Bottomland Riparian Forest

Description

A bottomland riparian forest is a forest located adjacent to a river or stream on a flat floodplain. The *Oregon Conservation Strategy (OCS)* recognizes the importance of these forests by their listing as a Strategy Habitat. The OCS outlines the following six functions of riparian forests:

- Stabilize stream banks to reduce erosion;
- Filter sediments and pollutants;
- Provide shade for cooler water;
- Supply nutrients for stream food chain;
- Provide wildlife with food, water, and cover; and
- Create resting areas for fish from woody debris.

Figure 1. Bottomland riparian forest along Tualatin

In general, riparian forests share three characteristics. First, they are subject to seasonal flooding, which results in soil erosion and deposition. Second, their long and narrow shape creates travel corridors and connections to other habitats beneficial for wildlife. Third, they are rich in plant species, which provide many places for wildlife to live.

Factors such as soil, nature of flooding, water table, and seed source determine the type of plants in a bottomland riparian forest. Along the Willamette River and its tributaries, broadleaved trees dominate the forests. There are three types of riparian forests, named for the dominant tree species. These are: red alder, black cottonwood and maple-ash.

On the Refuge, there are 388 acres of riparian forest. These forests are at elevations of 100 to 300 feet and receive between 40 and 50 inches of annual precipitation. Soils are rich and very deep.

Common species in the layers of the forest are:

- Canopy (tallest trees) - Oregon ash, bigleaf maple, Douglas-fir, grand fir, and western red cedar.
- Subcanopy (trees underneath the canopy trees) - California hazel, cascara, red alder, Pacific yew, black hawthorn, and ninebark.
- Shrubs - snowberry, sword fern, red-osier dogwood, elderberry, thimbleberry, and Himalayan blackberry (invasive).
- Herb - stinging nettle, violets, waterleaf, trillium, vanilla leaf, false Solomon seal, and inside-out flower.


Figure 2. Mature bottomland riparian forest on Refuge

History

Historically, riparian forests covered the floodplains of the Willamette River and lower reaches of its tributaries. These forests once covered about 10 percent of the Valley. Since the 1850s, Willamette Valley bottomland riparian forest areas declined dramatically.

Notes in the original 1852 land survey of the forested land that is now part of the Atfálat'i Unit of the Refuge described: "Land gently rolling Soil good 2d rate clay loam" and "Timber Fir, Cedar, Y-Pine, Maple &c." In addition, areas of swamp and prairie were noted.

Wildlife Use

Bottomland riparian forest supports many birds including warblers, woodpeckers, raptors, flycatchers, and hummingbirds. Amphibians such as northern red-legged frogs, salamanders, and rough-skinned newts spend time in riparian forests. Reptiles such as western pond turtles and garter snakes use the forest to aestivate (inactivity during hot, dry periods), over winter, or to escape the hot summer sun. Mammals such as beaver, mink, black-tailed deer, and bats use the forest to forage, rest, and find escape cover. Riparian forest shade helps migrating fish, such as steelhead and Pacific lamprey to

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migrate up and down streams. In winter, juvenile salmonids (salmon and trout) may use riparian forests for forage and escape during floods.

Snags and downed logs in riparian forests are important for wildlife. Snags are standing dead trees. One hundred wildlife species in western Oregon and Washington use snags. Cavity-nesting birds account for 30-45% of bird population in many forests. Wildlife use snags for nests, food sources (insects), and food storage. Snags also provide protection from weather. Their suitability for nesting and foraging results from the wood decomposition caused by insects, fungi, bacteria, and weather.

A key species interconnected with snags is the Pileated woodpecker. Along with the beaver, Pileated woodpeckers are "ecosystem engineers" for altering their environment. The Pileated excavates large cavities in trees and new snags. These cavities provide roosting, nesting and feeding sites for the Pileated. Smaller woodpeckers, kestrels, small owls, brown creepers, Douglas squirrels, northern flying squirrels and bats also use these cavities. In addition, the openings expose wood to decomposition by fungi, which provides habitat for insects which many of these birds and small mammals eat.

