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

OCHOCO DIVIDE RESEARCH NATURAL AREA[1]

Interior mixed conifer (ponderosa pine, Douglas-fir, grand fir, and western larch) forests and mountain meadows typical of central Oregon's Blue Mountains.

The Ochoco Divide Research Natural Area was established in July 1935 to exemplify the forests of ponderosa pine *(Pinus ponderosa)* and Douglas-fir *(Pseudotsuga menziesii)* and of grand fir *(Abies grandis),* western larch *(Larix occidentalis),* and Douglas-fir, characteristic of mid-elevations in the Blue Mountains of central Oregon. The 777-ha. (1,920acre) tract is located in Wheeler County, Oregon, and is administered by the Big Summit Ranger District (Prineville, Oregon), Ochoco National Forest. Its roughly rectangular shape includes portions of sections 28, 29,30,31, and 33 and all of section 32, T. 12 S., R. 20 E., Willamette meridian. It is located at 44 °30' N. latitude, and 120°20' W. longitude (fig. OD-l).

ACCESS AND ACCOMMODATIONS

The natural area is located about 48 km. (30 miles) northwest of Prineville on U.S. Highway 26 or about 14 km. (9 miles) northeast of Ochoco Ranger Station on Forest Roads 1222 and 1204. Forest Road 1204 passes through the southeastern corner of the tract. Access is good during summer, but snow creates difficulties during the winter.

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

Public accommodations are available in Prineville or in primitive forest camps in the vicinity of the natural area.

ENVIRONMENT

The Ochoco Divide Research Natural Area varies in elevation from 1,250 to 1,650 m. (4,100 to 5,400 ft.). Topography varies from undulating to rolling. The tract is located at the upper edge of an uplifted plateau and is underlain primarily by Clarno formation materials (Baldwin 1964). These late Eocene to early Oligocene deposits include rhyolite and basalt flows, tuffs and breccias, as well as some tuffaceous sedimentary rocks.

A modified 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 Ochoco Ranger Station located at 1,200 m. (3,980 ft.) in a valley 11 km. (7 miles) to the southeast are as follows (U.S. Weather Bureau 1965):

Mean annual temperature	6.2°C. (43.1°F.)
Mean January temperature	-4.3°C. (24.3°F.)
Mean July temperature	16.3°C. (61.4°F.)
Mean January minimum temperature	−9.9°C. (14.2°F.)
Mean July maximum temperature	27.8°C. (82.1°F.)
Average annual precipitation	490 mm. (19.3 in.)
June through August precipitation	76 mm. (3.0 in.)
Average annual snowfall	175 cm. (69.0 in.)

Precipitation is higher and temperatures lower on the natural area itself.

Soils on the area have not been mapped or described. Forest soils are developed from aerially deposited volcanic ash over buried soil profiles (Hall 1967). They resemble Gray Wooded soils and are not podzolized.

BIOTA

Estimated areas by vegetation types are:

Name	*Area*
Ponderosa pine forests	337 ha. (833 acres)
Grand fir - western larch - Douglas-fir forests	335 ha. (828 acres)
Wet and dry meadows	34 ha. (85 acres)
Grasslands	39 ha. (94 acres)
Western juniper - bunchgrass savannas	32 ha. (80 acres)

The distribution of these types is shown in figure OD-2. Ponderosa pine stands are generally assignable to SAF forest cover type 237, Interior Ponderosa Pine (Society of American Foresters 1954), although fir reproduction is common, and to Kuchler's (1964) Type 11 Western Ponderosa Forest. The mixed grand fir-western larch-Douglas-fir stands can be related to SAF type 213, Grand Fir - Larch - Douglas-Fir, and to Kuchler's Type 14, Grand Fir - Douglas Fir Forest. The western juniper *(Juniperus occidentalis)* stands can be assigned to SAF type 238, Western Juniper, and to Kuchler's Type 24, Juniper Steppe Woodland. The natural area is located within an *Abies grandis* Zone (Franklin and Dyrness 1969).

The forests dominated by old-growth ponderosa pine are also characterized by seedlings, saplings and sometimes poles of Douglas-fir, occasional western larch, and some grand fir. Ground vegetation is strongly dominated by pinegrass *(Calamagrostis rubescens)* (fig. 0 D-2). Other understory species are elk sedge *(Carex geyeri), Arnica cordifolia,* and *Lupinus* spp. Fire-scarred ponderosa pine are common. These stands have been classified as a mixed conifer/pinegrass community type by Hall (1967).

