Priest River Experimental Forest (Idaho)

Introduction

Priest River Experimental Forest was among the first experimental forests: it was set aside as a forestry research center in September 1911. The forest served as the headquarters for the Priest River Experiment Station until 1930 when it was incorporated into the Northern Rocky Mountain Forest and Range Experiment Station, which, in turn, joined the Intermountain Research Station, now part of the Rocky Mountain Research Station. Since the establishment of Priest River, numerous educators, Forest Service researchers, and State and Private Forestry personnel have used it.

The forest encompasses 2,590 ha, with elevations ranging from 680 to 1,800 m. Two major east-to-west drainages bisect the forest, resulting in predominantly north- to northwest- and south- to southwest-facing slopes. The 397 ha of the headwaters of Canyon Creek were set aside as the Canyon Creek Research Natural Area in 1937 and an additional 182 ha of the drainage were set aside as the Wellner Cliffs Research Natural Area in 2002. Priest River also contains an arboretum set aside in 1929 to study exotic and native species and an irrigated and animal-protected tree nursery.

Climate

Priest River is influenced by the Pacific Ocean, which causes a modified maritime climate. Precipitation averages 810 mm, with most of the moisture falling as snow in the winter. Summers are dry and the mean annual temperature is 6.6 °C.

Soils

Soils are Typic Vitrandepts, with a thick mantle of volcanic ash overlaying belt series parent material.

Vegetation

The wide range of elevations and aspects at Priest River support five major forest types: subalpine fir, grand fir, western hemlock, Douglas-fir, and western redcedar. Within these types, western larch, lodgepole pine, ponderosa pine, and western white pine are frequent associates. Productive ponderosa pine sites occur on the western redcedar potential vegetation type. Whitebark pine occurs at the highest elevations within the forest. Forest ages range in age from 20 to more than 200 years, but the age of most trees ranges from 80 to 160 years.

Long-Term Data Bases

Records have been maintained at Priest River on the following: weather (1911 to present), streamflow (1937 to present), forest growth (1914 to present), and snowfall (1940 to present).

Research, Past and Present

Early research at Priest River provided information on basic forestry principles still used today for managing Rocky Mountain forests. Throughout the forest's history, it has been a key location for conducting forestry research. Regeneration studies using shelterwood, seed-tree, and clearcut methods have provided information for regenerating mixed conifer forests. Site preparation, planting, cleaning, weeding, and thinning studies have

provided information on how to regenerate and maintain forest stand composition and growth.

Forest genetic research began in 1911 with a racial variation test of ponderosa pine with sources from 22 locations throughout the Western United States. Growth characteristics of disease-resistant western white pine have been studied since 1955 and the Priest River has been the site of numerous common garden studies defining seed-transfer rules and zones for western conifers.

Fire research began with the development of the first fire danger rating system. This was followed by studies on fire behavior, fuel inflammability, and fire effects. Forest growth and yield has been studied on the forest since 1914. The results led to the development of growth and yield models.

Currently, studies are being conducted on coarse woody debris function, long-term soil productivity, acid deposition, western white pine seedling development in canopy gaps, forest structure impacts on water yield and quality, white bark pine progeny trials, and fungal inoculation to enhance wood decomposition.

Major Research Accomplishments and Effects on Management

The following major research findings were developed at Priest River:

- Rust-resistant western white pine
- Mapping of habitat types, Prognosis model (forest vegetation simulator)
- Beginnings of fire behavior, fire danger rating, and fire effects information
- Influence of forest structure on water yield and quantity
- Importance of coarse woody debris in maintaining forest productivity

Collaborators

Scientists from University of Montana, University of Idaho, Washington State University, Washington Department of Natural Resources, and Idaho Department of Lands, as well as from USDA Forest Service Northern Region and Idaho Panhandle National Forests have worked on the Priest River.

Research Opportunities

Forest growth and climate, watershed and forest structure, forest disease as a disturbance process, weather influences on forest structure, and maintaining functioning forests at the urban interface are topics for research opportunities at Priest River.

Facilities

Priest River has living quarters, laboratories, offices, conference room, and a shop, all of which are listed on the Idaho State and National Historical Registers. Laboratory, office, and shop facilities are available from April 1 through November 1. Living and conference facilities are available throughout the year.

Lat. 48°21′ N, long. 116°41′ W

Contact Information

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