

RAINBOW CREEK RESEARCH NATURAL AREA¹

Virgin grand fir-western white pine,
Douglas-fir - ponderosa pine and
western larch stands typical of the
interior mixed-conifer forest zone in
the northern Blue Mountains of
southeastern Washington.

The Rainbow Creek Research Natural Area
was established November 6, 1968. It exemplifies
three forest types which are ecologically and
commercially important in the northern Blue
Mountains of northeastern Oregon and
southeastern Washington. The 170-ha. (420-acre)
tract is located in Columbia County, Washington,
and is administered by the Pomeroy Ranger
District (Pomeroy, Washington), Umatilla
National Forest. Unfenced, topographic
boundaries give it an irregular shape (fig. RC-1).
It occupies portions of sections 14, 22, 23, and
26, T. 7 N., R. 40 E., Willamette meridian. It lies
at 47°15' N. latitude and 117°50' W. longitude.

ACCESS AND ACCOMMODATIONS

Access is rather difficult because the nearest
road terminates approximately 3 km. (2 miles)
from the tract at Godman Guard Station. Trail
No. 3138 leads from Godman Guard Station to
the edge of the natural area descending 480 m.
(1,600 ft.) in elevation. Specific directions can be
obtained from the Pomeroy District Ranger.
Motorized vehicu-

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lar traffic is prohibited on the trail by the
Regional Forester because the Rainbow Research
Natural Area lies entirely within the designated
Wanaha Back-Country Area. Public
accommodations are available in Dayton,
Washington, about 40 km. (25 miles) northwest.
Primitive camps are located along the Skyline
Road, and there is a developed campground at
Godman Guard Station.

ENVIRONMENT

The Rainbow Creek Research Natural Area
varies from 1,100 m. (3,600 ft.) to a maximum of
1,440 m. (4,700 ft.) in elevation at the summit of
Sugarloaf Butte. The topography varies from
rolling to steep on the slopes of the butte and all
aspects are present (figs. RC-1 and RC-2).

The natural area is on an uplifted portion of
Columbia basalt flows with some volcanic ash
deposits in the forested areas. Sugarloaf Butte
represents a residual island in this deeply eroded
and dissected area.

A modified continental climate prevails with
cool, moist, partly cloudy winters and warm, dry,
cloudless summers. Precipitation is moderate and
seasonal, usually occurring as snow. The nearest
climatic station (Dayton, Washington) is 32 km.
(20 miles) northwest of the tract on the Columbia
Basin plateau and outside of the topographically
modified climate; data from this station are as
follows (U.S. Weather Bureau 1965):

Mean annual temperature	10.5°C. (50.9°F.)
Mean January temperature	-0.2°C. (31.6°F.)
Mean July temperature	21.5°C. (70.7°F.)
Mean January minimum temperature	-4.3°C. (24.3°F.)
Mean July maximum temperature	30.6°C. (87.2°F.)
Average annual precipitation	495 mm. (19.5 in.)
June through August precipitation	58 mm. (2.3 in.)
Average annual snowfall	58 cm. (23.0 in.)

RC-1

The variability of the soils is reflected in the vegetational diversity (fig. RC-2). Basaltic colluvial soils are common under moderately dense to dense forest cover. These soils are commonly covered with a layer of aerially deposited volcanic ash and appear to fall in the Umatilla and shallow, stony Umatilla categories (Washington State Agricultural Experiment Station 1954). They may be broadly classed as Gray Wooded. Shrub and grassland soils tend to be shallow, stony Lithosols with little to moderate profile development. These soils are located on upper portions of the butte, on ridge tops, and on steeper, colluvial areas.

BIOTA

Estimated areas by cover type are:

Name	Area
Grand fir-western white pine	57 ha. (140 acres)
Douglas-fir-ponderosa pine	93 ha. (230 acres)
Western larch	16 ha. (40 acres)
Grass and shrubs	4 ha. (10 acres)

The primary forest types of interest are the grand fir (*Abies grandis*) and western white pine (*Pinus monticola*) stands which are probably assignable to SAF forest cover type 213, Grand Fir-Larch-Douglas-Fir (Society of American Foresters 1954), and Kuchler's (1964) Type 14, Grand Fir-Douglas Fir Forest. The Douglas-fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*) forests form an intricate inter-grading mosaic and probably best fit SAF type 214, Ponderosa Pine-Larch-Douglas-Fir, or Kuchler's Type 11, Western Ponderosa Forest, and Type 12, Douglas Fir Forest. The western larch (*Larix occidentalis*) stand is assignable to SAF type 212, Larch-Douglas-Fir, and is what Kuchler considers seral to his Type 14, Grand Fir-Douglas Fir Forest. Grasslands are dominated by wheatgrasses (*Agropyron* spp.) and fall in Kuchler's Type 51, Wheatgrass-Bluegrass. The entire area lies within the *Abies grandis* Zone of the Blue Mountains (Franklin and Dyrness 1969).

