

## ASHLAND RESEARCH NATURAL AREA<sup>1</sup>

"Pacific" ponderosa pine and ponderosa pine-Douglas-fir forests in a steep, granitic mountain valley of southwestern Oregon's Siskiyou Mountains.

The Ashland Research Natural Area was established on May 4, 1970, to provide examples of the "Pacific" ponderosa pine (*Pinus ponderosa*) and ponderosa pine-Douglas-fir (*Pseudotsuga menziesii*) forests found west of the Cascade Range in southern Oregon. The 570-ha. (1,408-acre) tract is located in Jackson County and is administered by the Ashland Ranger District (Ashland, Oregon), Rogue River National Forest. The natural area occupies portions of sections 21, 27, 28, 33, and 34, T. 39 S., R. 1 E., and sections 3, 4, 9, and 10, T. 40 S., R. 1 E., Willamette meridian. About three-fourths of the tract is bounded by roads: Forest Roads 3963 and 3903 on the east and south and Forest Road 3903-B (a spur) on the southwest (fig. AS-I). Ridgetops form most of the remaining northeast and east boundary. The natural area lies at 42°08' N. latitude and 122°43' W. longitude.

### ACCESS AND ACCOMMODATIONS

The natural area will normally be reached from Ashland, located about 5 km. (3 miles) to the north, via either Forest Road 3963 or 3903. These roads are located on the upper edge of the natural area and provide general views and access. The lower edge of the

<sup>1</sup>Description prepared by Dr. J. F. Franklin, U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station, Forestry Sciences Laboratory, Corvallis, Oregon.

natural area can be reached via Forest Road 3925 which goes past Reeder Reservoir; however, this road is blocked by a locked gate.

There are no maintained trails within the natural area. The steep, broken topography and brush make cross-country travel somewhat arduous and hazardous. There is an old trail which crosses the northern part of the natural area from east to west (fig. AS-I).

Numerous commercial accommodations are available at Ashland.

### ENVIRONMENT

The natural area occupies the slopes of a rugged mountain canyon along the East Fork of Ashland Creek. Topography is steep to very steep throughout most of the tract, with many spur ridges and subdrainages occurring at right angles to the main drainage. Areas of gentle to moderate slopes are found in southern and southwestern portions of the natural area. Elevations range from about 840 m. (2,800 ft.) at Reeder Reservoir to a maximum of about 1,400 m. (4,600 ft.).

The natural area is located on intrusive granitoid rocks of upper Jurassic and lower Cretaceous age (Wells 1956). Quartz diorite, a light- to medium-gray rock of sodic plagioclase and quartz, dominates. It may contain minor amounts of hornblende or biotite or both.

The climate is typical of inland valleys in southwestern Oregon. Summers are warm and dry, and winters are cool and moist. Extended summer drought periods are common. Some winter precipitation occurs as snow, the percentage of snow and total precipitation increasing rapidly with elevation. The following climatic data from Ashland (located at about 610-m. or 2,000-ft. elevation, 5 miles or 3 km. to the north) are reasonably representative of conditions in the lower part of the natural area (U.S. Weather Bureau 1965):

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Mean annual temperature . . . . . 11.3°C. (52.4°F.)  
 Mean January temperature . . . . . 3.6°C. (37.5°F.)  
 Mean July temperature . . . . . 20.6°C. (69.1°F.)  
 Mean January minimum temperature . . . . . -0.5°C. (30.1°F.)  
 Mean July maximum temperature . . . . . 30.2°C. (86.4°F.)  
 Average annual precipitation . . . . . 508 mm. (19.99 in.)  
 June through August  
 precipitation . . . . . 46 mm. (1.81 in.)  
 Average annual snowfall . . . . . 39 cm. (15.3 in.)

Soils within the natural area are typically relatively shallow and coarse-textured. The major soil series present is probably the Siskiyou series, a type of Grey Brown Podzol, with a thin A1 horizon and yellowishbrown B2.

