CAMAS SWALE RESEARCH NATURAL AREA

Supplement No. 21[1]

Alan B. Curtis[2]

The Research Natural Area described in this supplement is administered by the Bureau of Land Management, U.S. Department of the Interior. Bureau of Land Management Research Natural Areas are administered by District Offices that are organizational subdivisions of their State Offices. Scientists wishing to use these Research Natural Areas (RNA) should contact the Bureau's State Director. Because this tract is located in Oregon, the responsible individual is the Oregon State Director (Bureau of Land Management, PO. Box 2965, Portland, Oregon 97208). The manager of the district in which the Research Natural Area is located will be informed of mutually agreed on activities by the State Director. Nevertheless, a scientist should visit the administering District Office when beginning a study and explain the nature, purpose, and duration of activities planned. Permission for brief observational visits to Research Natural Areas can be obtained from District Managers.

Camas Swale Research Natural Area is part of a Federal system of such tracts established for research and educational purposes. Each RNA constitutes a site where natural features are preserved for scientific purposes, and natural processes are allowed to dominate. Their main purposes are to provide:

1. Baseline areas against which effects of human activities can be measured;
1. Sites for study of natural processes in undisturbed ecosystems; and
1. Gene pool preserves for all types of organisms, especially rare and endangered types.

The Federal system is outlined in "A Directory of the Research Natural Areas on Federal Lands of the United States of America."3

Of the 96 Federal Research Natural Areas established in Oregon and Washington, 45 are described in "Federal Research Natural Areas in Oregon and Washington: A Guidebook for Scientists and Educators" (see footnote 1). Supplements to the guidebook describe additions to the system.

The guiding principle in management of Research Natural Areas is to prevent unnatural encroachments or activities that directly or indirectly modify ecological processes. Logging and uncontrolled grazing are not allowed, for example, nor is public use that might impair scientific or educational values. Management practices necessary for maintenance of ecosystems may be allowed.

Federal Research Natural Areas provide a unique system of publicly owned and protected examples of undisturbed ecosystems where scientists can conduct research with minimal interference and reasonable assurance that investments in long-term studies will not be lost to logging, land development, or similar activities. In return, a scientist wishing to use a Research Natural Area is obligated to:

1. Obtain permission from the appropriate administering agency before using the area;4
1. Abide by the administering agency's regulations governing use, including specific limitations on the type of research, sampling methods, and other procedures; and
1. Inform the administering agency on progress of the research, published results, and disposition of collected materials.

'Supplement No. 21 to "Federal Research Natural Areas in Oregon and Washington: A Guidebook for Scientists and Educators," by Jerry F. Franklin, Frederick C. Hall, C.T. Dyrness, and Chris Maser (Pacific Northwest Forest and Range Experiment Station, 1972).

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'Federal Committee on Ecological Reserves. A directory of the Research Natural Areas on Federal lands of the United States of America. Washington, DC: U.S. Department of Agriculture, Forest Service; 1977.

"Six agencies cooperate in this pro,,'Tam in the Pacific Northwest: U.S. Department of Agriculture-Forest Service; U.S. Department of the Interior-Bureau of Land Management, Fish and Wildlife Service, and National Park Service; U.S. Department of Energy; and U.S. Department of Defense.

The purpose of these limitations is to:

1. Ensure that the scientific and educational values of the tract are not impaired;
2. Accumulate a documented body of knowledge about the tract; and
3. Avoid conflict between studies.

Research must be essentially nondestructive; destructive analysis of vegetation is generally not allowed, nor are studies requiring extensive modification of the forest floor or extensive excavation of soil. Collection of plant and animal specimens should be restricted to the minimum necessary to provide voucher specimens and other research needs. Under no circumstances may collecting significantly reduce population levels of species. Collecting must also be carried out in accordance with applicable State and Federal agency regulations. Within these broad guidelines, appropriate uses of Research Natural Areas are determined by the administering agency.

CAMAS SWALE RESEARCH NATURAL AREA

Old-growth Douglas-fir forest growing on foothills west of the Willamette Valley.

The Camas Swale Research Natural Area (RNA) was established in January 1984 to provide an example of a dry-site, mature Douglas-fir forest in the Willamette Valley foothills (fig. 1). This site also incorporates a small, xeric, meadow community that, in the absence of fire, is slowly being invaded by several shrub and tree species. The 117-ha area in Lane County, Oregon, is administered by the Lorane Resource Area of the Eugene (Oregon) District of the Bureau of Land Management (ELM). The RNA is situated in Section 25, T. 19 S., R. 4 W, Willamette Meridian (lat. 43°53' N.; long. 123°07' W).

Access and Accommodations

To reach the RNA, take Interstate 5 to exit 182 at Creswell, Oregon, 11 mi south of Eugene, Oregon. 'rravel 6 mi west on Camas Swale Road (county road 2130) to Weiss Road (county road 2146). Turn south on Weiss Road and follow it for 2 mi to BLM road 19-4-26. Follow the gravel-surfaced BLM road for 0.8 mi to a gate (obtain key from BLM office in Eugene) in the northwest corner of the RNA. The northern boundary of the RNA roughly follows road 19-4-26 for 0.6 mi. The southern part of the RNA is reached by continuing on this road for 0.6 mi to its end (fig. 2).

