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

HORSE RIDGE RESEARCH NATURAL AREA[1]

A unique western juniper/big sagebrush/threadleaf sedge community in near pristine condition.

The Horse Ridge Research Natural Area was established March 1967 as an example of western juniper *(Juniperus occidentalis)* - big sagebrush *(Artemisia tridentata)* vegetation within the juniper zone of central Oregon. The 240-ha. (600-acre) tract is located in Deschutes County, Oregon, and is administered by the Prineville District (Prineville, Oregon), Bureau of Land Management. The rectangular tract is located in sections 15 and 22, T. 19 S., R. 14 E., Willamette meridian, at 43°55' N. latitude, 120°02' W. longitude.

ACCESS AND ACCOMMODATIONS

The natural area is located about 31 km. (19 miles) southeast of Bend and is approached via U.S. Highway 20. Directions for locating the tract should be obtained at the Prineville District Office. Access is good during both summer and winter. Public accommodations are available in Bend; primitive camps which lack drinking water are available in the vicinity of the tract.

ENVIRONMENT

The Horse Ridge Research Natural Area varies in elevation from 1,250 to 1,430 m. (4,100 to 4,700 ft.). It is located on top of rolling topography (Horse Ridge) which rises above the surrounding flat to undulating plateau (fig. HR-2). Columbia River basalts underlie the entire area.

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 4 months of drought are common. Climatic data from Bend are as follows (U.S. Weather Bureau 1965):

Mean annual temperature	7.9°C. (46.3°F.)
Mean January temperature	-1.0°C. (30.2°F.)
Mean July temperature	17.6°C. (63.7°F.)
Mean January minimum temperature	-6.5°C. (20.3°F.)
Mean July maximum temperature	28.6°C. (83.6°F.)
Average annual precipitation	305 mm. (12.0 in.)
June through August precipitation	56 mm. (2.2 in.)
Average annual snowfall	91 cm. (36.0 in.)

Soils in the area have not been mapped. Cursory examination suggests they are sandy textured and developed in 30 to 60 em. (12 to 24 in.) of aerially deposited pumice over well cracked basalt bedrock.

BIOTA

Nearly all of the 240 ha. (600 acres) is characterized by a western juniper/big sagebrush/threadleaf sedge *(Carex filifolia)* community. A small area at the eastern edge is occupied by a stand of western juniper/big sagebrush/bluebunch wheatgrass *(Agropyron Spicatum)* with abundant surface stone. Vegetation can probably be assigned to SAF forest cover type 238, Western Juniper (Society of American Foresters 1954), and Kuchler's (1964) Type 24, Juniper Steppe Woodland. The area falls within the *Juniperus occidentalis* Zone of central Oregon (Franklin and Dyrness 1969).

The major plant community (fig. HR-2) is dominated by western juniper which conspicuously lacks decadent or dead specimens.

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

Ground vegetation is dominated by big sagebrush and threadleaf sedge with some dead and decadent bitterbrush *(Purshia tridentata),* bluebunch wheatgrass, Idaho fescue *(Festuca idahoensis), Koeleria cristata,* and *Tetradymia canescens.* The soil surface is characteristically bare of litter and is covered by fine pumice gravel, 2- to 5-mm. diameter.

This plant community is interesting in several ways. Hybridization of bluebunch wheatgrass and bottlebrush squirrel tail *(Sitanion hystrix)* appears to be more common on this tract than elsewhere in the central Oregon juniper zone. Western juniper appears to affect distribution of plant species (fig. HR-2) - within the crown and root zone of western juniper, Idaho fescue tends to assume clear dominance to the near exclusion of big sagebrush and great reduction in threadleaf sedge. These conditions and the general dominance of threadleaf sedge tend to make this vegetation unique in the central Oregon area. Driscoll (1964) did not find this plant community common enough to warrant classification in his study of plant communities in central Oregon western juniper. Furthermore, this area apparently represents essentially ungrazed conditions; forage utilization data gathered by the Prineville District suggest that threadleaf sedge is sensitive to grazing and quickly decreases in abundance under heavy livestock use.