Grand fir - western larch - Douglas-fir stands are characteristic of north slopes. They vary in tree composition from nearly pure grand fir to a mixture of the three species. Ground vegetation is a moderately sparse stand of *Bromus vulgaris, Arnica cordifolia.,* pinegrass, *Lupinus latifolius,* elk sedge, *Carex concinnoides, Hieracium albiflorum,* and *Pyrola* spp. Stands where larch is abundant contain fire-charred, dead, and downed trees. These mixed conifer stands have been classified as the grand fir/woodland brome community type by Hall (1967).

The western juniper communities occur on steep slopes and shallow soils (fig. OD-2). They are dominated by scattered western juniper with bitter cherry *(Prunus emarginata),* and Idaho fescue *(Festuca idahoensis).* Past livestock use and present game use of this highly palatable community have degraded the range to a point where it is considered in poor condition. Furthermore, the soils are shallow and recover very slowly following misuse.

The remaining grassland and meadow communities have not been extensively examined. One mountain meadow located in the southern half of the tract is dominated by *Poa pratensis* and *Bromus carinatus* with occasional *Veratrum californicum* and some *Cirsium vulgare.* Past livestock use has also altered vegetation in this meadow which might be considered to be in fair range condition.

Mule deer use the area as summer range.
A complete list of mammals believed to utilize the natural area as residents or transients is provided in table OD-I.

HISTORY OF DISTURBANCE

Fire-scarred ponderosa pine indicate ground fires periodically burned the area prior to initiation of fire control programs about 1910. Hall (1967) has suggested that ponderosa pine/pinegrass communities constitute a fire climax which are shifting with fire control to grand fir and Douglas-fir climax. Dominance of fir reproduction in this plant community substantiates this hypothesis.

Some tree cutting, apparently for juniper fenceposts, occurred many years ago in the western juniper communities. A minor amount of timber was cut in connection with mining exploration work in the southwestern portion of the tract, the latest having occurred about 1966.

Domestic livestock grazed portions of the natural area between 1880 and 1963. Various segments of the tract were included in three grazing units - Nature Creek, Carrol Glade,

and Carrol Butte. The 600 acres of the natural area included in the Nature Creek unit were grazed from about 1880 to 1920 with about four bands of sheep for four months of the year. Numbers were gradually reduced, and from 1930 to 1960 one band continued to use the area. Sheep and cattle grazed the Carrol Glade grazing unit from 1880 to 1962 when the 950 acres of the natural area included in this grazing unit was fenced off. This Use consisted of from 300 to 500 cattle from 1930 to 1940 and one band of sheep, between July 1 and September 30 from 1940 to 1962. A stock driveway along the eastern edge of this grazing unit had considerable influence on the pattern of grazing use. The Carrol Butte grazing unit included about 400 acres of the natural area and, until 1960, had a pattern of sheep use comparable to the Nature Creek area. To summarize the effects of grazing, use appears to have affected the composition of communities with a high proportion of highly palatable species, such as the western juniper and moist meadow types. It does not appear to have severely affected ground vegetation in the forest communities.

Mining claims in the southern half of the tract caused disturbance of soil and vegetation; however, these claims are not currently active. The area has recently been withdrawn from mineral entry.

RESEARCH

No research is known to have been conducted within the natural area. However, plant communities similar to those found on the natural area were described and characterized in Hall's (1967) extensive study of this portion of the Blue Mountains.

The natural area provides interesting opportunities to evaluate: (1) biomass production as affected by soils and topography under a single macroclimate; (2) natural forest succession following control of ground fires; (3) game and non-game animal habitat in the absence of logging.

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 (Big Summit Ranger District) or Forest Supervisor (Ochoco National Forest, Prineville, Oregon) can provide details on the most recent aerial photo coverage of the area.

