

JACKSON CREEK RESEARCH NATURAL AREA¹

An old-growth Douglas-fir stand growing on a major river terrace in the western Olympic Peninsula.

The Jackson Creek Research Natural Area was established to exemplify the Douglas-fir (*Pseudotsuga menziesii*) forest type as it occurs on the western Olympic Peninsula. The 65-ha. (160-acre) tract is located in Jefferson County, Washington, and is administered by the Olympic National Park (Port Angeles, Washington). The natural area is rectangular occupying the NE1/4 NE1/4 section 13, T. 27' N., R. 10 W., and N1/2 NW1/4 and NW1/4 NE1/4 section 18, T. 27 N., R. 9 W., Willamette meridian (fig. JC-1). It lies at 47°51' N. latitude and 123° 55' W. longitude.

ACCESS AND ACCOMMODATIONS

The natural area is located on the south bank of the Hoh River immediately opposite the Hoh River Ranger Station and campground. The ranger station is at the end of the Hoh River Road about 30 km. (19 miles) from U.S. Highway 101. To reach the natural area, it is necessary to ford the Hoh River. This generally requires scouting up river from the campground until a log jam suitable for crossing is located. During recent years, such a log jam has been located only a short distance above the central campground area,

but conditions change periodically. Although there are no trails, cross-country travel within the natural area is not difficult because of the open nature of the forest stand.

Commercial accommodations are available in Forks or Kalaloch, along U.S. Highway 101, from 48 to 64 km. (30 to 40 miles) away. However, the public campground at the end of the Hoh River Road is excellent, and there are several smaller state campgrounds along the road outside of the Park.

ENVIRONMENT

The natural area occupies gentle topography on terraces and benches in the Hoh River valley. Elevations range from about 207 to 402 m. (680 to 1,320 ft.). Jackson Creek flows through the middle of the natural area. The natural area is located on upper Cretaceous-lower Tertiary sedimentary rocks belonging to the Soleduck formation (Danner 1955, Hunting et al. 1961). However, bedrock is buried entirely beneath depositions of alluvium and, possibly, glacial drift at higher elevations. The valley of the Hoh River, including the natural area, was glaciated at least three times during the Wisconsin epoch and at least once before that (Crandell 1964).

A wet, mild, maritime climate prevails. Winters are mild, and summers are cool with frequent cloudy days. Precipitation is heavy, but less than 10 percent falls during summer months. The following climatic data are from the Forks Weather Station located approximately 35 km. (22 miles) northwest of the natural area (U.S. Weather Bureau 1965) :

Mean annual temperature	9.55°C. (49.2°F.)
Mean January temperature	3.72°C. (38.7°F.)
Mean July temperature	15.39°C. (59.7°F.)
Mean January minimum temperature	0.17°C. (32.3°F.)
Mean July maximum temperature	21.55°C. (70.8°F.)

¹ 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.

Average annual precipitation .. 2,974 mm. (117.10 in.) June through August
precipitation 214 mm. (8.44 in.)
Average annual snowfall 348 em. (13.70 in.)

Precipitation is significantly higher on the natural area itself, probably averaging about 3,600 mm. (142 in.) annually (Kirk 1966).

Soils appear to be predominantly Sols Bruns Acides. Fonda² has described profiles with A1-B1-B2-C sequences from terraces in the vicinity of the natural area. The A1 horizons are apparently relatively thick (0 to 16 cm.).

BIOTA

Essentially all 65 ha. (160 acres) of the natural area can be classified as SAF forest cover type 229, Pacific Douglas-Fir (Society of American Foresters 1954). It would probably fall entirely within Kuchler's (1961) Type 1, Spruce-Cedar-Hemlock Forest, and the *Picea sitchensis* Zone as defined by Franklin and Dyrness (1969).

Four coniferous tree species are known to occur within the Jackson Creek Research Natural Area: Douglas-fir, western hemlock (*Tsuga heterophylla*), Sitka spruce (*Picea sitchensis*), and western red-cedar (*Thuja plicata*). Douglas-fir is overwhelmingly dominant, surprisingly so for a stand estimated to be around 275 years in age. Samples within the natural area indicate about 72 sq. m. per hectare of basal area (314 sq. ft. per acre), of which 87 percent is Douglas-fir.³ Trees average 125- to 150-cm. (50- to 60-in.) d.b.h. and 68 m. (225 ft.) in height with maximum diameters of about 235 cm. (94 in.) b.h. (fig. JC-2). Western hemlock is well distributed over the natural area, but averages only about 11 percent of the stand volume. Western hemlock has relatively little representation in intermediate size classes (saplings and poles). Sitka spruce is generally uncommon in the overstory but is commonly encountered as reproduction growing on down logs; it is most common in swampy areas

found in some portions of the natural area. Occasional red alder (*Alnus rubra*) and bigleaf maple (*Acer macrophyllum*) may also be encountered in the wetter, open areas.