A fallen snag or tree becomes a downed log on the forest floor. Downed logs provide many habitat needs for wildlife including travel ways, perches, food sources (insects), hiding cover, and nest sites. In addition, downed logs return their nutrients to the soil (recycling), provide sites for new trees to grow, and serve as sources of beneficial fungi for living trees.

Conservation Status – Willamette Valley

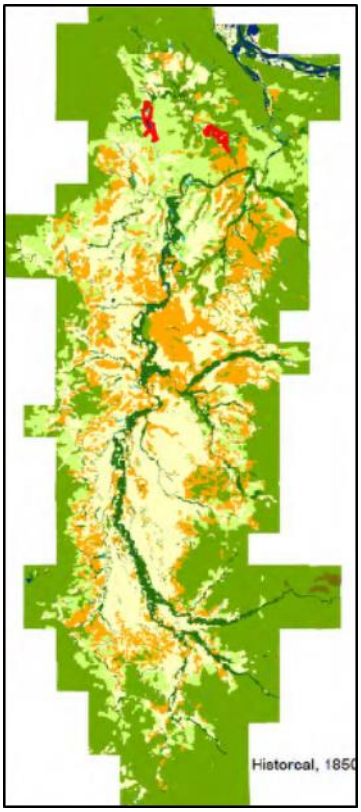

Figure 4. Riparian forest (dark green) 1850

The Willamette Valley lost 79% of its riparian forest between 1850 and 2008. Draining wetlands, timber harvest, conversion to agricultural and urban uses, and stream alterations caused this loss.

Current threats to these forests include: continued conversion to other land uses, reduced flooding, invasive plants and animals, and isolation from other riparian forests.

In the Tualatin River watershed, the Refuge, Metro, Clean Water Services and other organizations work to restore riparian forests.

The Refuge's Comprehensive Conservation Plan (CCP) identifies specific activities to maintain and restore these forests ". . . for the benefit of breeding and migrating land birds (e.g., Pacific slope flycatcher, yellow warbler) and a diverse assemblage of other native species (e.g., northern red-legged frog)."

The CCP specifies the following actions: control invasive species; plant and protect native species; manage the size and number of snags; and, reestablish historic creek channels, when possible.

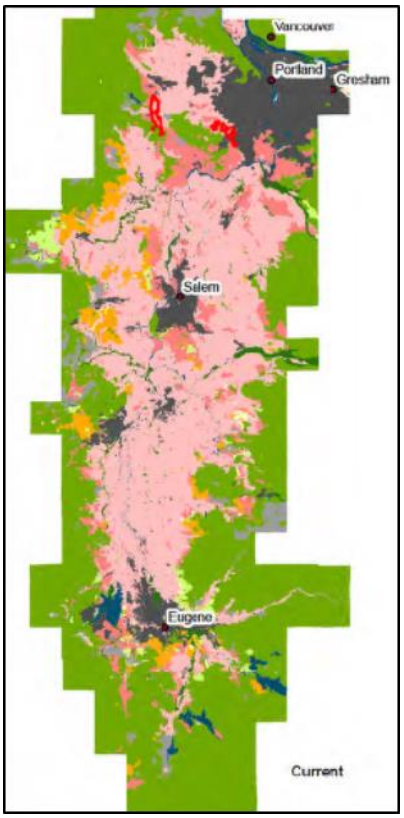

Figure 5. Current remaining acreage.

Fun Facts

- Oregon ash was once believed to provide protection from snakes. It was said that rattlesnakes would not crawl over an ash stick.
- Epiphytes (plants that grow on other plants) on a bigleaf maple can weigh 4 times as much as the tree's leaves.
- Western redcedar is considered the "cornerstone of northwest coast Indian culture," providing raw material for housing, clothing, tools, fuel, and canoes.
- Of the 414 western Oregon and Washington wildlife species, 359 use riparian zones or wetlands during some seasons or parts of their life cycles.

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