LITERATURE CITED

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Table OD-1. — Tentative list of mammals for Ochoco Divide Research Natural Area

Order	Scientific name	Common name
Insectivora	*Scapanus orarius*	coast mole
	Sorex obscurus	dusky shrew
	Sorex palustris	northern water shrew
	Sorex preblei	Preble shrew
	Sorex vagrans	wandering shrew
Chiroptera	*Antrozous pallidus*	pallid bat
	Eptesicus fuscus	big brown bat
	Lasionycteris noctivagans	silver-haired bat
	Lasiurus cinereus	hoary bat
	Myotis californicus	California myotis
	Myotis evotis	long-eared myotis
	Myotis lucifugus	little brown myotis
	Myotis subulatus	small-footed myotis
	Myotis thysanodes	fringed myotis
	Myotis volans	long-legged myotis
	Myotis yumanensis	Yuma myotis
	Pipistrellus hesperus	western pipistrel
	Plecotus townsendi	Townsend big-eared bat
Lagomorpha	*Lepus americanus*	snowshoe hare
Rodentia	*Castor canadensis*	beaver
	Clethrionomys gapperi	Gapper red-backed vole
	Erethizon dorsatum	porcupine
	Eutamias amoenus	yellow-pine chipmunk
	Marmota flaviventris	yellow-bellied marmot
	Microtus longicaudus	long-tailed vole
	Microtus montanus	mountain vole
	Microtus richardsoni	Richardson vole
	Neotoma cinerea	bushy-tailed wood rat
	Peromyscus maniculatus	deer mouse
	Phenacomys intermedius	heather vole
	Spermophilus beldingi	Belding ground squirrel
	Spermophilus lateralis	mantled ground squirrel
	Tamiasciurus douglasi	chickaree
	Thomomys talpoides	northern pocket gopher
	Zapus princeps	western jumping mouse
Carnivora	*Canis latrans*	coyote
	Felis concolor	mountain lion or cougar
	Lynx canadensis	Canadian lynx
	Lynx rufus	bobcat
	Martes americana	marten
	Martes pennanti	fisher
	Mephitis mephitis	striped skunk
	Mustela erminea	short-tailed weasel or ermine
	Mustela frenata	long-tailed weasel
	Mustela vison	mink
	Procyon lotor	raccoon
	Spilogale putorius	spotted skunk or civet cat
	Taxidea taxus	badger
	Ursus americanus	black bear
	Vulpes fulva	red fox
Artiodactyla	*Cervus canadensis*	wapiti or elk
	Odocoileus h. hemionus	mule deer

