter snake, black-capped chickadee and long-eared owl.**

Living a life of wildlife abundance

It was the elk that first attracted Maurizio Valerio to the corner of northeastern Oregon where he and his wife have owned about 500 acres of land for 35 years.

"The elk brought me here because when I was living in Bend, we used to pack in with horses and mules and hunt in the Eagle Caps," he says.

When he was ready to leave Bend because it was too crowded, a picturesque property south of the town of Union came on the market. It had pine trees and meadows where the elk liked to congregate, and Valerio couldn't resist putting in an offer. "I drove by many times, and I thought, by God, this would be a good place to live."

For Valerio, who grew up in Verona, Italy, now living in a sparsely populated place where he's surrounded by nature and wild animals is a dream come true.

"I feel like I'm in paradise," he says. "I lived a life of wildlife depravation, and now I live a life of wildlife abundance and it's super cool. I will not go back."

As a hunter and hunting instructor who holds a master's degree in zoology, doing what he can on his property to help elk and other wildlife is a top priority that factors into just about every decision he and his wife make about how to manage their land.

After finding a dead elk cow entangled on a fence on his property, he removed seven miles of barbed wire fences and replaced them with either wildlife-friendly fences, with smooth wire on top and bottom, or low wooden fences — "so the elk can easily jump over or go under," he explains.

"Ever since we replaced all of the fences, I have not found an entangled animal yet and hopefully I never will."

They've logged portions of their forest several times but have always left untouched areas, Valerio says. "We have some very thick areas that I know some wildlife love, and those were off-limits."

He's also intentional about making sure there's a variety of different habitats across his forestland.

"We have a forest with many different types," Valerio says. "We have young trees. We have old trees. We have open areas, and we have very thick areas, and you need them all."

One of the biggest rewards of owning forestland that provides habitat for an array of creatures is simply observing them and noticing their behaviors — like the squirrels who harvest mushrooms and store them on tree branches for later, he says. "If you keep your eyes open, you see a lot of little beautiful things."

Wildlife viewing is a favorite pastime for him and his wife. "We spend hours and hours watching wildlife. That's what we do at night. We sit out (on the porch) at night, and we watch the elk."

Although the elk are frequent visitors to his property, sometimes coming so close to his house that he can hear them eating grass, Valerio makes no claim to them.

"I think we are stewards to the land and stewards to this immense patrimony of wildlife we have," he says. "Not just for me, but for everybody to enjoy."

MAURIZIO VALERIO
Forest landowner, Union

Below: **A variety of forest types provide food and shelter for elk. Forested shelter helps elk escape predators and provides thermal protection in extreme weather events.**

Photo: Maurizio Valerio

Caring for more than trees

As a professional forester, Brennan Garrelts is trained to manage forests to meet the objectives set before him. But even in his work for a southern Oregon family-owned forest management company, those goals have never strictly been to produce wood.

Growing and harvesting timber to meet society's demand for wood products doesn't mean you can't also steward wildlife, explains Garrelts, a vice president with Roseburg-based Lone Rock Resources.

"So many people think they're mutually exclusive, and they're not. They go hand in hand," he says. "I can manage a forest to meet an objective of efficiently, safely and effectively getting the wood to the mill while also stewarding and supporting many wildlife species."

Maintaining wildlife habitat across the more than 150,000 acres of forestland Lone Rock Resources manages in western Oregon is an important part of their commitment to practicing sustainable forestry, Garrelts says.

"Our landowners, our shareholders, our partners want to know their lands are being responsibly managed, not just for timber production, but also for all of the ecosystem services that forests provide to society and the wildlife out there," he says.

To meet that commitment, Lone Rock's consulting wildlife biologist trains the company's foresters on how they can help wildlife in the course of their work. The close partnership also includes a wildlife biologist's review for every one of their timber harvests and forest road construction projects to ensure the company is following all state and federal laws related to wildlife protection, and to identify additional voluntary steps they can take to help wildlife — such as leaving extra standing trees and habitat piles, or spreading wildlife-friendly seed mixes on exposed soils.

That type of foresight is typical for foresters, who often plan for what a forest will look like decades into the future, Garrelts says. Foresters and land managers of the past had different land-use objectives. Now, it's common practice for 21st-century foresters to consider the types of habitats a forest will provide as it grows and develops, and the variety of wildlife species that will use the forest as it grows.

BRENNAN GARRELTS
Vice President,
Lone Rock Resources

Photo: Angus Kjos

Photo: Eliana Pool

Right, top: **A habitat pile being constructed from root wads on a road construction project.**

Right: **Biologists collect Kincaid's lupine seeds as part of Lone Rock's stewardship of this plant.**

Protecting threatened and endangered wildlife species

Because so much of Oregon is covered in forestland, many of the wildlife species that receive special protections under the federal Endangered Species Act, such as the northern spotted owl, are reliant on forested habitats — including privately managed forests.

Knowing that threatened and endangered species could be present on their forestlands, many private landowners in Oregon either have staff wildlife biologists or hire professional wildlife consultants to survey their lands for these species. If threatened or endangered species are located on their lands, they can use that information to modify their management plans to protect sensitive wildlife.

