Federal Research Natural Areas in Oregon and Washington A Guidebook for Scientists and Educators. 1972.
Pacific Northwest Forest and Range Experiment Station, Portland, Oregon.

GOODLOW MOUNTAIN RESEARCH NATURAL AREA[1]

A tract spanning the transition from sagebrush steppe through open ponderosa pine savanna to ponderosa pine - white fir forest characteristic of south-central Oregon.

The Goodlow Mountain Research Natural Area was established May 1942 to exemplify the transition from sagebrush *(Artemisia* spp.) steppe through open ponderosa pine *(Pinus ponderosa)* savanna to ponderosa pine - white fir *(Abies concolor)* forest along an east-west elevational gradient. The 510-ha. (1,260-acre) tract is located in Klamath County, Oregon, and is administered by the Bly Ranger District (Bly, Oregon), Fremont National Forest. Its rectangular shape is oriented east and west (fig. GM-1) encompassing part of section 4, all of section 5, and part of section 6, T. 39 S., R. 13 E., Willamette meridian, at 45° 10' N. latitude and 121°15' W. longitude.

ACCESS AND ACCOMMODATIONS

The natural area is located about 71 km. (43 miles) east of Klamath Falls, Oregon. It is reached most readily by following State Highway 140 for 43.5 km. (27 miles) to Bonanza Junction at the foot of Bly Mountain; thence south for 3 km. (2 miles) on State Highway 70 to its junction with Forest Road 3726; thence east on Road 3726 for 11 km. (7 miles) to its junction with Forest Road 384; and south on Road 384 for 11 km. (7 miles) to the natural area. Although the tract can be reached from Bly, Oregon, the road is in very poor condition and should be avoided if possible.

1 Description prepared by Dr. F. C. Hall, U.S. Department of Agriculture, Forest Service, Region 6, Portland, Oregon.

ENVIRONMENT

The Goodlow Mountain Research Natural Area varies in elevation from 1,490 to 1,620 m. (4,900 to 5,300 ft.). Topography is gently rolling to rolling with slopes of 10 to 20 percent. Goodlow Mountain is a low butte at the edge of the sagebrush steppe. The natural area extends from the summit of Goodlow Mountain to the forest edge. The butte is igneous rock of volcanic origin.

A continental climate prevails. Most precipitation occurs as snow during the cool, partly cloudy winter. Summers are warm, generally low in precipitation, and largely cloudless. One to 3 months of drought are common. Climatic data from Round Grove located 29 km. (18 miles) east-northeast of the natural area are as follows (U .S. Weather Bureau 1965):

Mean annual temperature	6.4°C. (43.5°F.)
Mean January temperature	-2.8°C. (27.0°F.)
Mean July temperature	16.8°C. (62.3°F.)
Mean January minimum temperature	-8.8°C. (16.1°F.)
Mean July maximum temperature	27.4°C. (83.1°F.)
Average annual precipitation	419 mm. (16.5 in.)
June through August precipitation	56 mm. (2.2 in.)
Average annual snowfall	119 cm. (47.0 in.)

Soils in the area have not been mapped. Reconnaissance notes suggest that, under forested stands, upper horizons contain aerially deposited pumice presumably from the Mount Mazama (now Crater Lake) eruption (Baldwin 1964). They tend to have minimum profile development and are not podzolized. Soils under juniper and sagebrush-grass appear to be derived from igneous rock.

BIOTA

Estimated areas by plant community are as follows:

Community	*Area*
Pinus ponderosa/ Purshia tridentata savanna	89 ha. (220 acres)
Pinus ponderosa/ Arctostaphylos parryana	218 ha. (540 acres)
Pinus ponderosa-Abies concolor/ Carex rossii	130 ha. (320 acres)
Juniperus occidentalis/ Artemisia tridentata	40 ha. (100 acres)
Artemisia arbuscula/ Poa sandbergii	32 ha. (79 acres)

Pinus/Purshia and *Pinus/Arctostaphylos* stands are probably assignable to SAF forest cover type 237, Interior Ponderosa Pine (Society of American Foresters 1954), and Kuchler's (1964) Type 10, Ponderosa Pine Shrub Forest. The *Pinus-Abies/Carex* stands are possibly assignable to SAF type 214, Ponderosa Pine - Western Larch - Douglas Fir, and to Kuchler's Type 14, Grand Fir Douglas-Fir Forest, even though Douglas-fir is not present in this part of Oregon. *Juniperus/Artemisia* stands are assignable to SAF type 238, Western Juniper, and Kuchler's Type 24, Juniper Steppe Woodland. The *Artemisia/Poa* stands are assignable to Kuchler's Type 55, Sagebrush Steppe. The natural area spans upper elevation edges of sagebrush steppe, the ponderosa pine zone, and the lower edge of the white fir zone.