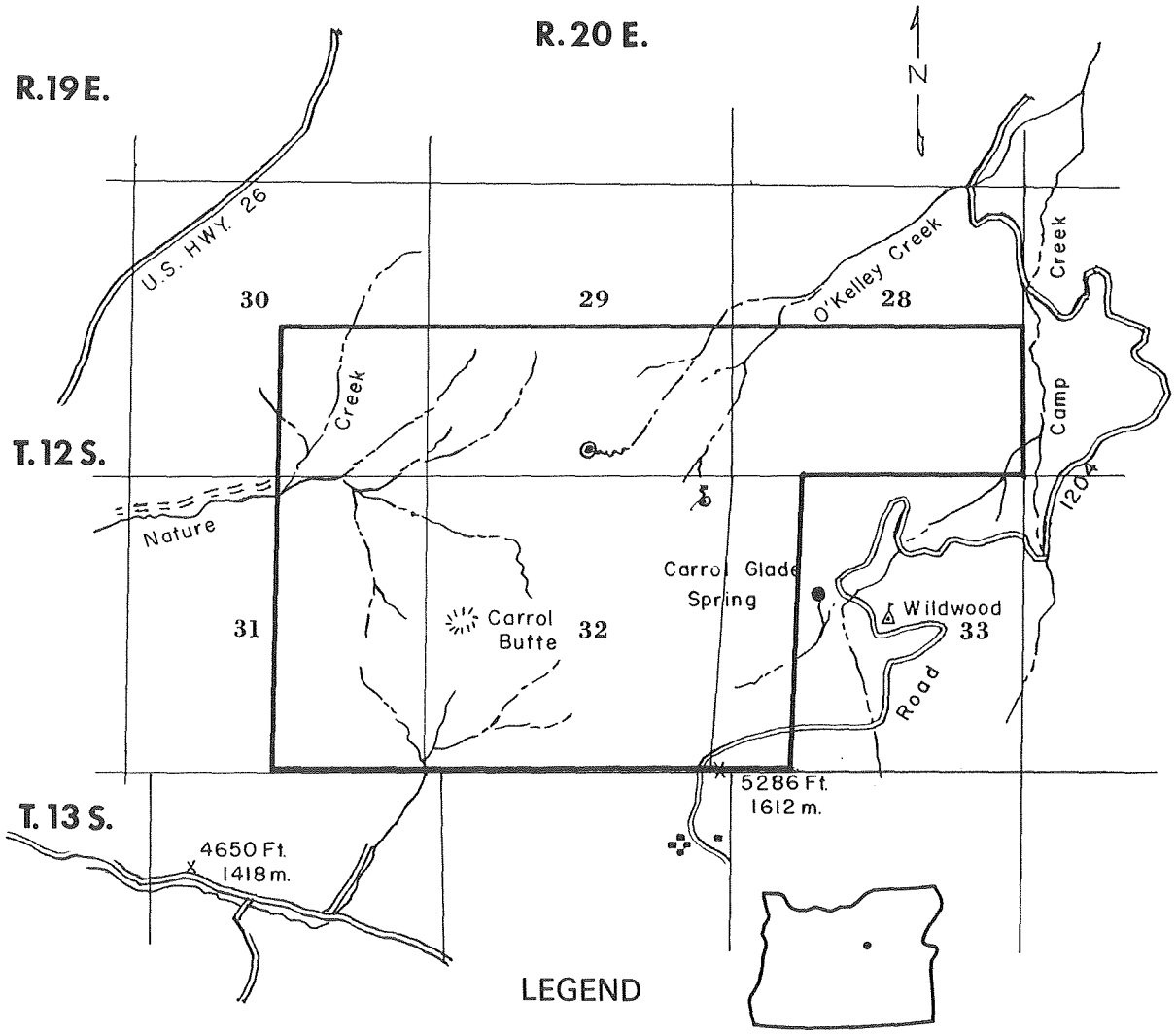
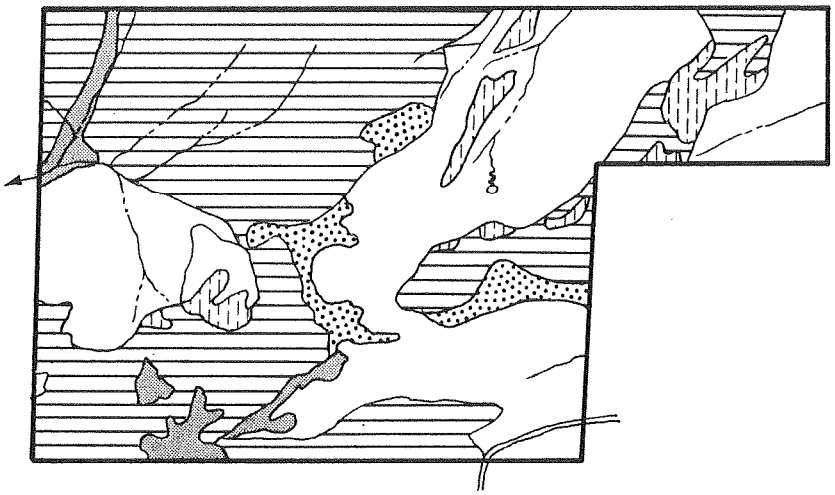
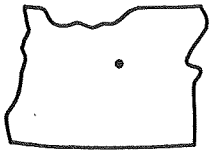


Figure OD-1.– Ochoco Divide Research Natural Area, Wheeler County, Oregon.





LEGEND

BOUNDARY, OCHOCO DIVIDE RESEARCH NATURAL AREA

STREAM

ROAD

0 1/4 1/2 1 Mi.

0 1/4 1/2 1 Km.

PONDEROSA PINE

GRAND FIR - WESTERN LARCH - DOUGLAS-FIR

MEADOW

GRASSLAND

WESTERN JUNIPER

Figure OD-2.– Vegetation types in the Ochoco Divide Research Natural Area.

Figure OD-3.-Communities of the Ochoco Divide Research Natural Area. Upper left: Western juniper-bitter cherry/Idaho fescue community on shallow soil; vegetation has deteriorated from livestock and game animal use. Upper right: Moist meadow dominated by *Poa pratensis* and *Bromus carinatus* with some *Verbascum* and *Cirsium;* a deteriorated community resulting from past livestock grazing. Lower left: Ponderosa pine-grand fir/pinegrass community; pine dominates the overstory while fir dominates reproductive size classes. Lower right: Grand fir/pinegrass community approaching climax condition with dying Douglas-fir and sedge.