## Oregon Plants, Oregon Places:

# Gearhart Mountain Wilderness

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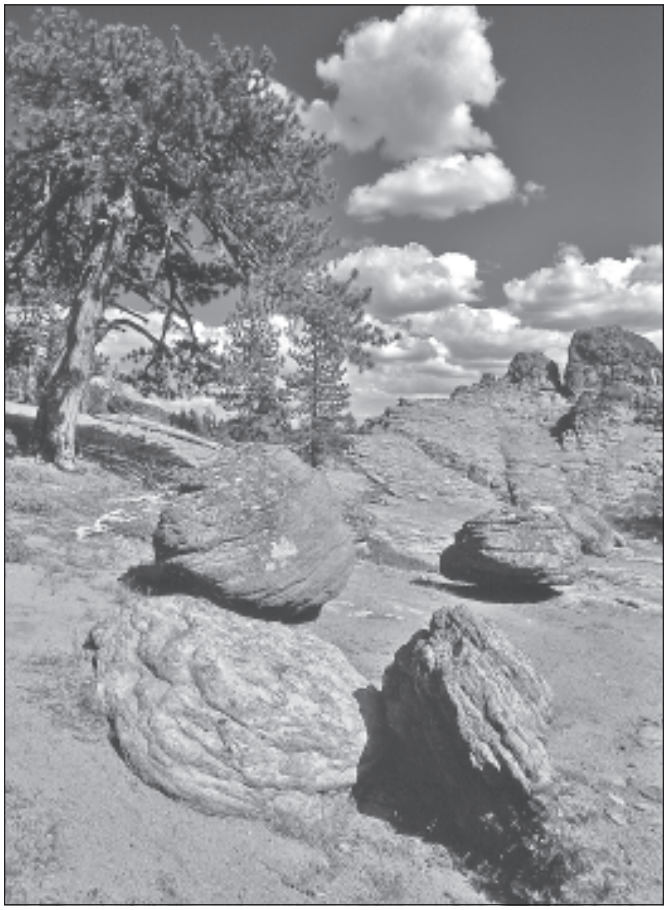
Gearhart Mountain, a broad-shouldered giant on the border between Klamath and Lake counties, lures me each July to explore the pristine meadows located on its east flank, seeking further discoveries among the abundant wildflowers. Gearhart Mountain, located about 12 miles northeast of Bly, forms part of the watershed boundary between the Klamath and Chewaucan drainages. It lies within the Fremont-Winema National Forest. Higher areas of the mountain (above 6,300 ft.) received wilderness designation in 1964, with additional lands added in 1984, bringing the current Wilderness total to 22,800 acres. The mountain was named for the Gearhart family, local ranchers who lived in the area in the 1870s (McArthur 1982). During WWII the Mitchell family was picnicking near the southern base of the mountain. They died when a Japanese fire balloon, designed to ignite West Coast forests, exploded when they touched it. A monument now stands near the site of the accident.



Palisade Rocks consist of porphyritic lava rock weathered into a variety of fascinating shapes. Photo taken at 6,500 feet elevation by Ron Larson.