The major climax species on the natural area appears to be western hemlock, although age class distributions indicate the climax condition is still far in the future. Sitka spruce may also be a minor climax species in these forests, since reproductive size classes up to saplings and small poles are encountered through most of the area. Climax status for the Sitka spruce would apparently contrast with normal conditions for the *Picea sitchensis* Zone (Franklin and Dyrness 1969). This is probably a partial consequence of the special conditions found in so-called "rain forest" valleys of the western Olympic Peninsula, e.g., the relatively open nature of many of the stands and selective grazing of hemlock seedlings by elk.⁴

Several community types can be recognized within the natural area including: (1) *Pseudotsuga menziesii*/*Pteridium*. *Aquilinum*/*Achlys triphylla*, (2) *Pseudotsuga menziesii*/*Polystichum munitum*-*Oxalis oregana*, (3) *Picea sitchensis*/*Acer circinatum*/*Pteridium aquilinum*. The *Pseudotsuga*/*Pteridium*/*Achlys* community occupies much of the actual river-terrace habitat within the natural area (fig. JC-2). Typical species include *Pteridium aquilinum*, *Oxalis oregana*, *Tiarella trifoliata*, *Vaccinium parvifolium*, *Achlys triphylla*, *Rubus pedatus*, *Blechnum spicant*, *Luzula parviflora*, *Trisetum Cernuum*, *Carex deweyana*, and *Mainthemum bifolium* var. *kamaschaticum*. The *Pseudotsuga*/*Polystichum*-*Oxalis* community is very similar in composition, lacking only the dominance of *Pteridium aquilinum*. This community type is most common in the eastern half of the natural area on gentle slopes and a higher level bench. The *Picea*/*Acer*/*Pteridium* community typifies the very open areas which appear relatively swampy in character. Tree cover is very low in these openings, but the coverage of brush species such as vine maple (*Acer circinatum*) and herbs such as *Pteri-*

² Personal communication from Dr. Richard W. Fonda, Biology Department, Western Washington State College, Bellingham.

³ See footnote 2.

⁴ See footnote 2.

dium aquilinum and various grasses and sedges is quite high.

The most important mammal within the natural area is the Roosevelt elk (*Cervus canadensis roosevelti*) which is particularly common during the winter and spring. A list of mammals believed to utilize the tract is provided in table JC-1.

Jackson Creek, which flows through the natural area for a small portion of its length, provides the only aquatic habitat within the natural area. The open swampy areas undoubtedly provide additional specialized habitat for a variety of plant and animal species not typical of the heavily forested area.

HISTORY OF DISTURBANCE

The Douglas-fir stand present on the natural area probably originated with a wildfire approximately three centuries ago; however, no fire scars were seen, which would provide evidence for more recent wildfires.

Human disturbance of the area appears to be very minor despite its proximity to the Hoh River campground; the Hoh River undoubtedly provides a major barrier against casual use of the area.

RESEARCH

The only research work known to have been conducted within the natural area is an

examination and description of the Douglas-fir stands in connection with a study of the relationship between forest communities and environmental conditions in the Hoh River valley.⁵ The natural area would appear to offer unusually good opportunities for studies of: (1) successional development and the factors which have retarded the rate of natural succession from Douglas-fir to hemlock; (2) the effect of Roosevelt elk on community composition and forest succession; and (3) occurrence of animals in sharply contrasting but contiguous community types (dense Douglas-fir forest vs. wet, brush- and herb-dominated openings).

MAPS AND AERIAL PHOTOGRAPHS

Special maps applicable to the natural area include: *TopogTaphy-15*, Mount Tom, Washington quadrangle, scale 1: 62,500, issued by the U.S. Geological Survey in 1955, and Olympic National Park and Vicinity, Washington, scale 1: 125,000, issued by the U.S. Geological Survey in 1957; and *geology -Geologic Map of Washington*, scale 1:500,000 (Hunting et al. 1961). The Superintendent, Olympic National Park (Port Angeles, Washington), can provide details on the most recent aerial photo coverage and forest type maps for the area.