Commercial accommodations are available in Creswell and in the greater Eugene area. Commercial air service is available at Eugene.

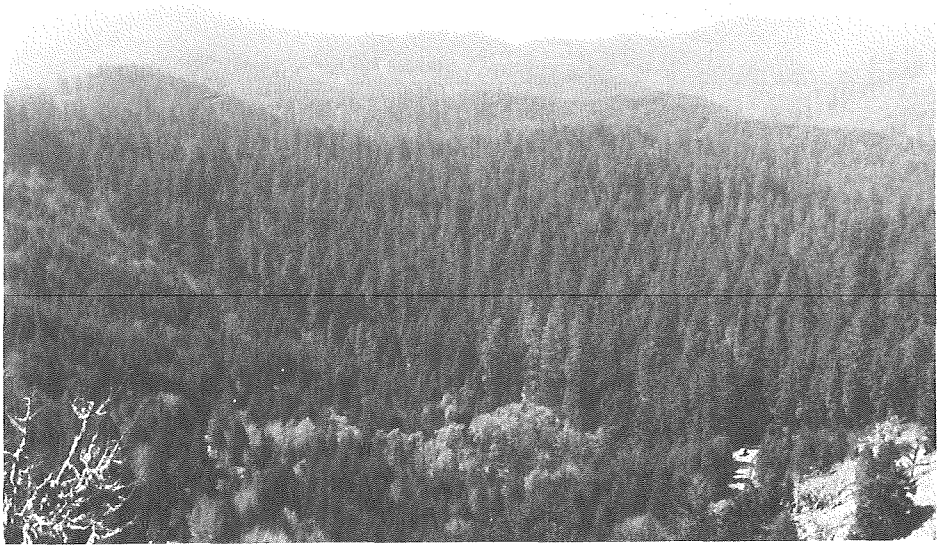

Figure 1—General view of Camas Swale RNA looking southwesterly. The RNA encompasses the mature forest running through the center of the photo.