## BIOTA

Approximate areas by SAF forest cover type are as follows (Society of American Foresters 1954):

| No. | Name                                     | Area                |
|-----|--|---------------------|
| 245 | Pacific Ponderosa Pine                   | 152 ha. (375 acres) |
| 244 | Pacific Ponderosa<br>Pine-Douglas-Fir    | 292 ha. (720 acres) |
| 229 | Pacific Douglas-Fir                      | 113 ha. (280 acres) |
| 234 | Oak-Madrone                              | 8 ha. (21 acres)    |
| 243 | Ponderosa Pine-Sugar<br>Pine-Douglas-Fir | 3 ha. (12 acres)    |

As will be seen, assignment of many stands to these categories is necessarily somewhat arbitrary. Kuchler (1964) types represented probably include 10 (Ponderosa Shrub Forest), 5 (Mixed Conifer Forest), 12 (Douglas Fir Forest), and 29 (California Mixed Evergreen Forest). The natural area appears to lie primarily within the southwestern Oregon Mixed Conifer Zone (Franklin and Dyrness 1969), although elements of the *Abies concolor* and Interior Valley Zones are present at highest and lowest elevations, respectively.

It is important to note that the natural area is located in the eastern Siskiyou Mountains, an area impoverished in species in comparison with either the western Siskiyou Mountains or southern Cascade Range (Waring 1969). Furthermore, the natural area occupies an area where strong environmental gradients, particularly of temperature and moisture, have been demonstrated and quantified (Waring 1969). These have profound

effects on community composition and make it difficult to break the mosaic into community types.

Common tree species within the natural area include ponderosa pine, Douglas-fir, sugar pine (*Pinus lambertiana*), white fir (*Abies concolor*), and Pacific madrone (*Arbutus menziesii*). Less important species include California black oak (*Quercus kelloggii*), Oregon white oak (*Quercus garryana*), chinkapin (*Castanopsis chrysophylla*), and incensecedar (*Libocedrus decurrens*). Bigleaf maple (*Acer macrophyllum*), white alder (*Alnus rhombifolia*), Pacific yew (*Taxus brevifolia*), and vine maple (*Acer circinatum*) are found along the stream bottoms.

The major climax species appear to be Douglas-fir and white fir. Douglas-fir is probably the typical climax tree on warmer and drier sites such as are found at lower elevations and southerly-exposed slopes. Ponderosa pine is probably not climax anywhere in the natural area, even where Douglas-fir is presently absent.<sup>2</sup> However, successional processes are often slow on these sites due to the severe microclimate and historically open nature of the stands. White fir is clearly the major climax species at higher elevations and on moister habitats; this is certainly the case where it presently occurs and is probably so in some other stands where this fire-sensitive species does not yet occur.

The forest stands classed as "Pacific Ponderosa Pine" are generally found in the lower third of the natural area (fig. AS-2). Type maps show these are dominated by poor to medium stocking of old-growth ponderosa pine,<sup>3</sup> i.e., trees over 53-cm. (21-in.) d.b.h. Minor amounts of Douglas-fir are normally associated. Typical measurements for dominant conifers are 75-cm. (30-in.) d.b.h. and 22 m. (75 ft.) in height. Hardwood tree

<sup>2</sup>Personal communication from Dr. H. H. Waring, Forestry Research Laboratory, Corvallis, Oregon.

<sup>3</sup>These are stocking levels according to standard timber inventory practices. Full (100-percent) stocking is defined by "normal stocking tables" and indicates complete occupation of the site by a tree species. Poor, medium, and good stocking are equivalent to 10 to 40, 40 to 70, and 70 to 100 percent, respectively, of the theoretical full stocking.

species present in such stands are California black and Oregon white oaks and Pacific madrone. The oaks typically attain diameters of 30 cm. (12 in.) at b.h. and heights of 10 to 12 m. (30 to 40 ft.); madrones may be somewhat larger (40-cm. or 16-in. d.b.h. and 15 m. or 50 ft. in height). Douglas-fir typically dominates whatever reproduction is present with smaller amounts of ponderosa pine. Both may be essentially absent, however, when a heavy understory of shrubs is present. The shrubby understory typically includes such sclerophyllous evergreen species as *Arctostaphylos patula* and *A. viscida*. In some stands the shrubs are gradually being killed off as Douglas-fir reproduction grows through and overtops them (fig. AS-2). Other common understory species are *Ceanothus integerrimus*, *Lotus crassifolius*, *berberis nervosa*, *Achillea lanulosa*, *Solidago canadensis*, *Apocynum pumilum*, *Hieracium albiflorum*, *Madia madioides*, *Lupinus albifrons*, *Collomia* spp., *Agoseris retrorsa*, *Rhus diversiloba*, *Lonicera hispidula*, and grasses. These communities appear to relate most closely to Waring's (1969) "Black Oak Type"; Waring (1969) provides environmental and additional compositional data for this type.

