

Wind River Experimental Forest (WIN)

The Wind River Experimental Forest (WIN) is located in the southwestern Washington Cascades, amidst a north-south trending valley bisected by the Wind River. Though the WIN was not established until 1932, Forest Service research in the area began at least 20 years prior. Thornton T. Munger, later to become the first Pacific Northwest Research Station Director, arrived in 1909 and proceeded to help establish a tree nursery, an arboretum, the first Douglas fir growth and yield plots, and a seminal tree heredity study. Munger also established the Wind River RNA, later to be named after him, in 1926. The experimental forest was set up as two divisions, Panther Creek and Trout Creek. Early on the WIN became the central area for studying the great Douglas-fir forests of the Pacific Northwest, and many of the silvicultural practices for managing these forests were developed here. Though silvicultural studies continued following World War II and into the 1960s, many other areas began serving as important sites for the study of Douglas-fir forests, and the importance of WIN waned somewhat. In the 1980s research at WIN was rekindled with an increase in ecosystem studies and old-growth/wildlife habitat studies. In 1994 the Wind River Canopy Crane was established in the T. T. Munger RNA. The Wind River Canopy Crane Research Facility is a partnership between the Pacific Northwest Research Station, the Gifford Pinchot National Forest and the University of Washington.

Site Description and Characteristics: The 4200-ha WIN is comprised of two separate divisions, Trout Creek and Panther Creek. Elevations range between 330m to 1300m. The nearby Columbia River Gorge affects the Wind River valley's climate, contributing to strong winds in any season and cool, wet weather in the winter. Average precipitation is about 250 cm annually, occurring as rain or snow during fall, winter, and spring. Summers are warm and dry. Cold air draining into the Wind River valley can bring frosts almost any time of the year.

WIN is best known for its old-growth forests of Douglas-fir and western hemlock. Other tree species in the forest include western redcedar, Pacific silver fir, grand fir, and noble fir. Understory trees include Pacific yew, vine maple, Pacific dogwood, and red alder. Western white pine used to grow in the forest, but most have been killed by the white pine blister rust. Much of the forest consists of stands more than 400 years old. Younger forests include stands that were established after burns in the late 1840s and then again after the 1902 Yacolt Burn. Numerous plantations have been established following timber harvest into the late 1980s. The soils are primarily volcanic in origin with some colluvial and glacial till.

The forest has many small mammals including nine species of bats, three species of shrews, three species of voles, flying squirrels, Douglas squirrel and Townsend's chipmunks. Large mammals include elk, black-tailed deer, weasels, martens, bobcats, coyotes, black bears, and cougars. Northern spotted owls, listed as a threatened species, live in parts of the forest.



Summer and winter steelhead use Trout and Panther creeks and are the only anadromous fish known to use these streams. Rainbow trout are year-round residents in both streams. Eastern brook trout live in Trout Creek but have not been found in Panther Creek.

Research Focus: The earliest concerns at WIN were how to prevent and control wildfires, how to best regenerate burned and cutover lands, and how to grow seedlings to revegetate 1000s of hectares of denuded forest land. A ground breaking heredity study looked at what class of tree would produce the best seed for artificial reforestation and the Wind River Arboretum was established to study which tree species from all over the world would grow best in the area. Permanent growth and yield plots, spacing studies, pruning, fertilization, and thinning studies, along with Leo Isaac's unparalleled work on the autecology of Douglas-fir, provided the most complete body of knowledge on the management and silviculture of Douglas-fir-western hemlock forests in the Pacific Northwest prior to World War II. After the war, work continued at WIN with an increased interest in working in younger stands and in laboratories. Though continuation of older studies, residue use, and thinning continued to be studied at WIN, the late 60s and 70s saw a waning of more traditional forestry work at WIN. One exception in the late 70s is the Trout Creek Hill study, which continues to look at growth of different species mixtures with an eye toward managing for diversity, not only of species but for various and differing management objectives.

In the early 1980s use of WIN increased with more ecosystem oriented studies including pollutant monitoring, nutrient cycling, decay of coarse woody debris, and forest gaps. The WIN also became one of two focal sites for the Old-Growth Program whose objectives were to define old-growth Douglas-fir forests, identify wildlife species associated with these forests, and determine their biological requirements and ecological relationships.

In 1994 a standard construction canopy crane was installed in the old-growth forest of the Thornton T. Munger RNA in order to study processes operating at the interfaces between vegetation and the atmosphere and belowground. The six major research emphases are forest carbon and nutrient cycling, biological diversity and ecosystem functioning, forest health and protection, monitoring of climate and climate variability, ground validation and testing of new remote sensing technology, and tree physiology and growth. Many studies within these broader categories are not only taking place in the old-growth forest, but are being duplicated in the younger stands and plantations throughout the WIN.



The arboretum, heredity, spacing, permanent plot and the Trout Creek Hill studies are also ongoing.