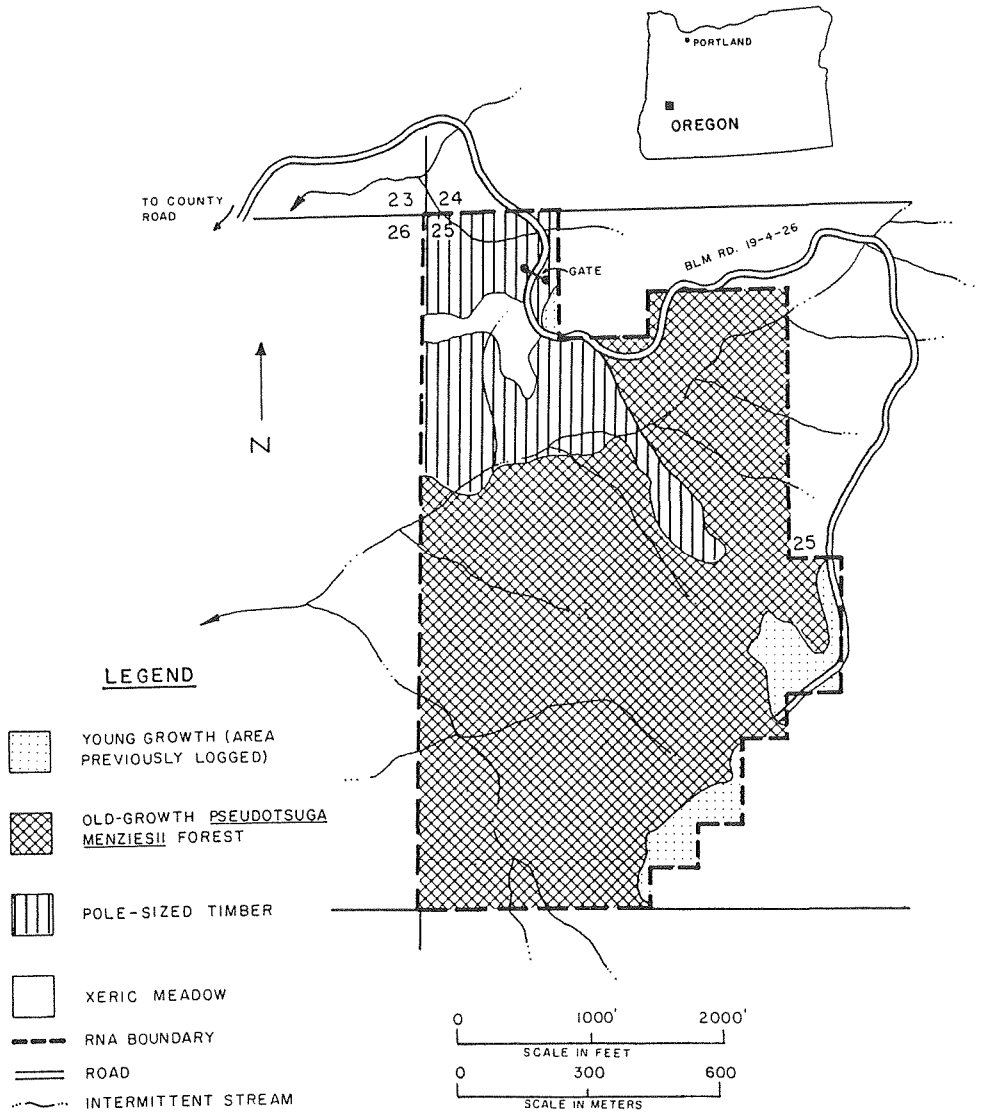

Figure 2—Map of Camas Swale RNA.

Environment

Camas Swale RNA lies on the approximate boundary of the Willamette Valley and Coast Range physiographic provinces. Low, rounded hills pass gradually into more mountainous, highly dissected terrain with steep slopes. The RNA occupies the west slope of a high divide at the head of a branch of Camas Swale Creek. Steep to nearly level slopes of north, south, and west exposures are represented. Elevations range from 232 to 396 m.

The area is uniformly forested with conifers except for a small, open meadow on south- and westfacing slopes. Hardwoods occur on lower slopes and along many of the intermittent streams in the area.

Proximity to the Pacific Ocean (51 mi west of Camas Swale RNA) gives the area a temperate, marine climate-cool, wet winters and warm, dry summers. The closest weather station is located in Eugene. Temperatures average 3.8 *DC* in January and 19.4 *DC* in July; the mean annual temperature is 11.1 *DC* (National Oceanic and Atmospheric Administration 1984). Precipitation

at the RNA averages 1020 mmJyear (Pacific Northwest River Basins Commission 1970). Approximately 70 percent of the precipitation falls in the 5-month period from November through March, and only 5 percent falls from June through August. Nearly all the precipitation falls as rain; on rare occasions, a few inches of snow may accumulate, but it usually melts within 3 to 4 days. In summer, the relative humidity at Eugene is commonly between 35 and 50 percent with occasional drops below 30 percent. Evaporation at this time far exceeds precipitation, and this leads to drought.

Stable high-pressure air masses bring clear skies in summer, and light winds are usually from the north. Also during summer, temperature inversions sometimes occur in the valleys and foothills of the Eugene area. Beginning in late fall and continuing through spring, unstable low-pressure air masses bring frequent storms from the Pacific Ocean. Prevailing winds are out of the southwest, and sometimes their force is sufficient to cause extensive windthrow of trees. Wind speeds of 98 mi/h were recorded in Eugene during the 1962 Columbus Day storm.

Soils

Soils in Camas Swale RNA are diverse; all are derived from pyroclastic rocks. The soils occur in a xeric moisture regime. A complex of Bellpine and Jory series occupies more than half of the area. These series are found on the undulating slopes in the central part of the RNA and are particularly dominant in the southwest portion. The Bellpine-Jory soils are productive, silty clay loams, red, and 61 to 152 cm deep.

Dark brown soils of the Witzel series are scattered in the field of Bellpine-Jory soils. The Witzel soils occur on areas of 1 to 5 ha on gentle slopes. This is a very stony, silty loam soil that is less than 51 cm deep. In droughty situations, trees do not grow well on Witzel soils.

In the northeast end of the RNA, Jory soils occur on an area of 7 to 10 ha. This soil is more than 102 cm deep. In the northwest corner, very dark brown soils of the Dixonville series occupy 4 ha on a north-facing slope. This soil is a silty clay loam that is 51 to 102 cm deep. Permeability is slow for both the Jory and the Dixonville soils. A small area of Kilchis soils borders the main stream south of the xeric meadow. This soil is shallow (less than 51 cm deep) and stony and has rapid permeability.

Vegetation

The forest at Camas Swale RNA is dominated by *Pseudotsuga menziesii* (fig. 3) (see table 1 for a list of all plants in the RNA). This is the same as Society of American Foresters (SAF) cover type 229, Pacific Douglas-fir (Eyre 1980). This old-growth forest covers 86.2 ha. On north slopes, the forest has a closed canopy; on south and west slopes, the forest is more open, and trees of all age classes are present. The distribution of ages indicates that *P menziesii* is the major climax species at this site, partly because it responds better than other species to stressful, relatively dry environments. The range of diameters at breast height (d.b.h.) for Douglas-fir is 61 to 122 cm, and trees average 46 m tall.

The major associate in this forest is *Calocedrus decurrens.* Scattered large individuals occur on south and west exposures. The largest one found was 165 cm d.b.h. and the average height of these trees was 36 m. At this site, *P menziesii* and C. *decurrens* are typically near the same age, but C. *decurrens* forms a lower stratum below the dominant *P menziesii* canopy (Franklin and Dyrness 1973).