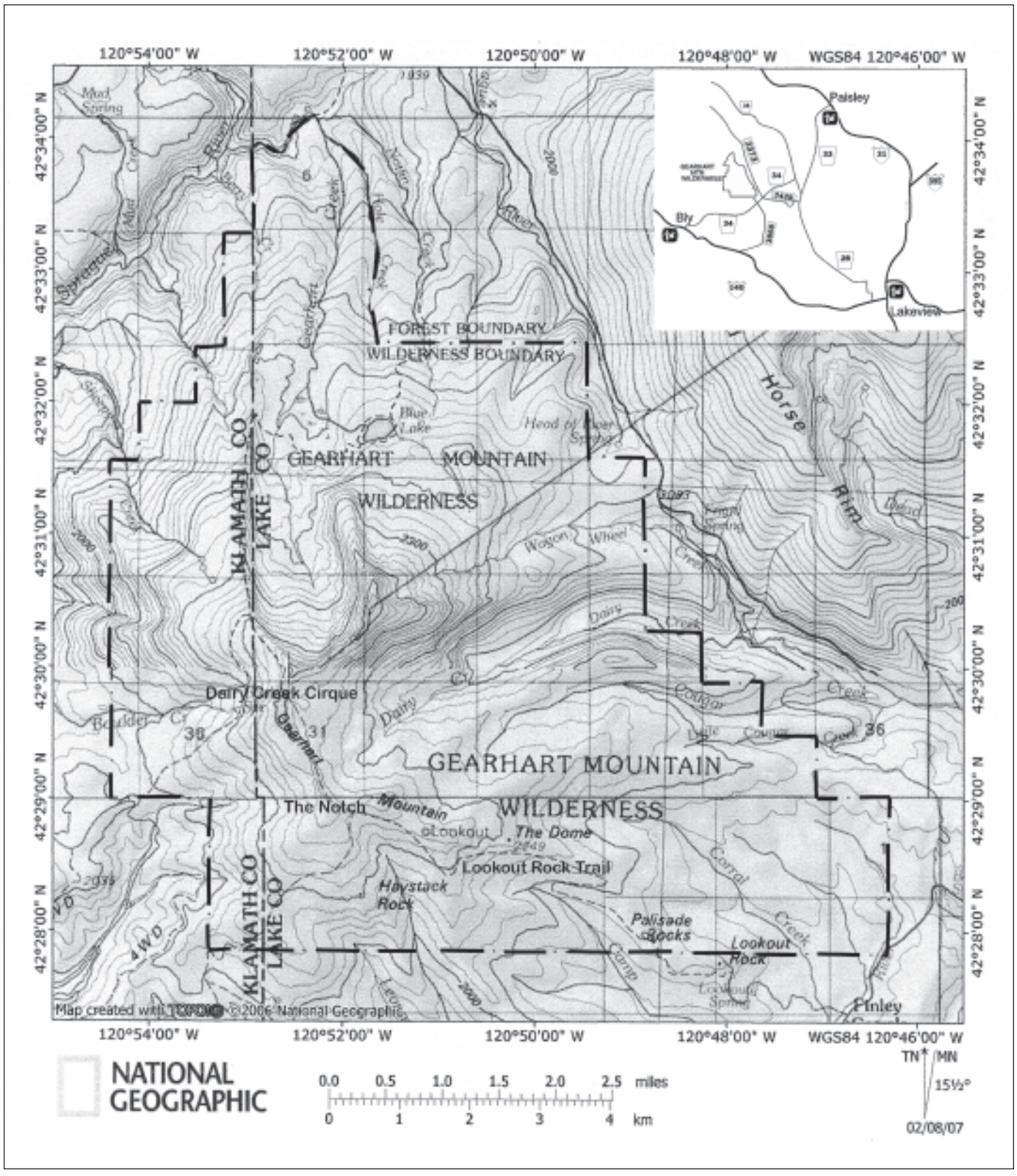
Situated between two physiographic provinces (Cascade Mountains, Basin and Range), Gearhart Mountain provides an opportunity to investigate how its flora has been affected by these two large floristic regions. At 8,364 ft, Gearhart is the highest peak in south-central Oregon between the Cascade and Warner Mountains. The nearest peaks of similar height are Yamsey (8,196 ft.) about 40 miles to the northwest, and Drake (8,407 ft.) about 40 miles to the east. The Cascades lie about 75 miles to the west.

Taylor and Hannan (1999) place Gearhart Mountain in the "High Plateau" climate zone, which has a short growing season, subject to frost throughout the year. In Klamath County, annual precipitation averages 37 inches, with about 80 percent falling between October and March. Average minimum temperatures for January are 15º F. Because of its height and size, precipitation rates on Gearhart are relatively high for the region east of the Cascades. The Forest Service reports a record snow depth of 100 inches, measured at 7,000 ft. elevation on the mountain. Although this is likely exceptional, it emphasizes the importance of snow in the water budget of the mountain. Snow covers most of higher terrain from November to June, and in heavy snowfall years, some small drifts last through summer and fall. As a consequence, springs, seeps, wet meadows, and other wetlands are plentiful at the higher elevations. The basin formed by Dairy Creek Cirque on the east side of the mountain has the highest concentration of meadows. These start at about 7,600 ft. and continue down slope for about a mile.