At lower elevations (1,490 m. or 4,900 ft.), *Juniperus/Artemisia* stands occur. These plant communities are dominated by western juniper *(Juniperus occidentalis),* big sagebrush *(Artemisia tridentata),* and Idaho fescue *(Festuca idahoensis).* The *Artemisia/Poa* stands occur on shallow to very shallow soils and reflect these edaphic restraints. They are dominated by low sagebrush *(Artemisia arbuscula)* and Sandberg bluegrass *(Poa sandbergii).* Soil conditions are inimical to both juniper and ponderosa establishment (fig. GM-2). Where soils are deeper, Idaho fescue tends to dominate.

A small meadow complex, about 1 ha. (2 acres) in size, occurs at the eastern edge of the natural area. It is unique in that a moist meadow is located topographically above a dry meadow.

The *Pinus/Purshia* stands are characteristic of the lowest forested elevations and represent savanna transitional to sagebrush steppe. They are dominated by ponderosa pine with a crown cover of 20 to 40 percent. Ground vegetation is generally dominated by bitterbrush *(Purshia tridentata)* and Ross's sedge *(Carex rossii)* with curlleaf mountain-mahogany *(Cercocarpus ledifolius)* and a variety of Compositae spp. as associates (fig. GM-2). Mid-elevations are characterized by ponderosa pine of 30- to 50-percent crown cover with Parry manzanita *(Arctostaphylos parryana)* and occasional bitterbrush with sedge (fig. GM-2). Upper elevations are characterized by old-growth ponderosa pine with seedlings, saplings, and poles, and occasionally mature trees of white fir. Tree crown cover ranges from 40 to 70 percent. Ground vegetation is dominated by Ross's sedge with minor amounts of Parry manzanita (fig. GM-2).

Mammals which frequent the natural area either as residents or transients are listed in table GM-l.

HISTORY OF DISTURBANCE

Fire scars on ponderosa pine (fig. GM-2) indicate ground fires periodically burned the area prior to initiation of fire control programs in 1910. Ranger District records document a ground fire between 1920 and 1930. In addition, a severe fire in 1918 (known as the Goodlow Mountain Burn) burned over 16 ha. (41 acres) of the southwestern corner of the natural area and killed 100 percent of the timber. A very dense stand of pine reproduction is now present in this area.

Prior to establishment of the natural area, an 800-ewe band of sheep grazed the tract periodically from the middle of June to the end of August. Ranger District records indicate this livestock use was light to moderate and should not have materially affected vegetation. Sheep use is now terminated.

RESEARCH

The Bureau of Entomology and Plant Quarantine has been studying bark beetle activity in section 5 since 1922. Between 1938 and 1940, two 10-acre plots were established in which all trees of 10-inch and larger d.b.h. were tagged, recorded, and fully described. These permanent plots are still under observation.

The Goodlow Mountain Research Natural Area provides interesting research opportunities on: (1) comparison of undisturbed vegetation across the geographic range of the aerially deposited Mount Mazama pumice in conjunction with Bluejay and Pringle Falls Research Natural Areas in the center and at the northern edge of the pumice deposit, respectively; (2) evaluation of environmental and plant community relationships from sagebrush steppe to mixed coniferous forest; (3) biomass productivity in relation to the environmental gradient; and (4) study of forest succession under fire prevention.

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 (Bly Ranger District) or Forest Supervisor (Fremont National Forest, Lakeview, Oregon) can provide details on the most recent aerial photo coverage of the area.

LITERATURE CITED

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1954. Forest cover types of North America (exclusive of Mexico). 67 p., illus. Washington, D.C.

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1965. Climatic summary of the United States - supplement for 1951 through 1960, Oregon. Climatography of the United States 86-31, 96 p., illus.

Table GM-1. — Tentative list of mammals for Goodlow Mountain Research Natural Area

Order	Scientific name	Common name
Insectivora	*Scapanus latimanus*	broad-footed mole
	Sorex merriami	Merriam shrew
	Sorex vagrans	wandering shrew
Chiroptera	*Antrozous pallidus*	pallid bat
	Eptesicus fuscus	big brown bat
	Lasionycteris noctivagans	silver-haired bat
	Lasiurus borealis	red bat
	Lasiurus cinereus	hoary bat
	Myotis californicus	California myotis
	Myotis evotis	long-eared myotis
	Myotis lucifugus	little brown myotis
	Myotis thysanodes	fringed myotis
	Myotis volans	long-legged myotis
	Myotis yumanensis	Yuma myotis
	Plecotus townsendi	Townsend big-eared bat
Lagomorpha	*Lepus californicus*	black-tailed jack rabbit
	Sylvilagus nuttalli	mountain cottontail
Rodentia	*Erethizon dorsatum*	porcupine
	Eutamias amoenus	yellow-pine chipmunk
	Glaucomys sabrinus	northern flying squirrel
	Lagurus curtatus	sage vole
	Microtus montanus	mountain vole
	Neotoma cinerea	bushy-tailed wood rat
	Neotoma fuscipes	dusky-footed wood rat
	Peromyscus maniculatus	deer mouse
	Sciurus griseus	western gray squirrel
	Spermophilus lateralis	mantled ground squirrel
	Tamiasciurus douglasi	chickaree
Carnivora	*Canis latrans*	coyote
	Felis concolor	mountain lion or cougar
	Lynx rufus	bobcat
	Martes americana	marten
	Mephitis mephitis	striped skunk
	Mustela frenata	long-tailed weasel
	Spilogale putorius	spotted skunk or civet cat
	Taxidea taxus	badger
	Urocyon cinereoargenteus	gray fox
	Ursus americanus	black bear
	Vulpes fulva	red fox
Artiodactyla	*Odocoileus h. hemionus*	mule deer

