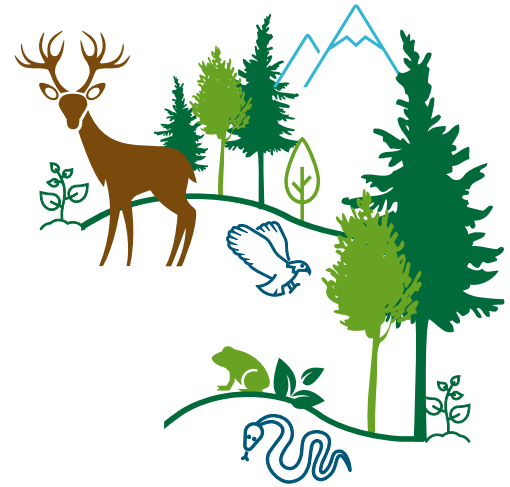


HOW WE DO IT: Wildlife Habitat



A common misperception of managed forests is that they do not support diverse plant and animal communities — but the truth is our forests are home to vibrant ecosystems throughout the United States and Canada. The forests we manage in the western U.S. alone host more than 250 native vertebrate species, including large mammals such as deer, elk, cougar, black bear and bobcat, as well as a tremendous diversity of birds, reptiles, amphibians, insects, native fish and other aquatic species. Many of these species prefer different forest age classes and forest structures, or other habitat features on the landscape, such as riparian areas. Since our timberlands contain a matrix of forest stand ages, along with other special areas we protect around streams and wetlands, these forests support a high level of native biodiversity.



KEY POINTS

- To manage these habitat types and protect biological diversity at multiple spatial scales, we participate in conservation partnerships with state and federal agencies and nonprofit organizations¹, and we support our planning and decision-making with our internal Environmental Research and Operational Support teams.
- We also frequently partner with other research organizations to ensure our practices are consistent with the best available science — and that we are meeting our conservation objectives, including protecting water quality and biodiversity, and providing habitat for threatened, endangered and sensitive species.
- Weyerhaeuser has a long history of contributing timberlands for conservation initiatives through land exchanges, sales, donations and conservation easements.
- Through special programs, including Habitat Conservation Plans and Candidate Conservation Agreements with Assurances, we are able to enroll our timberlands in conservation agreements that ensure our forests provide habitat features that support at-risk or sensitive species — and still sustainably harvest and regenerate timber. In 2019, 3.4 million acres of our timberlands were enrolled in formal habitat conservation agreements.
- We leave forest buffers around rivers and streams to protect habitat for aquatic species. These riparian buffers help filter water and keep stream temperatures cool during warmer months, which can be critical for certain aquatic species, including salmon, as well as provide downstream benefits for other sensitive species, such as orcas.
- Focal species of special concern on our Pacific Northwest timberlands include the Pacific fisher, Humboldt marten, Oregon slender salamander², red tree vole, northern spotted owl, marbled murrelet and salmon. In our Southern Timberlands, focal species include the Louisiana pinesnake, gopher tortoise and red-cockaded woodpecker, and we also have conservation agreements protecting the American burying beetle and Red Hills salamander.
- Further, we examine habitat relationships, estimate biodiversity and measure overall environmental performance across different stand age classes, forest types and harvest configurations, or when we implement new technology, such as tethered logging.

SUPPORTING RESEARCH

- We examined the influence of forest harvesting on an at-risk species, Oregon slender salamanders, from 2012 to 2019 on a collaborative research project³ with federal, private and university partners. This species occurs only in the Oregon Cascades, and much of its distribution overlaps our timberlands. We sampled harvest units before and after clearcutting and determined that occupancy of this species did not appear to decline with forest harvesting. This research contributed to a decision to remove this species from Endangered Species Act listing consideration.

¹ Partners include the U.S. Forest Service, U.S. Fish and Wildlife Service, Bureau of Land Management, U.S. Geological Survey, National Council for Air and Stream Improvement, and Oregon State University, among others.