### Geology and Soils

Gearhart is a Miocene shield volcano composed of numerous low-viscosity lava flows that extend outwards about ten miles from the mountain. (Newberry Crater, south of Bend is also a shield volcano, and other shield volcanoes occur in the area just east of the Cascades from northern California to Washington.) On Gearhart Mountain, this gray, igneous, porphyritic rock forms prominent outcrops and formations, some over 300 feet high. Their characteristic platy, slate-like fracture creates conspicuous rock formations, many of which are named; for example, Haystack Rock, The Dome, Lookout Rock, and Palisade Rocks.

Powerful erosional forces, especially glaciers, have carved prominent valleys that dominate the terrane on the north and east sides. Well preserved moraine loops occur at distances of two to three miles from cirque headwalls on the northeast side of the mountain (Osborn and Beavis 2001). The Dairy Creek Cirque is two miles wide. Dairy Creek flows into the Chewaucan River, which drains into Lake Abert. Lake Abert basin lacks external drainage and some geographers consider it part of the Great Basin. Near-vertical cliffs of the massive headwall of the Dairy Creek Cirque rise over 300 feet high. The headwall has eroded through on the west, forming a prominent cliff that can be seen from a




Map of Gearhart Mountain Wilderness showing Lookout Rock Trail, Palisade Rocks, and Dairy Creek Cirque in the southern part. Gearhart Mountain is located off Highway 140 about 50 miles ENE of Klamath Falls and 35 miles NW of Lakeview. Topographic map created using TOPO!® ©1998 Wildflower Productions, www.topo.com. Vicinity inset map from USFS website.

great distance. Prominent talus slopes and slide debris occur below the cliffs. Other cirques and valleys occur around the mountain.

At the higher elevations, soils are poorly developed and contain a high fraction of volcanic ash and rock; lower sites have sandy loam soils (Hopkins 1979). Habitats on the mountain vary by elevation, aspect, soils, moisture, presence of exposed rock, and other factors. Glacial activity on the north and east sides of the mountain has contributed to habitat diversity, especially by gouging basins that trap fine sediments and water, thus creating wetlands. The south and west aspects are warmer and drier than the east and north slopes, and these differences are reflected in the plant cover. Coniferous forests cover most of the mountain, except were soils are saturated or the substrate is primarily rock.

## Plant Collections and Trail Access

According to records at Oregon State University Herbarium, about 250 sheets have been collected from Gearhart Mountain, representing 166 plant species. Major collections were made by John Leiberg in 1896, Lincoln Constance in 1928, May Loveless in 1931, and Virginia Crosby, Lakeview BLM botanist, in 1976 and 1979. I have been making observations since 1998.

Most plant collections, including my own observations, have been from near Trail 100, which starts at the wilderness boundary on the south side of the mountain near the Corral Creek campground and Finley Corrals. From the trailhead at 6,300 ft., this trail ascends for 5 miles to 8,000 feet, before descending to 7,500 ft. in the Dairy Creek Cirque basin. From there it continues north for a total distance of 11 miles. To access the west side of the mountain, use Boulder Creek Trail 100A, which originates at 6,500 ft. A third trail, Lookout Rock, is accessed via a short spur road (#012) off Forest Road 34, which is about a half mile north of Bly on Highway 140.

## Overview of Plant Communities

### Lookout Rock Trail

Forests of western juniper (*Juniperus occidentalis*) and ponderosa pine (*Pinus ponderosa*) occupy the south and west slopes between 6,300 and 7,000 ft. elevation. A broad area of scabland with only scattered trees covers the southwest slope near the Sprague River. In contrast, lodgepole pine (*Pinus contorta*) and white fir (*Abies concolor*) dominate the north and east aspects. White fir extends onto the south and west sides, where it is joined by scattered ponderosa and sugar pine (*Pinus lambertiana*) up to about 7,000 feet, in what could be called the montane zone. Above this, in a subalpine zone, lodgepole pine and whitebark pine (*Pinus albicaulis*) dominate, with the latter becoming more prevalent above 7,500 ft.