The C. *decurrens* understory that occurs throughout much of the RNA originated around 1860. This closely correlates with the cessation of burning by Native Americans. These trees also comprise the bulk ofthe pole-sized stands on 21.5 ha surrounding the meadow area (fig. 4).

A few individuals of *Pinus ponderosa* are found at the driest sites in the northwest corner of the RNA and on a bench above one stream. The largest tree found was 107 cm d.b.h., and the tallest one was 36 m. Most of these pines have numerous conks on their trunks. A small amount of pine reproduction can be found on adjacent disturbed sites.

Figure 3—Old-growth Pseudotsuga menziesii *on a southern exposure in Camas Swale RNA.*

At the wettest sites, a few *Abies grandis* are present; the largest was 84 cm d.b.h., and the tallest was 44 m. This species is also found as seedlings or saplings throughout the forest, especially on lower slopes. There is one gentle, wet slope where *Fraxinus latifOlia* occurs; the largest tree was 53 cm d.b.h. *Acer macrophyllum* is found along most of the stream courses in the RNA.

Common understory shrubs throughout the RNA are *Acer circinatum, Corylus comuta* val'. *califomica,* and *Berberis nervosa* (fig. 5). Wetter sites support *Gaultheria shallon* and *Polystichum munitwn,* while drier sites have an abundance of *Rhus diversiloba* in both shrub and liana forms. Common herbaceous species include *Calypso bulbosa, Cardamine pulcherrima* val'. *tenella, Goodyera oblongifolia, Satureja douglasii,* and *Synthyris renifOrmis.* A dense carpet of moss covers the ground in all forested areas.

The 2.4-ha xeric meadow in the northwest portion of the RNA is fringed by conifers and scattered *Quercus garryana* (fig. 6). *Cynosurus echinatus,* the most common grass in the meadow, is not native. Common herbaceous plants include *Achillea millefolium, Mimulus guttatus, Prunella vulgaris,* and *Saxifraga oregana.* No rare, threatened, or endangered plants are known to occur anywhere in the RNA.

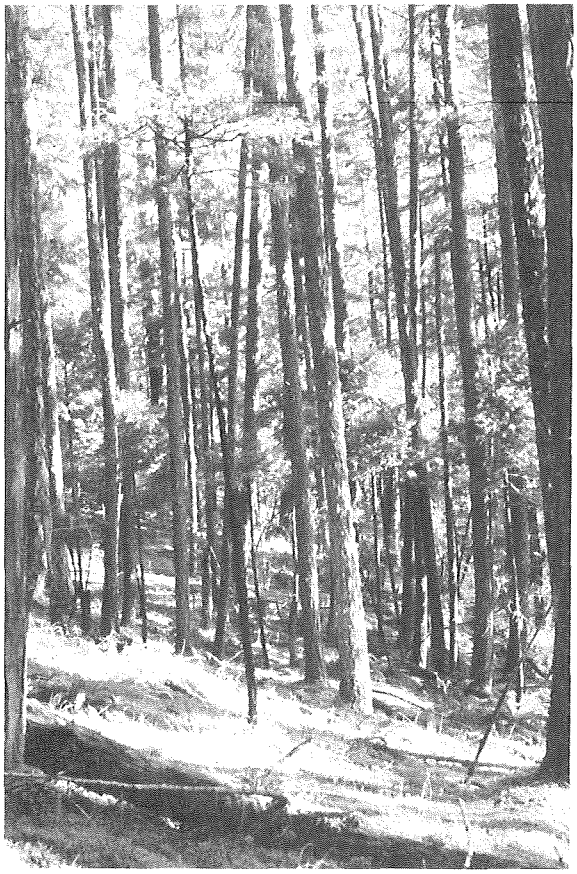

Figure 4—Pole-sized Pseudotsuga menziesii *stand with a* Calocedrus decurrens *understory in Camas Swale RNA.*

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Figure 5—An understory of Corylus cornuta *var.* californica *and* Polystichum munitum *occurs on much of Camas Swale RNA where the* Pseudotsuga menziesii *overstory is relatively open.*

Figure 6—The xeric meadow at Camas Swale RNA is being invaded by conifers and hardwoods as a result of the absence of fire in the recent past.

Fauna

A list of mammals believed to frequent the RNA is given in table 2; birds are listed in table 3; and reptiles and amphibians are listed in table 4.

History of Disturbance

At least one major forest fire has occurred in the RNA, as evidenced by the deep scars burned into trunks of nearly all old-growth *Calocedrus decurrens.* This fire interrupted the natural succession that would have occmred and has allowed *Pseudotsuga menzU?sii* to maintain its dominance. No fires are known to have bmned in the RNA since the initiation of fire suppression in the last 50 years.

In 1964-65,560 windthrown trees from the 1962 Columbus Day storm were salvaged. A dirt road that was needed dming salvage is now abandoned and overgrown. At the same time, two areas totaling 6.9 ha within the RNA boundary were clearcut and replanted. Distmbance, perhaps overgrazing by early settlers' domesticated animals, has led to invasion of the xeric meadow by non-native grasses. Off-road vehicle use has severely damaged the thin, fragile soil in a portion of the meadow in the northwest corner of the tract. Closme of BLM road 19-4-26 to all unauthorized vehicular use has curtailed, but not eliminated, the problem. Several residences are located less than 0.5 mile from the RNA boundary. There are no known archaeological sites in the RNA.