A list of mammals believed to utilize the natural area is provided in table HR-l. Mule deer *(Odocoileus hemionus)* are occasionally year around residents but frequently use the area for winter range.

HISTORY OF DISTURBANCE

An occasional burned-out juniper of large diameter can be found on the tract, indicating fires have occurred. Evidence of the extent of these fires could not be found. Normally only single trees are struck by lightning and burn, fires rarely spreading because of insufficient ground fuels.

Domestic livestock have apparently had little impact on the Horse Ridge Research Natural Area. Permanent water is a considerable distance below the ridge, suggesting that livestock have never been attracted to the area. As mentioned earlier, records in the Prineville District Office suggest livestock overuse causes a reduction in threadleaf sedge; the abundance of the sedge suggests minimal livestock disturbance. However, fencing may be necessary to prevent stock and increasing numbers of people from using the area.

RESEARC H

Baseline population levels of several bird and mammal species are presently under study on Horse Ridge Research Natural Area.[2] This is part of a larger, long-term eastern Oregon study which utilizes several other research natural areas in contrasting vegetation types. Research to date involves estimation of breeding bird populations based upon weekly, early-morning censuses during the breeding season within a 20-ha. (50-acre) grid and along a line transect.

The natural area provides interesting opportunities for research on: (1) hybridization of bluebunch wheatgrass with squirreltail and possibly native ryegrass *(Elymus* spp.); (2) evaluation of this unique plant community and the place of threadleaf sedge within the western juniper zone of central Oregon; and (3) evaluation of microchanges in herbaceous dominance as apparently influenced by juniper.

MAPS AND AERIAL PHOTOGRAPHS

No special topographic or geologic maps are available for the natural area which are sufficiently detailed to be useful. The District Manager (Prineville District, Bureau of Land Management) can provide details on the most recent aerial photo coverage of the area.

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[2] Research by Jay S. Gashwiler, Bureau of Sport Fisheries and Wildlife, Silviculture Laboratory, Bend, Oregon.

LITERATURE CITED

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Table HR-1. — Tentative list of mammals for Horse Ridge Research Natural Area

Order	Scientific name	Common name
Insectivora	*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 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 californicus*	black-tailed jack rabbit
	Sylvilagus idahoensis	pigmy rabbit
	Sylvilagus nuttalli	mountain cottontail
Rodentia	*Dipodomys ordi*	Ord kangaroo rat
	Erethizon dorsatum	porcupine
	Eutamias minimus	least chipmunk
	Lagurus curtatus	sage vole
	Marmota flaviventris	yellow-bellied marmot
	Microtus longicaudus	long-tailed vole
	Microtus montanus	mountain vole
	Neotoma cinerea	bushy-tailed wood rat
	Onychomys leucogaster	northern grasshopper mouse
	Perognathus parvus	Great Basin pocket mouse
	Peromyscus maniculatus	deer mouse
	Reithrodontomys megalotis	western harvest mouse
	Spermophilus beecheyi	California ground squirrel
	Spermophilus beldingi	Belding ground squirrel
	Spermophilus townsendi	Townsend ground squirrel
	Thomomys talpoides	northern pocket gopher
Carnivora	*Canis latrans*	coyote
	Lynx rufus	bobcat
	Mephitis mephitis	striped skunk
	Mustela frenata	long-tailed weasel
	Spilogale putorius	spotted skunk or civet cat
	Taxidea taxus	badger
	Urocyon cinereoargenteus	gray fox
	Vulpes fulva	red fox
Artiodactyla	*Odocoileus h. hemionus*	mule deer