Lookout Rock Trail enters the wilderness in a parkland of widely scattered mature white fir and ponderosa pine. The yellowish wolf lichen (*Letharia vulpina*) grows as an epiphyte on the bark of the firs, except near the base of the trees for about three to four feet, apparently marking the normal depth of winter snow. The forest understory consists of creeping snowberry (*Symphoricarpos mollis*), western hawkweed (*Hieracium scouleri*), bottlebrush squirreltail (*Elymus elymoides*), bitter dogbane (*Apocynum androsaemifolium*), Nuttall's linanthus (*Leptosiphon nuttallii*), pinemat manzanita (*Arctostaphylos nevadensis*), pinedrops (*Pterospora andromedea*), kelloggia (*Kelloggia galioides*), silverleaf phacelia (*Phacelia hastata*), waterleaf phacelia (*P. hydrophylloides*), bracken (*Pteridium aquilinum*), creeping Oregon grape (*Berberis repens*), wax currant (*Ribes cereum*) and sticky currant (*R. viscosissimum*). Colorful scarlet gilia (*Ipomopsis aggregata*) occurs in open, sunny sites where rufous hummingbirds are attracted to its nectar.

At about 6,500 ft. elevation, prominent sculpted rock outcrops have been named Palisade Rocks. Here, among the stunted ponderosa pines that grow from cracks in the rocks or from pockets of soil, I found a single whitebark pine. The pines are joined by an assortment of drought tolerant shrubs, including mountain spray (*Holodiscus dumosus*), curl-leaf mountain mahogany (*Cercocarpus ledifolius*), rubber rabbitbrush (*Ericameria nauseosa*), and bitter cherry (*Prunus emarginata*). Also finding refuge in the rock crevices are roundleaf alumroot (*Heuchera cylindrica*), hotrock penstemon (*Penstemon deustus*), and western boneset (*Ageratina occidentalis*). In the seasonally dry gravel and sandy soils at Palisade Rocks I have found mountain and prickly sandworts (*Arenaria capillaris* and *A. aculeata*), western hawkweed, wormleaf stonecrop (*Sedum stenopetalum*) and several buckwheats: sulphur flower (*Eriogonum umbellatum*), barestem (*E. nudum*), and broom (*E. vimineum*). Grasses include western needlegrass (*Achnatherum occidentale*), California brome (*Bromus carinatus*),

Whitebark pine, flagged by the prevailing southwest wind, grow on the west side of Gearhart Mountain in the subalpine zone, about 8,000 feet elevation. Mountain spray and mountain gooseberry grow protected by boulders. Discoid goldenweed, a rare Intermountain sub-shrub, also grows on these slopes. Photo by Ron Larson.

annual hairgrass (*Deschampsia danthonioides*), and bottlebrush squirreltail.

Beginning at about 7,000 feet, ground cover in the white fir forest becomes more diverse and abundant. Dominant herbs in this zone include western hawkweed, white flowered hawkweed (*Hieracium albiflorum*), kelloggia, sticky chickweed (*Pseudostellaria jamesiana*), and several wintergreen species, including bog (*Pyrola asarifolia*), white vein (*P. picta*), and sidebells (*Orthilia* [*Pyrola*] *secunda*). Also found in this area are Nuttall's linanthus, Oregon sunshine (*Eriophyllum lanatum*), western valerian (*Valeriana occidentalis*), and coyote mint (*Monardella odoratissima*).

At about 7,500 feet, stands of quaking aspen (*Populus tremuloides*) appear at small seeps and springs, along with a variety of wetland herbs, including red columbine (*Aquilegia formosa*), Columbia monkshood (*Aconitum columbianum*), western red baneberry (*Actaea rubra*), Gray's lovage (*Ligusticum grayii*), sweet cicely (*Osmorhiza berteroi*), ranger's buttons (*Sphenosciadium capitellatum*), Bolander's tarweed (*Kyhosia bolanderi*), California false hellebore (*Veratrum californicum*). On seasonally moist slopes below rocky cliffs, such as at The Dome, patches of blue stickseed (*Hackelia micrantha*) and the strongly aromatic nettle-leaved horsemint (*Agastache urticifolia*) occur. The pink-purple heads of the horsemint attract a variety of butterflies and bees. Steep and exposed rocky ridges on the south slopes are dominated by low sagebrush (*Artemisia arbuscula*), mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), coyote mint, curl-leaf mountain mahogany, common snowberry (*Symphoricarpos albus* var. *laevigatus*), woolly mule's ears (*Wyethia mollis*), spreading phlox (*Phlox diffusa*), and others. Sulphur flower buckwheat, coyote mint, and Bloomer's goldenweed (*Ericameria bloomeri*) are abundant. Butterflies find flowers of latter two species especially attractive. At about 7,300 feet where the soil becomes heavily influenced by volcanic ash, whitebark pine begins to replace the white fir. Above 7,700 feet white fir becomes scarce and the trees are much smaller than at lower elevations. Blue grouse are common in this zone and during July one can hear the males hooting.