Research

No research studies are known to be in progress in the RNA. In the past, the RNA has served as a study area for students from the University of Oregon. The area provides an excellent site for studying growth and succession in a dry-site, mixed-conifer forest.

Maps and Aerial Photographs

Maps applicable to Camas Swale RNA are:

Thpographic-the 15' Cottage Grove, Oregon, quadrangle, scale 1:62,500, issued by the U.S. Geological Smvey in 1957; and Geologic-Reconnaissance Geologic Map and Sections of the Western Cascade Range, Oregon, north of lat. 43^0 N. (Peck and others 1964). The Bureau of Land Management, Eugene District Office, can supply information on the most recent aerial photos and forest-type maps for the area.

English Equivalents

1 millimeter (mm) = 0.04 inch
1 centimeter (cm) = 0.4 inch
1 meter (m) = 3.3 feet
1 kilometer (km) = 0.6 mile
1 hectare (ha) = 2.5 acres
degrees Celsius (°C) = (degrees Fahrenheit -32)/1.8)

Table 1—Plants found in Camas Swale Research Natural Area[1]

Scientific name	Common name
Abies grandis (Dougl.) Forbes	Grand fir
Acer circinatum Pursh	Vine maple
Acer macrophyllum Pursh	Bigleaf maple
Achillea millefolium L.	Common yarrow
Achlys triphylla (Smith) DC.	Vanillaleaf
Adenocaulon bicolor Hook.	Pathfinder
Adiantum pedatum L.	Maidenhair fern
Agrostis hallii Vasey	Hall's bentgrass
Aira caryophyllea L.[2]	Silver hairgrass
Alnus rubra Bong.	Red alder
Amelanchier alnifolia Nutt.	Western serviceberry
Anaphalis margaritacea (L.) B. & H.	Pearly-everlasting
Anemone deltoidea Hook.	Threeleaf anemone
Angelica arguta Nutt.	Sharptooth angelica
Angelica genuflexa Nutt.	Kneeling angelica
Aquilegia formosa Fisch.	Sitka columbine
Arbutus menziesii Pursh	Pacific madrone
Arenaria macrophylla Hook.	Bigleaf sandwort
Asarum caudatum Lindl.	Wild ginger
Athyrium filix-femina (L.) Roth.	Lady-fern
Athysanus pusillus (Hook.) Greene	Sandweed
Berberis aquifolium Pursh	Tall Oregongrape
Berberis nervosa Pursh	Oregongrape
Brodiaea sp.	Brodiaea
Bromus mollis L.[2]	Soft brome
Calocedrus decurrens (Torr.) Florin	Incense-cedar
Calochortus tolmiei H. & A.	Tolmie's mariposa
Calypso bulbosa (L.) Oakes	Calypso orchid
Campanula prenanthoides Dur.	California harebell
Cardamine oligosperma Nutt.	Little western bittercress
Cardamine pulcherrima Greene var. *tenella* (Pursh) Hitchc.	Slender toothwort
Carex spp.	Sedge
Castanopsis chrysophylla (Dougl.) DC.	Golden chinquapin
Ceanothus velutinus Dougl.	Sticky-laurel
Centaurium umbellatum Gilib.[2]	European centaury
Cerastium arvense L.	Field chickweed
Cerastium viscosum L.[2]	Sticky chickweed
Cerastium vulgatum L.	Common chickweed
Chimaphila umbellata (L.) Bart.	Prince's-pine
Chrysanthemum leucanthemum L.[2]	Oxeye-daisy
Cirsium arvense (L.) Scop. var. *horridum* Wimm. & Grab.[2]	Canada thistle

See footnotes at end of table.

Table 1—Plants found in Camas Swale Research Natural Area[1] (continued)