The grand fir-western white pine type (fig. RC-2) occurs at lower elevations, in the draws, and on the north slopes of Sugarloaf

Butte. Western white pine varies from a minor component to a co-dominant in the stands (fig. RC-2), constituting 20 to 40 percent of the total basal area (trees over 15-cm. or 6-in. d.b.h.). Grand fir comprises 40 to 60 percent of the basal area and Douglas-fir and western larch account for the rest. Ground vegetation is dominated by *Vaccinium membranacium*, along with Pacific yew (*Taxus brevifolia*), thinleaf alder (*Alnus tenuifolia*.), *Rosa* spp., and 10 to 15 species of forbs and grasses. Tree reproduction is composed almost entirely of grand fir; western white pine reproduction is nearly absent.

The Douglas-fir-ponderosa pine forests occur primarily on the south and west slopes of Sugarloaf (fig. RC-1) where they are associated with small areas of grass and shrub communities. The stand of pole-sized western larch (fig. RC-2) occurs on a northwest slope and represents natural forest succession following catastrophic fire.

Rocky Mountain elk (*Cervus canadensis*) use the area extensively as summer range. The animals usually migrate down Butte Creek to winter along the Wanaha River. Grass utilization by elk appears to be causing some change in the grassland communities and may be influencing reproduction of Pacific yew within the forest stand. Other mammals believed to utilize the tract as residents or transients are listed in table RC-1.

HISTORY OF DISTURBANCE

Occasional fire-blackened snags and the western larch stand indicate some history of catastrophic fires.

Domestic livestock, primarily sheep, grazed the tract to some extent between 1890 and about 1945 when they were removed. In the past 20 to 30 years, elk numbers have increased significantly and presently may be altering some aspects of the non-forested plant communities.

Recreation use is rather high and increasing. Grazing from pack and saddle stock might have some influence on bottom land communities along the watercourses but should not influence the forest or upper grassland communities.

RESEARCH

No research is known on the area. The natural area provides interesting opportunities to study: (1) effect of slope aspect on vegetation; (2) soil-vegetation relationships and factors responsible for the mosaic pattern of forest and non-forest communities; (3) natural successional relationships of both western white pine and western larch; and (4) biomass production as affected by soils and topography under a single macroclimate.

MAPS AND AERIAL PHOTOGRAPHS

No special topographic or geologic maps are available for the natural area which are sufficiently detailed to be useful. Either the District Ranger (Pomeroy Ranger District) or Forest Supervisor (Umatilla National Forest, Pendleton, Oregon) can provide details on the most recent aerial photo coverage of the area.

LITERATURE CITED

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Table RC-1. — Tentative list of mammals for Rainbow Creek Research Natural Area

Order	Scientific name	Common name
Insectivora	<i>Scapanus orarius</i>	coast mole
	<i>Sorex palustris</i>	northern water shrew
	<i>Sorex preblei</i>	Preble shrew
	<i>Sorex vagrans</i>	wandering shrew
Chiroptera	<i>Eptesicus fuscus</i>	big brown bat
	<i>Lasionycteris noctivagans</i>	silver-haired bat
	<i>Lasiurus cinereus</i>	hoary bat
	<i>Myotis californicus</i>	California myotis
	<i>Myotis evotis</i>	long-eared myotis
	<i>Myotis lucifugus</i>	little brown myotis
	<i>Myotis subulatus</i>	small-footed myotis
	<i>Myotis thysanodes</i>	fringed myotis
	<i>Myotis volans</i>	long-legged myotis
	<i>Myotis yumanensis</i>	Yuma myotis
	<i>Plecotus townsendi</i>	Townsend big-eared bat
Lagomorpha	<i>Lepus americanus</i>	snowshoe hare
	<i>Sylvilagus nuttalli</i>	mountain cottontail
Rodentia	<i>Castor canadensis</i>	beaver
	<i>Clethrionomys gapperi</i>	Gapper red-backed vole
	<i>Erethizon dorsatum</i>	porcupine
	<i>Eutamias amoenus</i>	yellow-pine chipmunk
	<i>Glaucomys sabrinus</i>	northern flying squirrel
	<i>Microtus longicaudus</i>	long-tailed vole
	<i>Microtus montanus</i>	mountain vole
	<i>Microtus richardsoni</i>	Richardson vole
	<i>Neotoma cinerea</i>	bushy-tailed wood rat
	<i>Peromyscus maniculatus</i>	deer mouse
	<i>Phenacomys intermedius</i>	heather vole
	<i>Spermophilus columbianus</i>	Columbian ground squirrel
	<i>Spermophilus lateralis</i>	mantled ground squirrel
	<i>Tamiasciurus hudsonicus</i>	red squirrel
	<i>Thomomys talpoides</i>	northern pocket gopher
	<i>Zapus trinotatus</i>	Pacific jumping mouse
Carnivora	<i>Canis latrans</i>	coyote
	<i>Felis concolor</i>	mountain lion or cougar
	<i>Lynx rufus</i>	bobcat
	<i>Martes americana</i>	marten
	<i>Mustela erminea</i>	short-tailed weasel or ermine
	<i>Mustela frenata</i>	long-tailed weasel
	<i>Mustela vison</i>	mink
Artiodactyla	<i>Ursus americanus</i>	black bear
	<i>Cervus canadensis</i>	wapiti or elk
	<i>Odocoileus h. hemionus</i>	mule deer