The "Pacific Ponderosa Pine-Douglas-Fir" stands occupy the bulk of the natural area (fig. AS-2). Ponderosa pine is again conspicuous in the overstory, but it is consistently associated with medium to high stocking levels of Douglas-fir poles, second growth, and/or old growth. Conifers typically attain larger sizes - 75- to 100-cm. (30- to 40-in.) d.b.h. and 37 to 45 m. (125 to 150 ft.) tall. Douglas-fir is an important species in the tree reproduction, although reproduction of white fir is often present and may even be numerically dominant. Hardwood tree species are less common than in the Pacific ponderosa pine type. Understory shrubs include *Corylus cornuta* var. *californica*, chinkapin, *Holodiscus discolor*, *Symphoricarpos mollis*, and *Arctostaphylos patula*. *Rhus diversiloba* and *Lonicera hispidula* are generally absent. Subshrub and herbaceous species generally include those previously mentioned, but less hardy species such as *Trientalis latifolia*,

*Adenocaulon bicolor*, and *Polystichum munitum* are also common. These communities are mostly assignable to Waring's (1969) "Mixed Conifer Type," which indicates a significantly cooler and moister habitat than the aforementioned "Black Oak Type."

The forest stands assigned to the "Pacific Douglas-Fir" cover type differ from those outlined in the previous paragraph only in the minor role of ponderosa pine. Douglas-fir dominates the overstory with medium levels of stocking, and most of the reproduction is white fir (fig. AS-2). Ground vegetation is generally reduced under these denser stands, but the composition is typical of the "Mixed Conifer Type" (Waring 1969). The single stand of "Ponderosa Pine-Sugar Pine-Douglas-Fir" type differs only in 10- to 40-percent stocking of very large, old-growth sugar pine.

Although hardwoods are scattered throughout the natural area, there is one small, nearly pure stand of Pacific madrone 12- to 25-cm. (5- to 10-in.) d.b.h. It is located on top of a spur ridge just inside the natural area boundary south of Reeder Reservoir. Douglasfir is the major conifer associate. The understory includes the relatively uncommon parasite *Boschniakia strobilacea*.

Most of the common animals of the southwestern Oregon pine-fir forest are found in the natural area. Mammals believed to utilize the tract as residents or transients are listed in table AS-I. Spiny lizards (*Sceloporus* spp.), striped skinks (*Eumeces* sp.), gopher snakes (*Pituophis melanoleucus*), and garter snakes (*Thamnophis* spp.) constitute the most common reptiles present. A great variety of bird life is represented, including species of hawks (Accipitridae), grouse (Phasianidae), quail (Tetraonidae), doves (Columbidae), owls (Tytonidae), woodpeckers (Picidae), jays (Corvidae), nuthatches (*Sitta* spp.), wrens (Troglodytidae), sparrows (Fringillidae), and the red-shafted flicker (*Colaptes cafer*).

Specialized habitats consist primarily of rock outcrops and cliffs and stream and streamside areas. There is a small ecologically interesting stand of *Cercocarpus betuloides* and *Bromus* sp. located on very shallow soil near Reeder Reservoir.

## HISTORY OF DISTURBANCE

There is abundant evidence of wildfire occurrence within the natural area prior to the initiation of fire control programs about 1910. No major fires are known to have occurred within the area during recent years.

Human disturbance of the natural area is relatively minor despite its proximity to the city of Ashland. Access to the lower part of the natural area (Reeder Reservoir) is controlled, since this is the municipal water source for Ashland. Consequently, most disturbance is found along the bounding roads and extends only a short distance into the natural area. This type of marginal disturbance is expected to continue and probably increase in the future. There are some old mine workings, including buildings, within the northeastern edge of the tract.