Scientific name	Common name
Cirsium vulgare (Savi) Tenore[2]	Bull thistle
Collinsia grandiflora Lindl.	Large-flowered blue-eyed Mary
Collinsia parviflora Lindl.	Small-flowered blue-eyed Mary
Collomia heterophylla Hook.	Varied-leaf collomia
Comandra umbellata (L.) Nutt.	Bastard toad-flax
Coptis laciniata Gray	Cutleaf goldthread
Corallorhiza mertensiana Bong.	Western coral-root
Corallorhiza striata Lindl.	Striped coral-root
Cornus nuttallii Aud.	Pacific dogwood
Corylus cornuta Marsh. var. *californica* (DC.) Sharp	Hazelnut or California hazel
Cynoglossum grande Dougl.	Pacific hound's-tongue
Cynosurus echinatus L.[2]	Hedgehog dogtail
Dactylis glomerata L.[2]	Orchard-grass
Daucus carota L.[2]	Queen Anne's lace
Dodecatheon hendersonii Gray	Broad-leaved shooting star
Draba verna L.	Spring whitlow-grass
Dryopteris arguta (Kaulf.) Watt.	Coastal shield-fern
Elymus glaucus Buckl.	Blue wildrye
Epilobium angustifolium L.	Fireweed
Epilobium minutum Lindl.	Small-flowered willow-weed
Epilobium paniculatum Nutt.	Autumn willow-weed
Epilobium telmateia Ehrh.	Giant horsetail
Eriophyllum lanatum (Pursh) Forbes	Wooly sunflower
Erodium cicutarium (L.) L'Her.[2]	Alfilaria or stork's-bill
Erythronium oregonum Applegate	Giant fawn-lily
Festuca californica Vasey	California fescue
Festuca microstachys Nutt.	Small fescue
Fragaria vesca L.	Woods strawberry
Fraxinus latifolia Benth.	Oregon ash
Fritillaria lanceolata Pursh	Rice-root fritillary
Galium aparine L.[2]	Bedstraw
Galium triflorum Michx.	Sweetscented bedstraw
Gaultheria shallon Pursh	Salal
Geranium dissectum L.[2]	Cut-leaf geranium
Geranium molle L.[2]	Dovefoot geranium
Goodyera oblongifolia Raf.	Rattlesnake-plantain
Hieracium albiflorum Hook.	White-flowered hawkweed
Holcus lanatus L.[2]	Velvet-grass
Holodiscus discolor (Pursh) Maxim.	Ocean-spray
Hypericum perforatum L.[2]	Common St. Johns-wort
Hypochaeris radicata L.[2]	False dandelion

See footnotes at end of table.

Table 1—Plants found in Camas Swale Research Natural Area[1] (continued)

Scientific Name	Common Name
Inula helenium L.[2]	Elecampane
Iris tenax Dougl.	Oregon iris
Juncus spp.	Rush
Lathyrus pauciflorus Fern.	Few-flowered peavine
Lathyrus polyphyllus Nutt.	Leafy peavine
Ligusticum apiifolium (Nutt.) Gray	Celery-leaved lovage
Linnaea borealis L.	Twinflower
Lithophragma parviflora (Hook.) Nutt.	Smallflower woodlandstar
Lomatium utriculatum (Nutt.) Coult. & Rose	Common lomatium
Lonicera hispidula (Lindl.) Dougl.	Hairy honeysuckle
Lotus sp.	Deervetch
Luzula campestris (L.) DC. var. *congesta* (Thuill.) E. Meyer	Field woodrush
Madia gracilis (J.E. Smith) Keck	Slender tarweed
Marah oreganus (T. & G.) Howell	Oregon bigroot
Microsteris gracilis (Hook.) Greene var. *gracilis*	Pink microsteris
Mimulus alsinoides Dougl.	Chickweed
Mimulus guttatus DC.	Yellow monkey-flower
Mimulus moschatus Dougl.	Musk-flower
Montia perfoliata (Donn) Howell	Miners-lettuce
Montia sibirica (L.) Howell var. *sibirica*	Western springbeauty
Myosotis discolor Pers.	Yellow and blue forget-me-not
Myosotis laxa Lehm.	Small-flowered forget-me-not
Navarretia intertexta (Benth.) Hook.	Needle-leaf navarretia
Nemophila menziesii H. & A.	Baby blue eyes
Nemophila parviflora Dougl.	Small-flowered nemophila
Orobanche uniflora L. var. *purpurea* (Heller) Achey	Naked broomrape
Osmorhiza chilensis H. & A.	Mountain sweet-root
Oxalis suksdorfii Trel.	Western yellow oxalis
Perideridia gairdneri (H. & A.) Math.	Gairdner's yampah
Philadelphus lewisii Pursh	Lewis mockorange
Pinus ponderosa Dougl.	Ponderosa pine
Pityrogramma triangularis (Kaulf.) Maxon	Goldfern
Plantago lanceolata L.[2]	English plantain
Poa annua L.[2]	Annual bluegrass
Poa trivialis L.	Roughstalk bluegrass
Polypodium glycyrrhiza D.C. Eat.	Licorice-fern
Polygonum douglasii Greene	Douglas' knotweed
Polystichum munitum (Kaulf.) Presl	Sword-fern
Potentilla gracilis Dougl. var. *gracilis*	Slender cinquefoil

See footnotes at end of table.