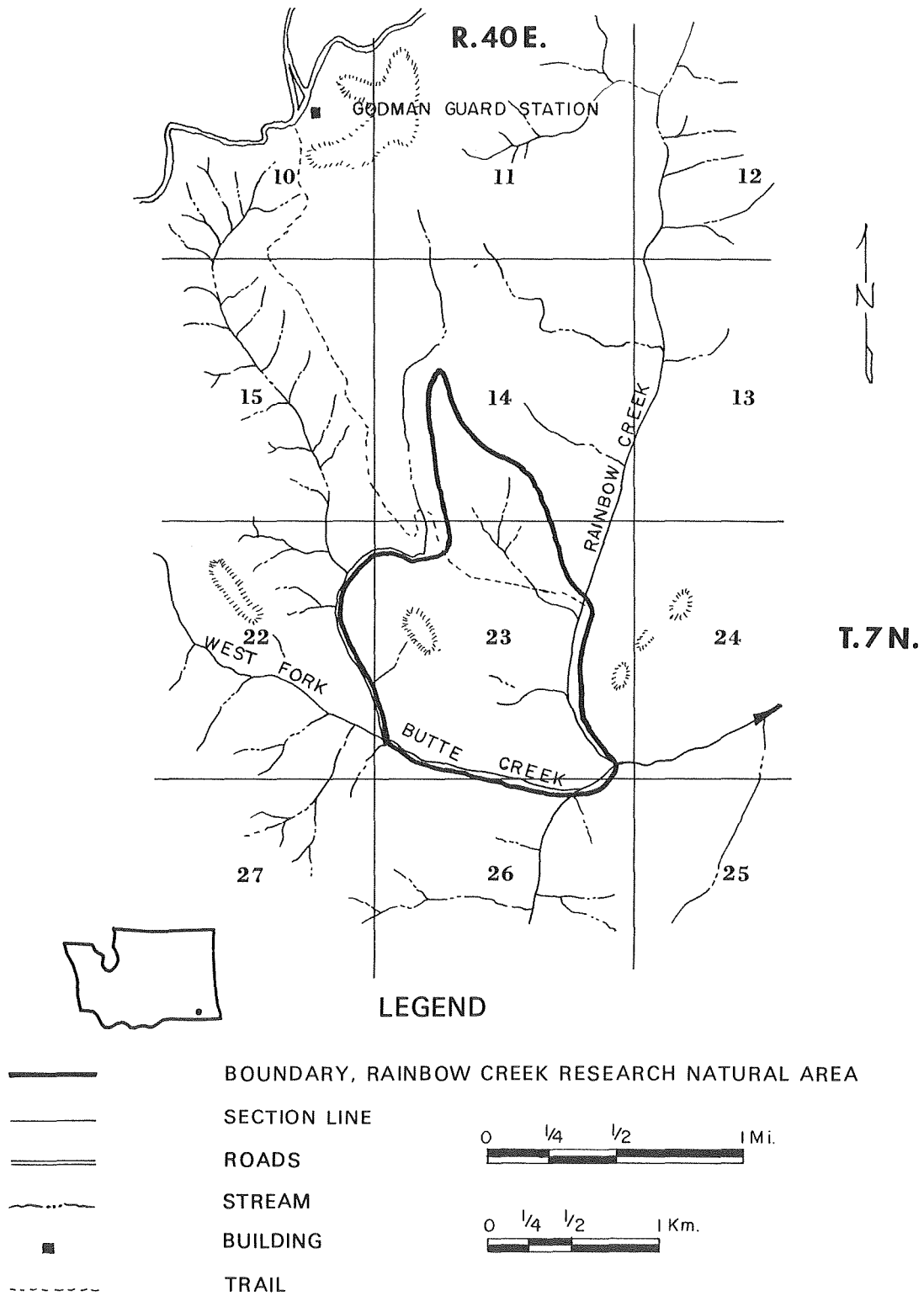


Figure RC-1.- Rainbow Creek Research Natural Area, Columbia County, Washington.

*Figure RC-2.-Natural features of the Rainbow Creek Research Natural Area. Upper left: Aerial view of Sugarloaf Butte showing the southerly slope which has western white pine in the draws and on the lower slope (the two bottom photographs were taken in this area). Upper right: Aerial view of the northwest slope showing the stand of western larch and some bunchgrass openings. Lower left: Stand of grand fir and western white pine with some Douglas-fir on lower slope position; Pacific yew, *Vaccinium membranaceum*, *Rosa* spp., and forbs dominate the understory. Lower right: One of the largest western white pines; note clumped branches on the Pacific yew behind the pine caused by heavy browsing of elk in winter.*