## RESEARCH

No research is presently known to be in progress on the natural area. However, numerous studies have been carried out in immediately adjacent areas on the ecology and environmental relations of the forest stands and tree species (Waring 1969, Cleary and Waring 1969, Atzet and Waring 1970). The results of these studies are directly

applicable to the natural area; the work of Whittaker (1960) should be applied with considerable caution, however, as it generally does not apply to conditions in the eastern Siskiyou Mountains. The flora of Mount Ashland, including the natural area, has been surveyed by Dennis (1959).

The natural area provides a site for studying the ecology of "Pacific" ponderosa pine-Douglas-fir forests over much of the range of environmental conditions in which it occurs. Studies of successional development within the variety of stand conditions and environments and their faunistic relationships are one example.

## MAPS AND AERIAL PHOTOGRAPHS

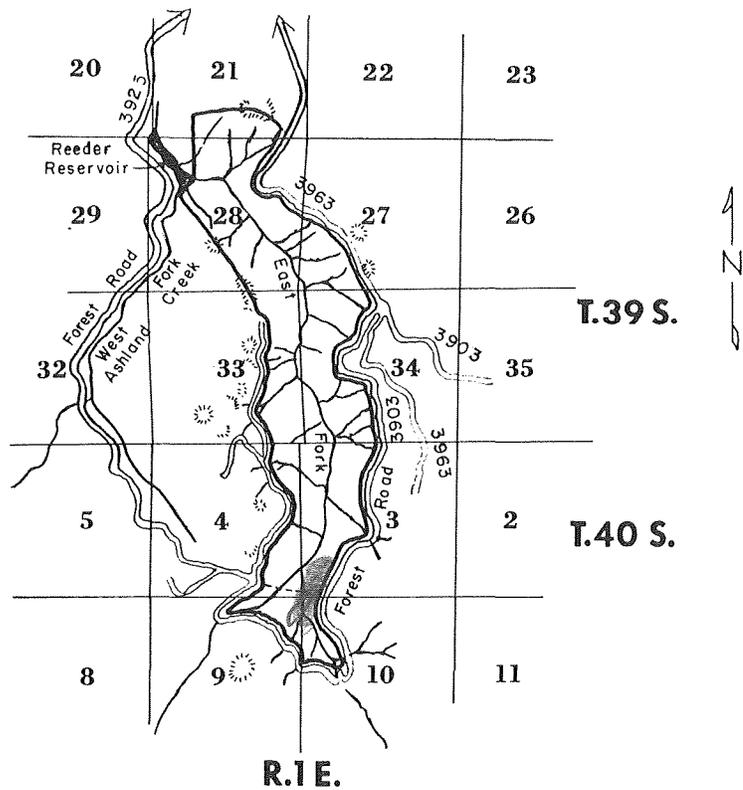
Special maps applicable to the natural area include: *Topography* - 15' Ashland, Oregon-California quadrangle, scale 1: 62,500, issued by the U.S. Geological Survey in 1962; and *geology - Geology of the Medford Quadrangle, Oregon-California*, scale 1:96,000 (Wells 1956). Either the District Ranger (Ashland Ranger District) or Forest Supervisor (Rogue River National Forest, Medford, Oregon) can provide details on the most recent aerial photo coverage and forest type maps for the area.

## LITERATURE CITED

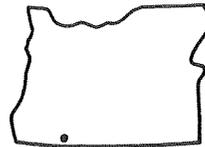
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**Table AS-1. — Tentative list of mammals for Ashland Research Natural Area**