Table 1—Plants found in Camas Swale Research Natural Area[1] (continued)

Scientific name	Common name
Prunella vulgaris L.[2]	Self-heal
Prunus emarginata (Dougl.) Walp.	Bitter cherry
Pseudotsuga menziesii (Mirb.) Franco	Douglas-fir
Pteridium aquilinum (L.) Kuhn	Bracken fern
Quercus garryana Dougl.	Oregon white oak
Ranunculus occidentalis Nutt. var. *occidentalis*	Western buttercup
Ranunculus uncinatus D. Don	Little buttercup
Rhamnus purshiana DC.	Cascara
Rhus diversiloba T. & G.	Poison-oak
Rosa gymnocarpa Nutt.	Baldhip rose
Rubus laciniatus Willd.[2]	Evergreen blackberry
Rubus leucodermis Dougl.	Blackcap
Rubus parviflorus Nutt.	Thimbleberry
Rubus ursinus Cham. & Schlecht.	Pacific blackberry
Rudbeckia occidentalis Nutt.	Black head
Rumex acetosella L.[2]	Sheep sorrel
Salix scouleriana Barratt	Scouler willow
Sambucus cerulea Raf.	Blue elderberry
Sanicula crassicaulis Poepp.	Pacific sanicle
Satureja douglasii (Benth.) Briq.	Yerba buena
Saxifraga oregana Howell	Oregon saxifrage
Scirpus microcarpus Presl	Small-fruited bulrush
Senecio jacobaea L.[2]	Tansy ragwort
Sitanion jubatum Smith	Big squirreltail
Smilacina stellata (L.) Desf.	Star-flowered Solomon-plume
Stachys rigida Nutt.	Rigid hedge-nettle
Stellaria crispa Cham. & Schlecht.	Crisped starwort
Symphoricarpos albus (L.) Blake	Common snowberry
Symphoricarpos mollis Nutt.	Creeping snowberry
Synthyris reniformis (Dougl.) Benth.	Snow-queen
Taxus brevifolia Nutt.	Pacific yew
Thermopsis montana Nutt. var. *venosa* (Eastw.) Jeps.	Mountain thermopsis
Tiarella trifoliata L. var. *unifoliata* (Hook.) Kurtz.	Coolwort foamflower
Tonella tenella (Benth.) Heller	Small-flowered tonella
Torilis arvensis (Huds.) Link[2]	Hedge-parsley
Trientalis latifolia Hook.	Western starflower
Trifolium variegatum Nutt.	White-tip clover

See footnotes at end of table.

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Table 1—Plants found in Camas Swale Research Natural Area[1] (continued)

Scientific name	Common name
Vancouveria hexandra (Hook.) Morr. & Dec.	White inside-out-flower
Veronica arvensis L.[2]	Common speedwell
Viburnum ellipticum Hook.	Oregon viburnum
Vicia americana Muhl.	American vetch
Viola sempervirens Greene	Evergreen violet
Whipplea modesta Torr.	Whipplevine

[1]Nomenclature follows Hitchcock and Cronquist (1976). Information supplied by author.
[2]Introduced species.

Table 2—Reptiles and amphibians in Camas Swale Research Natural Area[1]

Order	Scientific name	Common name
Caudata	*Ambystoma gracile*	Northwestern salamander
	Aneides ferreus	Clouded salamander
	Dicamptodon ensatus	Pacific giant salamander
	Ensatina eschscholtzii	Oregon salamander
	Taricha granulosa	Roughskin newt
	Plethodon dunni	Dunn's salamander
	Plethodon vehiculum	Western red-backed salamander
Anura	*Hyla regilla*	Pacific treefrog
Squamata	*Charina bottae*	Rubber boa
	Coluber constrictor	Racer
	Crotalus viridis	Western rattlesnake
	Diadophis punctatus	Ringneck snake
	Eumeces skiltonianus	Western skink
	Gerrhonotus coeruleus	Northern alligator lizard
	Gerrhonotus multicarinatus	Southern alligator lizard
	Pituophis melanoleucus	Pacific gopher snake
	Thamnophis elegans	Western terrestrial garter snake
	Thamnophis ordinoides	Northwestern terrestrial garter snake
	Thamnophis sirtalis	Common garter snake

[1]Nomenclature follows Collins and others (1978). Reptiles and amphibians listed are believed to use the area at some time of year. Information supplied by Charles Thomas, wildlife biologist, U.S. Department of the Interior, Bureau of Land Management, Eugene, Oregon, and Chris Maser, research biologist, U.S. Department of the Interior, Bureau of Land Management, Forestry Sciences Laboratory, Corvallis, Oregon.

Table 3—Birds in Camas Swale Research Natural Area[1]

Order	Scientific name	Common name
Ciconiiformes	*Ardea herodias*	Great blue heron
	Butorides striatus	Green-backed heron
Falconiformes	*Accipiter cooperii*	Cooper's hawk
	Accipiter gentilis	Northern goshawk
	Accipiter striatus	Sharp-shinned hawk
	Aquila chrysaetos	Golden eagle
	Buteo jamaicensis	Red-tailed hawk
	Cathartes aura	Turkey vulture
	Falco sparverius	American kestrel
Galliformes	*Bonasa umbellus*	Ruffed grouse
	Dendragapus obscurus	Blue grouse
	Oreortyx pictus	Mountain quail
Columbiformes	*Columba fasciata*	Band-tailed pigeon
	Zenaida macroura	Mourning dove
Strigiformes	*Aegolius acadicus*	Saw-whet owl
	Bubo virginianus	Great horned owl
	Glaucidium gnoma	Pygmy owl
	Otus asio	Western screech owl
	Strix occidentalis	Spotted owl
	Tyto alba	Barn owl
Apodiformes	*Chaetura vauxi*	Vaux's swift
	Selasphorus rufus	Rufous hummingbird
	Stellula calliope	Calliope hummingbird
Piciformes	*Colaptes auratus*	Common flicker
	Dendrocopos villosus	Hairy woodpecker
	*Dryocopus pileatus**	Pileated woodpecker
	Picodes pubescens	Downy woodpecker
	Sphyrapicus varius	Yellow-bellied sapsucker