At Manulife Forest Management, which manages timberland in western Oregon, Environmental Services Senior Manager Jenniffer Bakke uses her expertise as a wildlife biologist to advise the company's foresters on protecting threatened and endangered species. She leads a team of wildlife biologists who provide technical guidance to their colleagues in forest operations on topics such as conserving habitat and following state and federal regulations aimed at protecting sensitive wildlife species.

"We bring what we know about wildlife and biodiversity to those who are focused on the forestry side of the business," she says.

Bakke and her team use digital mapping databases to track the locations where threatened and endangered species have been found on and near Manulife forestlands. This alerts them to check for their

Photo: Ken Bevis

Left: **The northern spotted owl, an iconic threatened species native to Oregon, relies on forested habitats.**

presence if any activities, such as forest harvest or road building, are planned near those areas.

"We do annual surveys as a means to monitor known spotted owl sites and determine nesting status, which informs our conservation actions, such as timing restrictions," she says.

Surveying for spotted owls involves going out into the forest after dusk, when the nocturnal birds are active, and playing recordings of spotted owl calls to see if they respond, Bakke says.

If a surveyor hears a spotted owl respond to the recordings they played, they'll return the next day with live mice. They use the mice to determine the nesting status of the owls.

Knowing if and where the owls are nesting helps ensure their protection, Bakke says.

"Finding that nest tree, that center of activity, is really important for spotted owls," she says.

This allows foresters to either carve out certain areas from a planned timber harvest, including a protective buffer around the nest tree, or to defer harvest until after the nesting season to avoid disturbing the nest.

Advances in technology have even made it possible for surveys to find evidence of spotted owls in areas such as the Oregon Coast Range, where they've become scarce because of competition with invasive barred owls, Bakke says. Manulife ran a pilot project where they placed automated recording units to record animal calls in an area on their forestland where spotted owls had been seen in the past but hadn't been detected in a long time. To their surprise, the devices recorded spotted owl calls on multiple nights.

"It was nice to know that we were still adequately protecting the site, because there were owls still there," Bakke says. "It was a justification that we were doing the right thing."

Photo: Jordan Benner

JENNIFFER BAKKE
Senior Environmental Services Manager, Manulife Investment Management

CASE STORY

CASE STORY

Providing amphibian habitat on private forests

Amphibians play an important role in forested ecosystems. Frogs, toads and salamanders are centrally positioned in food webs and serve as both key predators and prey, and they also contribute to nutrient cycling, moving nutrients between terrestrial and aquatic environments.

Because logging, road building and other forestry activities cause disturbances to the landscape that can affect amphibian habitats, the Oregon Forest Practices Act includes laws that require all private forest landowners to provide special protections for streams and surrounding riparian areas.

In addition to following state forest practice rules, many private forest management companies across Oregon voluntarily take steps informed by past and ongoing academic research to conserve amphibian habitat. Some forest management companies — such as Weyerhaeuser, which owns a large amount of timberland in Oregon — also invest in wildlife research that helps shape their management decisions.

One example of research Weyerhaeuser was involved in studied Oregon slender salamanders. The Oregon slender salamander is a lungless salamander that breathes through its skin. It's part of a family of salamanders that don't need a stream or other water body for reproducing or rearing young. Instead, they lay their eggs in moist locations, such as in or under large pieces of down wood. But when Weyerhaeuser wildlife biologists learned that Oregon slender salamanders were known to be found on company forestland in the Oregon Cascade Range, little scientific research was available to inform management or conservation actions for private landowners.

"That gap prompted a long-term research study, because we didn't have the information we needed," says Jessica Homyack, Ph.D., Weyerhaeuser's director of environmental research and operational support. "We had very little information about the species, including how they interacted with managed forests."

To answer those questions, Weyerhaeuser, together with other private forestland and public

Photo: Josh Johnson

Photo: Jessica Homyack

land managers, teamed up with a faculty member from Oregon State University who specializes in amphibians to quantify the presence of Oregon slender salamanders in areas before and after recent timber harvesting.

"We were able to identify habitat features that Oregon slender salamanders were associated with, and to help understand whether they will persist after harvesting, which it turns out they will," Homyack says.

The study found that large logs provide important habitat for Oregon slender salamanders. This means existing state regulations are helping the species by requiring private landowners to leave a certain number of down logs for wildlife in harvested areas, Homyack says.

Often, scientific research helps confirm that forest practice rules designed to protect wildlife are working as intended, Homyack says. It also helps "build the understanding of the forestry professionals to know that when they leave extra logs and standing leave trees, it really does produce value for wildlife."

The Oregon slender salamander study is a perfect example of why it's important for Weyerhaeuser and other forest management companies to fund research on topics that are relevant to the forestry industry, Homyack says.

"We internally have our own processes that start with asking, why would we even invest money in a certain research topic?" she says. "We're very intentional about that. We want to pick areas that are important and meaningful and will come back, full circle, to those management questions."