Around 8,000 feet, ground cover becomes sparse, perhaps owing to changes in soils, which appear to consist mainly of Mount Mazama ash. Dominant herbs include small sedges, sandworts, Davidson's penstemon (*Penstemon davidsonii* var. *davidsonii*), sulphur flower buckwheat, spreading phlox, waterleaf phacelia, coyote mint, Oregon catchfly (*Silene oregana*), western valerian, pinemat manzanita, Bloomer's goldenweed, low sage, and bottlebrush squirreltail. Blue leaved penstemon (*Penstemon glaucinus*), an endemic on Oregon Natural Heritage Program (ONHP) list 1, grows with prickly sandwort under an open canopy of whitebark pine in dry ashy soils. Green-tinged paintbrush (*Castilleja chlorotica)*, another endemic on the ONHP list 1, grows on rocky ridges and in crevices along with mountain spray, mountain gooseberry (*Ribes montigenum*), roundleaf alum root, cutleaf daisy (*Erigeron compositus*), rock sword fern (*Polystichum scopulinum*) and lace lipfern (*Cheilanthes gracillima*). Common juniper (*Juniperus communis* var. *montana*) forms spreading mounds. I found two ponderosa pine trees on the south slope at 8,000 feet: their twisted and broken limbs provide a testament to the strong winds that buffet the mountain. At this elevation, powerful desiccating winds blast the whitebark pine with ice crystals, creating a flagged growth form with supple limbs oriented away from the prevailing southwest winds.

South-facing slopes (about 7,500 ft.) with gravelly soils are dominated by low sagebrush, mountain big sagebrush, coyote mint, and sulphur flower buckwheat. "The Notch" visible in the distance was formed when two glaciers cut through the rock, creating a landform termed a "col." Photo by Ron Larson.

The panoramic views from the crest of the Lookout Rock Trail and from the top of the mountain are stunning. One can see down to the meadows of the Dairy Creek Cirque, Winter Rim to the northeast, Dead Horse Rim and the Warner Mountains to the east, Cougar and Grizzly peaks to the southeast, the Sprague River Valley to the south, and Mt. McLoughlin far in the distance to the southwest. As the trail passes over the narrow ridge at "The Notch," the aspect changes from south-facing to northeast-facing. Snow persists into July in this sheltered, shady area and few vascular plants grow here except small whitebark pines, and two subalpine herbs, Davidson's penstemon and alpine springbeauty (*Claytonia megarhiza*), which emerge from rock crevices.

**Boulder Creek Trail**

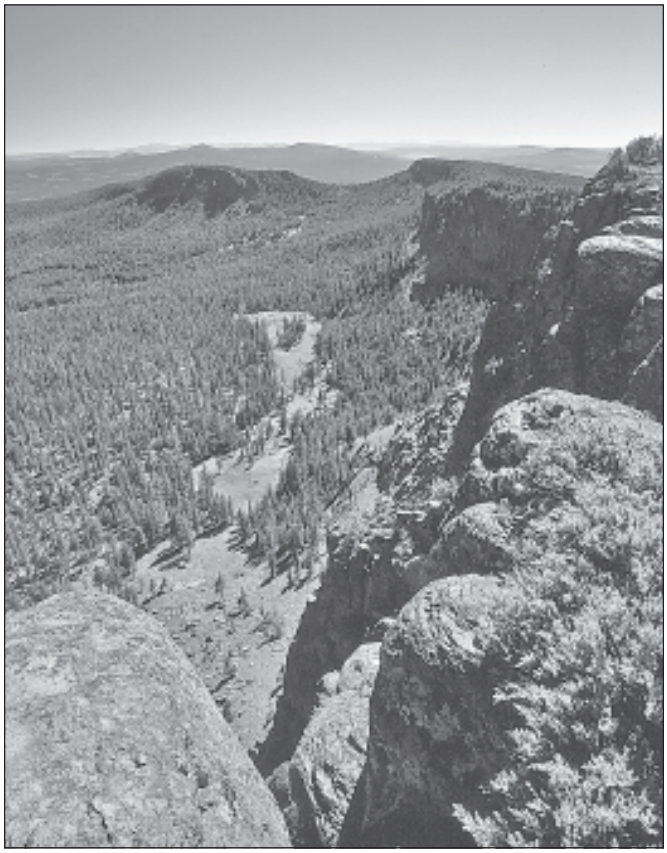
Access to the west side of the mountain is from the Boulder Creek