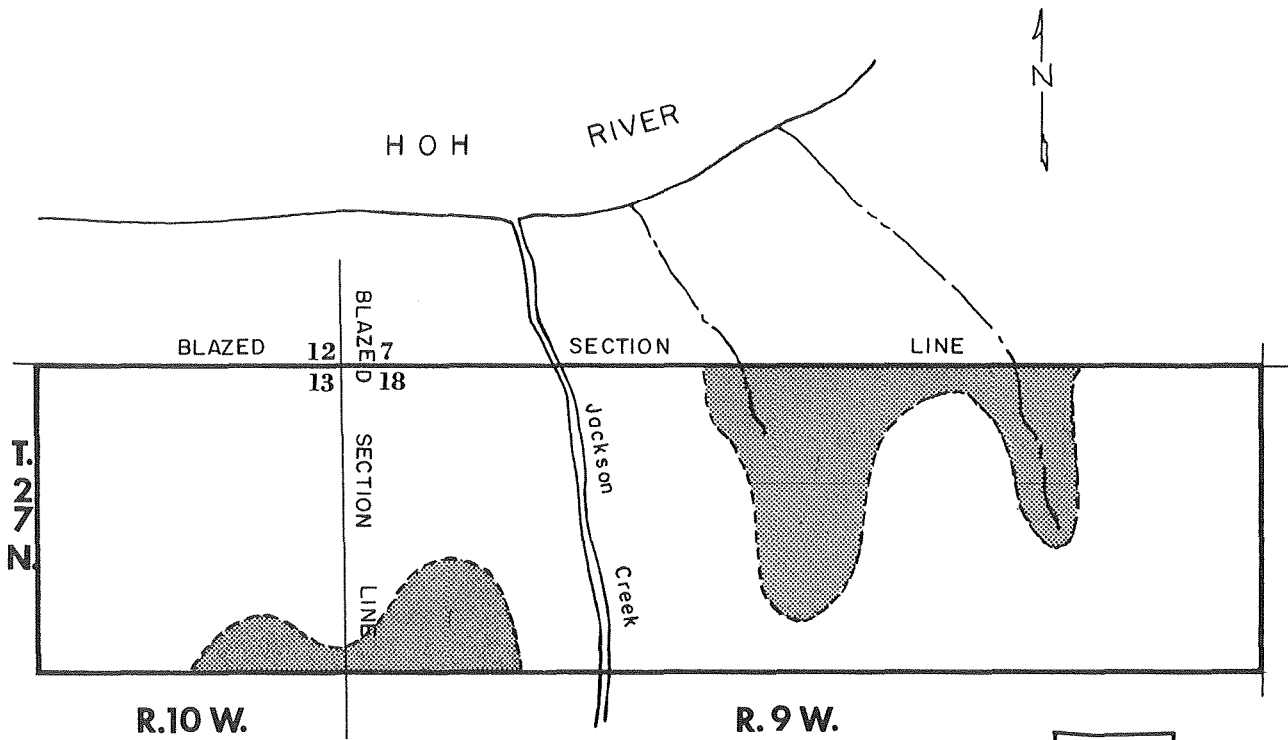
⁵ See footnote 2.

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Table JC-1. — Tentative list of mammals for Jackson Creek Research Natural Area

Order	Scientific name	Common name	
Insectivora	<i>Neurotrichus gibbsi</i>	shrew mole	
	<i>Scapanus orarius</i>	coast mole	
	<i>Scapanus townsendi</i>	Townsend mole	
	<i>Sorex bendirii</i>	marsh shrew	
	<i>Sorex obscurus</i>	dusky shrew	
	<i>Sorex trowbridgii</i>	Trowbridge 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 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	
Rodentia	<i>Aplodontia rufa</i>	mountain beaver	
	<i>Castor canadensis</i>	beaver	
	<i>Clethrionomys gapperi</i>	Gapper red-backed vole	
	<i>Eutamias townsendi</i>	Townsend chipmunk	
	<i>Glaucomys sabrinus</i>	northern flying squirrel	
	<i>Microtus longicaudus</i>	long-tailed vole	
	<i>Microtus oregoni</i>	Oregon or creeping vole	
	<i>Microtus townsendi</i>	Townsend vole	
	<i>Neotoma cinerea</i>	bushy-tailed wood rat	
	<i>Peromyscus maniculatus</i>	deer mouse	
	<i>Tamiasciurus douglasi</i>	chickaree	
	<i>Zapus trinotatus</i>	Pacific jumping mouse	
	Carnivora	<i>Canis latrans</i>	coyote
		<i>Felis concolor</i>	mountain lion or cougar
		<i>Lutra canadensis</i>	river otter
		<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>Mustela vison</i>		mink	
<i>Procyon lotor</i>		raccoon	
<i>Spilogale putorius</i>	spotted skunk or civet cat		
Artiodactyla	<i>Ursus americanus</i>	black bear	
	<i>Cervus canadensis roosevelti</i>	Roosevelt elk	
	<i>Odocoileus h. columbianus</i>	black-tailed deer	



LEGEND




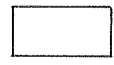

-  BOUNDARY, JACKSON CREEK RESEARCH NATURAL AREA
 -  SECTION LINE
 -  STREAM
 -  DOUGLAS-FIR STANDS
 -  WESTERN HEMLOCK-SITKA SPRUCE STANDS
- 0 660 1320 2640 Ft.
- 0 201 402 805m.

Figure JC-1.— Jackson Creek Research Natural Area, Jefferson County, Washington.

Figure JC-2.-Communities of the Jackson Creek Research Natural Area. Upper left: Old-growth specimen of Douglas-fir approximately 235-cm. (94-in.) d.b.h. Upper right: Ecotone between the Douglas-fir stands and a swampy, open area dominated by shrubs and herbs; reproduction of western hemlock is conspicuous. Bottom: Typical terrace community of *Pseudotsuga menziesii*/*Pteridium aquilinum*-*Achlys triphylla* on the main river terrace within the natural area.