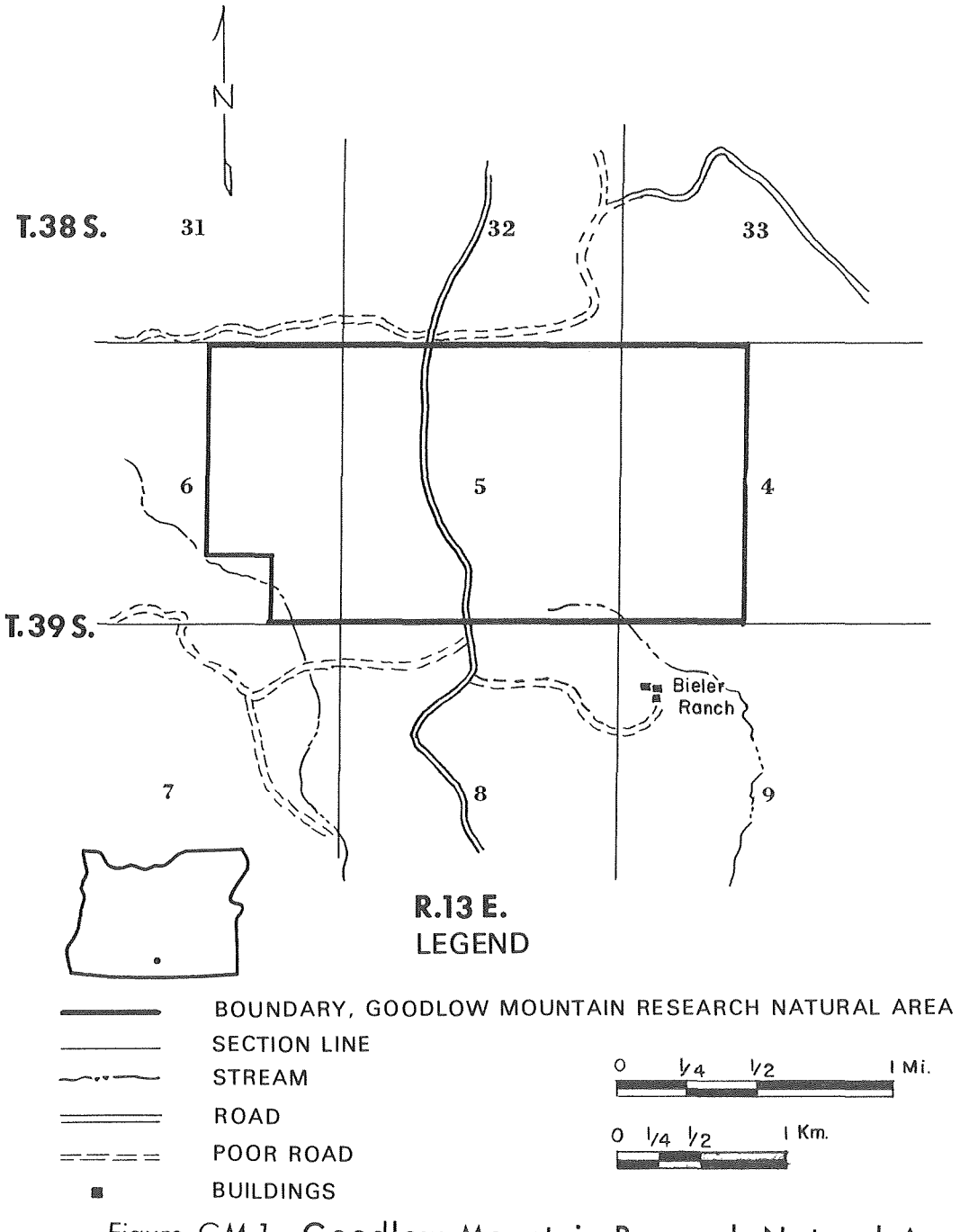

Figure GM-1.– Goodlow Mountain Research Natural Area, Klamath County, Oregon.

Figure GM-2.-Communities of the Goodlow Mountain Research Natural Area. Upper left: *Artemisia arbuscula/Poa Sandbergii* community with some Idaho fescue on shallow soil. Upper right: The *Pinus ponderosa/Purshia tridentata* community with some curl leaf mountain-mahogany is typical of lower elevations. Lower left: A *Pinus ponderosa/Arctostaphylos parryana* community typical of middle elevations. Lower right: *Pinus ponderosa-Abies concolor/Carex rossii* community characteristic of upper elevations; note fire scar on the tree left of the meter board.