Table 3—Birds in Camas Swale Research Natural Area[1] (continued)

Order	Scientific name	Common name
Passeriformes	*Nuttallornis borealis*	Olive-sided flycatcher
	Empidonax difficillis	Western flycatcher
	Empidonax oberhalseri	Dusky flycatcher
	Contopus sordidulus	Western wood pewee
	Parus rufescens	Chestnut-backed chickadee
	Parus atricapillus	Black-capped chickadee
	Psaltriparus minimus	Bushtit
	Perisoreus canadensis	Gray jay
	Cyonocitta stelleri	Steller's jay
	Corvus corax	Common raven
	Corvus branchyrhynchos	American crow
	Sitta canadensis	Red-breasted nuthatch
	Certhia familiaris	Brown creeper
	*Troglodytes troglodytes**	Winter wren
	Ixoreus naevius	Varied thrush
	Turdus migratorius	Robin
	Catharus guttata	Hermit thrush
	Catharus ustulata	Swainson's thrush
	Regulus calendula	Ruby-crowned kinglet
	Regulus satrapa	Golden-crowned kinglet
	Vireo gilvus	Warbling vireo
	Vireo huttoni	Hutton's vireo
	Vireo solitarius	Solitary vireo
	Dendroica coronata	Yellow-rumped warbler
	Dendroica nigrescans	Black-throated gray warbler
	Dendroica occidentalis	Hermit warbler
	Dendroica townsendi	Townsend's warbler
	Wilsonia pusilla	Wilson's warbler
	Carpodacus purpureus	Purple finch
	Melospiza melodia	Song sparrow
	Hesperiphona vespertina	Evening grosbeak
	Pheucticus melanocephalus	Black-headed grosbeak
	Loxia curvirostra	Red crossbill
	*Junco hyemalis**	Dark-eyed junco
	Pipilo erythrophthalmus	Rufus-sided towhee
	Spinus pinus	Pine siskin
	Piranga ludoviciana	Western tanager

*Indicates presence verified by sight, sound, or sign.

[1]Nomenclature follows Bertrand and Scott (1979). Birds listed are believed to use the area at some time of year. Information supplied by Charles Thomas, wildlife biologist, U.S. Department of the Interior, Bureau of Land Management, Eugene, Oregon, and Chris Maser, research biologist, U.S. Department of the Interior, Bureau of Land Management, Forestry Sciences Laboratory, Corvallis, Oregon.

Table 4—Mammals in Camas Swale Research Natural Area[1]

Order	Scientific name	Common name
Marsupialia	*Didelphis virginiana*	Common opossum
Insectivora	*Neurotrichus gibbsii*	Shrew-mole
	*Scapanus orarius**	Pacific coast mole
	Sorex trowbridgii	Trowbridge's shrew
	Sorex vagrans	Vagrant 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 thysanodes	Fringed myotis
	Myotis volans	Long-legged myotis
	Myotis yumanensis	Yuma myotis
	Plecotus townsendii	Townsend's big-eared bat
Lagomorpha	*Lepus americanus*	Snowshoe hare
Rodentia	*Aplodontia rufa*	Mountain beaver
	Arborimus longicaudus	Red tree vole
	*Clethrionomys californicus**	Western red-backed vole
	*Erethizon dorsatum**	Porcupine
	Glaucomys sabrinus	Northern flying squirrel
	Microtus oregoni	Oregon vole
	*Peromyscus maniculatus**	Deer mouse
	Sciurus griseus	Western gray squirrel
	*Tamiasciurus douglasii**	Chickaree
	Zapus trinotatus	Pacific jumping mouse

Table 4—Mammals in Camas Swale Research Natural Area[1] (continued)

Order	Scientific name	Common name
Carnivora	*Canis latrans*	Coyote
	Felis rufus	Bobcat
	Mustela erminea	Shorttail weasel
	Mustela frenata	Long-tailed weasel
	Mustela vison	Mink
	Spilogale putorius	Spotted skunk
	Urocyon cinereoargenteus	Gray fox
	Vulpes vulpes	Red fox
Artiodactyla	*Cervus elaphus*	Roosevelt elk
	*Odocoileus hemionus**	Blacktail deer

[1]Nomenclature follows Jones and others (1975). Mammals listed are believed to use the area at some time of year. Information supplied by Charles Thomas, wildlife biologist, U.S. Department of the Interior, Bureau of Land Management, Eugene, Oregon, and Chris Maser, research biologist, U.S. Department of the Interior, Bureau of Land Management, Forestry Sciences Laboratory, Corvallis, Oregon.

*Indicates presence verified by sight, sound, or sign.

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