Photo: Eliana Pool

JESSICA HOMYACK
Director of Environmental Research and Operational Support, Weyerhaeuser

Photo: Jessica Homyack

Photo: HWall/Shutterstock.com

Opposite page, left to right:

Research has shown that large logs provide important habitat for the Oregon slender salamander.

Preserving large legacy stumps also provides important amphibian habitat.

This page, left to right:

A biologist searches for Oregon slender salamanders. Often, scientific research helps confirm that forest practice rules designed to protect wildlife are working as intended.

Oregon slender salamanders are completely terrestrial.

CASE STORY

Collaborating to protect threatened and endangered wildlife

Starker Forests, a fifth-generation family forestland owner based in Corvallis, has deep roots in Oregon. The land Starker Forests owns in the Oregon Coast Range is managed by the Starker Family, a board of directors, and a staff of dedicated, longtime foresters and professionals.

Jennifer Beathe, forester and outreach manager, has been with the company since graduating from Oregon State University with a degree in forest engineering. She appreciates and is proud of Starker Forests' commitment to sustainably growing wood fiber for high-quality wood products, its dedication to community engagement, and its belief in strong, science-based management that includes managing for wildlife habitat.

Starker Forests works with a certified wildlife biologist to implement their wildlife program, which includes everyday actions to help keep common species common, as well as site-specific actions to protect endangered species. Starker Forests has been managing a site called "Butterfly Meadows" in collaboration with the U.S. Fish and Wildlife Service (USFWS) for over 20 years.

Photo: Corinne Walters-Finster

JENNIFER BEATHE
Forester and Outreach Manager, Starker Forests

Butterfly Meadows, located outside of Corvallis, is a large meadow nestled in the lands owned and managed by Starker Forests. The meadow has established Kincaid's lupine and Fender's blue butterfly populations — both of which are listed under the Endangered Species Act.

Starker Forests conducts routine maintenance of this site, including managing invasive weed species, maintaining the boundary of the meadow by not allowing encroachment of adjacent Douglas-fir, collecting and spreading native lupine seeds, and monitoring and reporting progress to USFWS. They also conduct regular surveys for Kincaid's lupine and Fender's blue butterfly.

The Fender's blue butterfly was downlisted from endangered to threatened by the USFWS in 2023. This was possible because of the contributions from Starker Forests and many others who care about species recovery in Oregon.

"We're thrilled, as private landowners, to play a hands-on role in the recovery of the Fender's blue butterfly through active land management that restores and expands its vital habitat," Beathe says.

Starker Forests has a long history of stewarding forestland for the benefit of the wildlife that live in the forest, for the communities that recreate in the woods, for the people who benefit from the wood products resulting from forest management, and for future generations.

Photo: Jennifer Beathe

Above: **Starker Forests, their consulting wildlife biologist and the United States Fish and Wildlife Service visited Butterfly Meadows to discuss management strategies for the Fender's blue butterfly.**

Below: **The Fender's blue butterfly relies on Kincaid's lupine. Kincaid's lupine and Fender's blue butterfly (both listed under the Endangered Species Act) are found on property owned and managed by Starker Forests Inc.**

Photo: Eliana Pool

SCIENCE AT WORK

The Wildlife in Managed Forests program will continue to bring private land managers together with the research community to understand how forest management impacts wildlife and habitat. As science continues to advance, biologists, foresters and landowners are always learning new and better ways to manage forests to support the wildlife that depend on them.

Scientists and land managers frequently develop and refine research-based strategies for enhancing and maintaining wildlife habitat while performing everyday forest operations. Land managers and scientists each contributing to the body of knowledge surrounding Oregon's forests is what makes us better land stewards and better scientists over time.

For private landowners across Oregon, these practices are often woven into company-specific wildlife management plans. In collaboration with wildlife biologists, foresters, loggers and other forestry workers, land managers are implementing actions for wildlife across the landscape — such as leaving logs and some dead and live standing trees during a clearcut, providing water sources with safe access for animals, and preserving fruiting shrubs and hardwood trees that are important to a variety of species. Additionally, landowners are enhancing pollinator habitat by using wildlife-friendly seed mixes, creating habitat piles and so much more.

Landowners can carry out these actions on forestlands of many different sizes — from the small woodland owner up to medium and large forest landowners managing hundreds of thousands of acres. Since all forests provide habitat for wildlife, foresters and wildlife biologists are working together to determine which actions make sense for which forest types, and which wildlife species might benefit, so Oregon's forests will continue to serve as habitat for wildlife now and into the future.

Below: **Here, scientists are researching red tree voles. This work contributes to the body of knowledge that helps to inform wildlife management on working forests.**

Photo: Fran Cafferata

The northern pygmy owl, active during both the day and night and a fierce hunter, is commonly found in managed forests in Oregon.

Photo: Jacob Owings

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ABOUT THE OREGON FOREST RESOURCES INSTITUTE

The Oregon Forest Resources Institute supports the forest sector and the stewardship of natural resources by advancing Oregonians' understanding of the social, environmental and economic benefits of our forests.

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