| Order                           | Scientific name                  | Common name                   |                         |
|---------------------------------|----------------------------------|-------------------------------|-------------------------|
| Insectivora                     | <i>Neurotrichus gibbsi</i>       | shrew mole                    |                         |
|                                 | <i>Scapanus latimanus</i>        | broad-footed mole             |                         |
|                                 | <i>Sorex trowbridgii</i>         | Trowbridge shrew              |                         |
| Chiroptera                      | <i>Sorex vagrans</i>             | wandering shrew               |                         |
|                                 | <i>Antrozous pallidus</i>        | pallid bat                    |                         |
|                                 | <i>Eptesicus fuscus</i>          | big brown bat                 |                         |
|                                 | <i>Lasiorycteris noctivagans</i> | silver-haired bat             |                         |
|                                 | <i>Lasiurus borealis</i>         | red 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 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        |                         |
|                                 | <i>Tadarida brasiliensis</i>     | Brazilian free-tailed bat     |                         |
|                                 | Lagomorpha                       | <i>Lepus americanus</i>       | snowshoe hare           |
| <i>Lepus californicus</i>       |                                  | black-tailed jack rabbit      |                         |
| Rodentia                        | <i>Sylvilagus bachmani</i>       | brush rabbit                  |                         |
|                                 | <i>Aplodontia rufa</i>           | mountain beaver               |                         |
|                                 | <i>Erethizon dorsatum</i>        | porcupine                     |                         |
|                                 | <i>Eutamias amoenus</i>          | yellow-pine chipmunk          |                         |
|                                 | <i>Eutamias townsendi</i>        | Townsend chipmunk             |                         |
|                                 | <i>Glaucomys sabrinus</i>        | northern flying squirrel      |                         |
|                                 | <i>Microtus californicus</i>     | California vole               |                         |
|                                 | <i>Neotoma fuscipes</i>          | dusky-footed wood rat         |                         |
|                                 | <i>Peromyscus maniculatus</i>    | deer mouse                    |                         |
|                                 | <i>Sciurus griseus</i>           | western gray squirrel         |                         |
|                                 | <i>Spermophilus beecheyi</i>     | California ground squirrel    |                         |
|                                 | <i>Spermophilus lateralis</i>    | mantled ground squirrel       |                         |
|                                 | <i>Tamiasciurus douglasi</i>     | chickaree                     |                         |
|                                 | <i>Thomomys bottae</i>           | valley pocket gopher          |                         |
|                                 | <i>Thomomys mazama</i>           | Mazama pocket gopher          |                         |
|                                 | Carnivora                        | <i>Bassariscus astutus</i>    | ringtail or miner's cat |
|                                 |                                  | <i>Canis latrans</i>          | coyote                  |
| <i>Felis concolor</i>           |                                  | mountain lion or cougar       |                         |
| <i>Lynx rufus</i>               |                                  | bobcat                        |                         |
| <i>Martes americana</i>         |                                  | marten                        |                         |
| <i>Martes pennanti</i>          |                                  | fisher                        |                         |
| <i>Mephitis mephitis</i>        |                                  | striped skunk                 |                         |
| <i>Mustela erminea</i>          |                                  | short-tailed weasel or ermine |                         |
| <i>Mustela frenata</i>          |                                  | long-tailed weasel            |                         |
| <i>Spilogale putorius</i>       |                                  | spotted skunk or civet cat    |                         |
| <i>Taxidea taxus</i>            |                                  | badger                        |                         |
| <i>Urocyon cinereoargenteus</i> |                                  | gray fox                      |                         |
| <i>Ursus americanus</i>         |                                  | black bear                    |                         |
| Artiodactyla                    | <i>Vulpes fulva</i>              | red fox                       |                         |
|                                 | <i>Odocoileus h. columbianus</i> | black-tailed deer             |                         |



**LEGEND**



- BOUNDARY, ASHLAND RESEARCH NATURAL AREA
  - SECTION LINE
  - ==== ROAD
  - ~~~~ STREAM
  - TRAIL
- 0 1/2 1 2 Mi.  
 0 1/2 1 2 Km.

*Figure AS-1.*— Ashland Research Natural Area, Jackson County, Oregon.

*Figure AS-2.*-Natural features of the Ashland Research Natural Area.

Upper left: General view of mixed ponderosa pine-Douglas-fir stands in the northeastern corner of the natural area; the East Fork of Ashland Creek is located in the canyon on the right.

Upper right: Shrub community of *Arctostaphylos* spp. being overtopped and gradually killed off by conifers.

Lower left: White fir reproduction under a mixed stand of sugar and ponderosa pine; white fir is the climax species and reproduces aggressively on more mesic portions of the natural area.

Lower right: Old-growth ponderosa pine and Douglasfir; note the severe fire scars left by past ground fires.