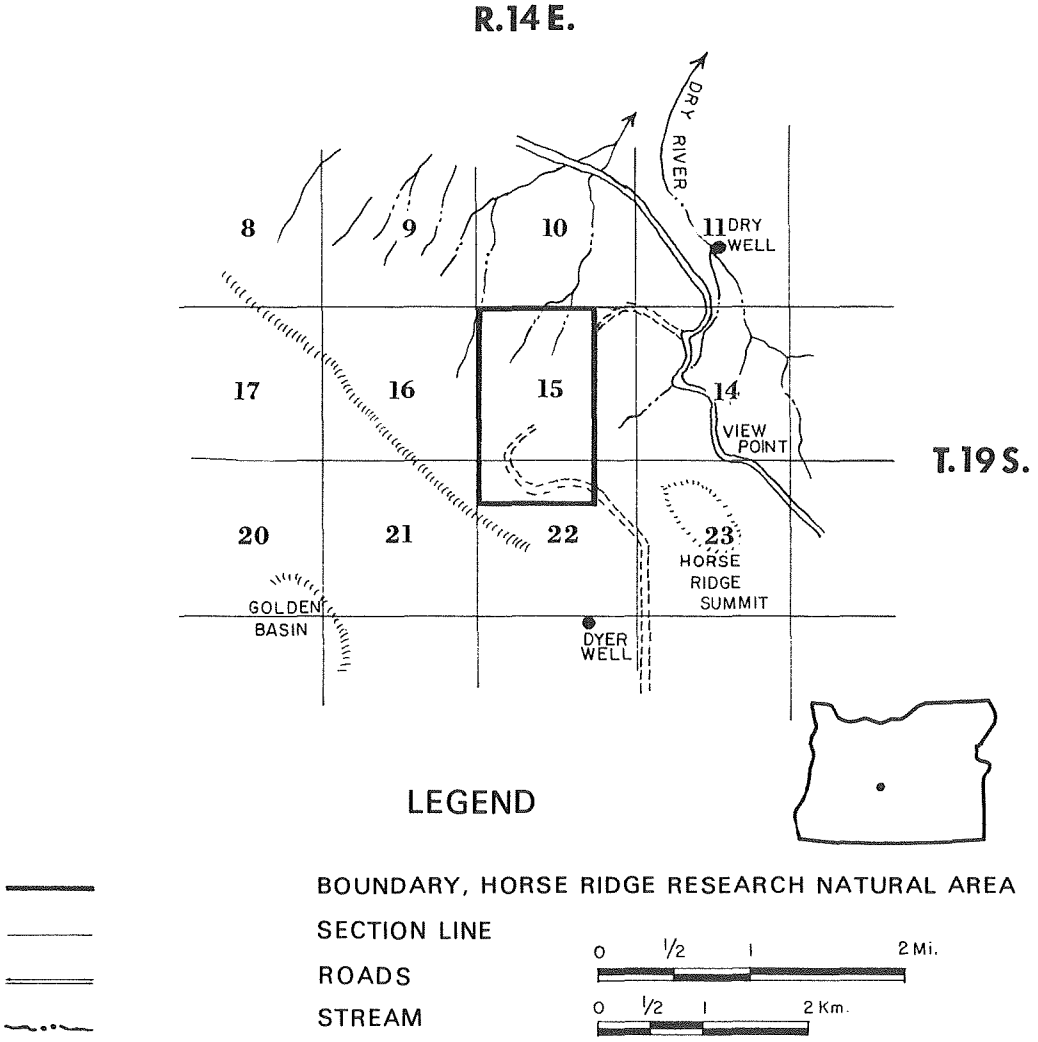

Figure HR-1.– Horse Ridge Research Natural Area, Deschutes County, Oregon.

Figure HR-2.-Communities of the Horse Ridge Research Natural Area. Upper left: A western juniper/big sagebrush/threadleaf sedge community with some bluebunch wheatgrass and Idaho fescue typical of those occupying the majority of the natural area. Upper right:
General northwesterly view from west end of tract showing typical western juniper woodland. Lower left:
Close view of ground vegetation dominated by big sagebrush and threadleaf sedge. Lower right: A view illustrating the apparent influence of western juniper on the distribution of ground vegetation-Idaho fescue dominates near the tree; big sagebrush and thread leaf sedge are common around the periphery.