² "Slow lives in the fast landscape: Conservation and management of plethodontid salamanders in production forests of the United States," *Forests* (2014)

³ "Evaluating Multi-Level Models to Test Occupancy State Responses of Plethodontid Salamanders," *PLOS One* (2015)

SUPPORTING RESEARCH – *continued*

- Red tree voles are small rodents that spend most of their lives in the canopy of Douglas-fir trees and were until recently considered for listing under the ESA. Although most monitoring efforts have found that these voles are associated with forests that have complex tree crowns, often a characteristic of old growth, our recent research indicates that intensively managed forest as young as 25 years old supports occupancy of this species. Our continued research on this species is examining whether young forest serves as long-term habitat that supports reproduction and survival of red tree voles.
- Our Intensive Forest Management study examined the responses of multiple species groups, including birds, moths⁴ and plants, to a gradient of stand establishment procedures, using intensity of herbicide application as the treatment. Since 2011, we have worked with partners at Oregon State University, the Oregon Department of Forestry and other private landowners and found that even with higher levels of vegetation control, reduction of biological diversity either did not occur or was minor and short-lived when it occurred.
- We have investigated small mammals, as well as amphibians and reptiles, across habitat types in the southeastern U.S., from North Carolina to Mississippi⁵. Our collaborative research has documented diverse and abundant small-mammal communities, which are important because they serve as essential prey for raptors, carnivores and snakes. And we consistently find high species diversity of amphibians and reptiles in managed forests, including species of conservation concern, such as the spotted turtle and green salamander.

FREQUENTLY ASKED QUESTIONS

How can harvested forests create habitat?

Each species requires a unique set of habitat conditions. Managed forests, with a large variety of age classes, structural conditions and areas set aside for riparian buffers, unstable slopes or other sites, support high levels of biodiversity. For example, we documented 40 species of songbirds associated with early seral forest⁶ in regenerating clearcuts in the Oregon Coast Range as part of the Intensive Forest Management study⁷.

But isn't monoculture bad for biodiversity?

Although we primarily plant a single species of native tree to grow into crop trees after a harvest, our landscapes still support a highly diverse plant community. Other species of trees, shrubs and plants naturally regenerate in forest stands, and areas that are not harvested and planted, such as riparian buffers or other special places, provide additional plant diversity. Some studies, in fact, have found that clearcutting — like other natural disturbances — produces a boon of early forage growth (spurred in part by an increase in sunlight that reaches the forest floor) that elk and other species, including many birds and insects, prefer.

Wouldn't old-growth forests still provide better habitat?

It's true that old-growth forests provide great habitat for certain species, but young forests provide ideal habitat for many others. That's a key benefit of our managed forests: Since they reflect a diverse mix of forest types and ages, they consistently provide access to food, shelter and other required habitat elements for a broad array of wildlife species. So while a clearcut stand might look empty from a distance, it immediately starts springing to life as a forest ecosystem with new seedlings and other native grasses, forbs and bushes — along with the myriad animals that depend on them.

How do you create special habitat features for a particular species?

We participate in conservation agreements or collaborative efforts that address specific habitat needs of at-risk or sensitive species. For example, we leave retention trees — large trees that are left standing through harvest and regeneration practices — to support use by many species, from hawks to bats to forest carnivores. We also work with watershed councils and other groups on stream restoration projects to enhance habitat for salmon.

⁴ "Plant diversity enhances moth diversity in an intensive forest management experiment," *Ecological Applications* (2016)

⁵ "Herpetofaunal assemblages of aquatic systems in a managed pine forest," *Forest Ecology and Management* (2016); "Rodent response to harvesting woody biomass for bioenergy production in the Southeastern United States," *Journal of Wildlife Management* (2017); "Effects of biomass harvesting guidelines on herpetofauna following harvests of logging residues," *Ecological Applications* (2016); "Effects of habitat modification on rodent population dynamics and community structure," *Forest Ecology and Management* (2016)

⁶ Complex early seral forests, or snag forests, are ecosystems that occupy potentially forested sites after a stand-replacement disturbance (such as a fire) and before reestablishment of a closed forest canopy. Harvested sites mimic some of these characteristics.

⁷ "Assembly dynamics of a forest bird community depend on disturbance intensity and foraging guild," *Journal of Applied Ecology* (2016)

FREQUENTLY ASKED QUESTIONS – *continued*

What about the marbled murrelet?

Nesting high up in mature trees and generally solitary by nature, marbled murrelets can be an especially challenging species to track and protect. In our Washington timberlands, we follow clear forest practice rules to identify potentially suitable habitat for murrelets — in short, older forests within 50 miles of the Pacific coast, and with branches wide enough to provide adequate nesting platforms for the birds. For any stands that match these habitat characteristics, we conduct a widely used survey protocol to determine if any murrelets are using that forest to nest. If they are, we immediately remove that stand from harvest consideration. Oregon forest practice rules don't require the same surveys, but as a company we voluntarily extend our Washington standard to all our timberlands in Oregon that are within 50 miles of the coast.

How do you partner with state and federal agencies?

One great partnership tool is through formal conservation agreements with the U.S. Fish and Wildlife Service, such as Candidate Conservation Agreements with Assurances, a specific habitat protection agreement authorized by the federal ESA. In early 2020, we signed a Conservation Management Agreement with the Louisiana Department of Wildlife and Fisheries that grants us inclusion into a CCAA to protect the Louisiana pinesnake on 667,000 acres of our Southern Timberlands. Listed as threatened in 2018 under the ESA, the pinesnake is one of the rarest snakes in the world, and this CCAA is the largest ever negotiated between the USFWS and a single private landowner in the southeastern U.S.

We also have a CCAA in place for the Pacific fisher on our timberlands in both Washington and Oregon. Our internal scientists participate in the Forest Carnivore Working Group, and we've provided technical expertise and equipment to support research and monitoring of fisher and marten.

We developed a Northern Spotted Owl Habitat Conservation Plan with USFWS for our Coos Bay Tree Farm in Oregon. This 50-year commitment was first implemented in 1995 and continues today. The plan provides habitat for the owl on our timberlands and is designed to complement owl recovery efforts on state and federal lands in the Coos Bay region. Similarly, we're implementing a Multi-Species Habitat Conservation Plan, also with USFWS, on our lands in Washington's Central Cascades. This plan focuses on northern spotted owl habitat as well as a host of other species, including grizzly bear, wolf and lynx.

Do animals get hurt from forest operations?

Large machinery and human activity in any environment could cause harm to some animals. However, most animals will leave active logging areas, and we avoid disrupting the breeding activities of sensitive species.

What other steps do you take to protect wildlife habitat?

We use state-level occurrence data from NatureServe⁸ and other programs to identify potential habitat for sensitive species and follow up with site visits to ensure appropriate management decisions. These data are integrated into our geographic information system and used by planners and harvest managers. For species that have specific regulatory requirements, we often conduct surveys to understand where they occur on our timberlands and adjust management as needed.

How do you know your programs are working?

We collect data from a number of sources, including state-level occurrence data, such as from NatureServe and natural heritage programs. Our staff review relevant data on species or community occurrences, and we run it through our company's GIS, with certain special sites triggered by the Compliance Warning System. This warning system allows for heightened attention to any special management risks and facilitates immediate communication and action to address management needs.

We also review regional conservation planning efforts, such as state wildlife action plans, habitat conservation plans, or species conservation action plans (e.g., Partners in Amphibian and Reptile Conservation, Partners in Flight, cerulean and golden-winged warbler habitat management guidelines) to help guide our management decisions and research efforts.

⁸ NatureServe is a Virginia-based nonprofit that provides proprietary wildlife conservation-related data, tools and services to private and government clients, partner organizations, and the public.