On the south slope at about 7,800 ft., ice-sculpted cliffs end in a community of snowbrush, mountain gooseberry, roundleaf alumroot, cutleaf daisy, rock sword fern, and lace lipfern. Mounds of common juniper grow above the cliff; whitebark pine below. Photo by Ron Larson.

Trail (#100A). The trailhead begins at 6,500 ft elevation off Forest Road #018, and passes through lodgepole pine and white fir stands. After 1.3 miles it reaches a large meadow rich in wildflowers and rimmed by aspens near the head of Boulder Creek at 7,500 ft. elevation. From here, it is a short one-third mile scramble up a steep talus slope to the highest point on the mountain. The flora along this trail shares many of the same species present along the Lookout Rock Trail. One notable exception is the presence of discoid goldenweed (*Ericameria discoidea*) at about 8,000 ft. on a dry, rocky slope. This low shrub is on ONHP list 4 and appears to be at its western-most location here. Because the Boulder Creek Trail gets less use, it can be hard to follow and therefore is not recommended for novice hikers.

**Dairy Creek Cirque**

Numerous springs, seeps, pools and stream channels add diversity to a long meadow at about 7,600 feet just below the headwall and its talus slope in Dairy Creek Cirque. This area appears to have been a small tarn or glacier-formed lake, based on the presence of a low berm (probably a moraine) that likely formed a dam. Over time, the tarn filled with sediments and peat until only a series of pools and small streams remain. Other wet meadows are scattered across the upper part of the cirque basin and down slope for about a half mile. It is unlikely that these meadows have been grazed by cattle, and are among the highest elevation pristine meadows in this part of the state. These subalpine wetlands support an especially rich flora, although they represent a tiny fraction of the wilderness area. They contain about one-third of the vascular plant species found in the Wilderness. In July, the meadows are especially colorful with a high diversity of wildflowers including alpine and arrowleaf groundsels (*Packera subnuda* [*Senecio cymbalarioides*] and *S. triangularis*), longleaf, hairy and Parry's arnicas (*Arnica longifolia*, *A. mollis*, and *A. parryi*). Orchids are represented by white bog orchid (*Platanthera dilatata* var. *leucostachys*), sparse flowered bog orchid (*P. sparsiflora*), slender bog orchid (*P. stricta*), and hooded ladies tresses (*Spiranthes romanzoffiana*). Other wetland plants include subalpine daisy (*Erigeron glacialis*) [Note: new name for *E. peregrinus* var. *callianthemus*], black twinberry (*Lonicera involucrata*), alpine laurel (*Kalmia microphylla*), pink mountain heather (*Phyllodoce empetriformis*), meadow lupine (*Lupinus polyphyllus*), American bistort (*Bistorta bistortoides*), creeping sibbaldia (*Sibbaldia procumbens*), marsh marigold (*Caltha leptosepala*), alpine shooting star (*Dodecatheon alpinum*), primrose monkeyflower (*Mimulus primuloides*), elephant's head (*Pedicularis groenlandica*), scarlet paintbrush (*Castilleja miniata*), and small white violet (*Viola macloskeyi*). Shrubs include bog birch (*Betula glandulosa*), and several unidentified willows (*Salix* spp.) and huckleberries (*Vaccinium* spp.). I have not yet identified the many



From the top of the mountain at 8,300 ft., one can view the bowl-shaped cirque of Dairy Creek. Wet meadows appear as islands surrounded by whitebark pine forests. Photo by Ron Larson.

species of sedges and rushes in the wetlands, but several species present in the Oregon State University Herbarium are in the appended plant list.

The headwall of the Dairy Creek Cirque and associated talus slopes support some species that are not found elsewhere in the Wilderness, including American alpine lady fern (*Athyrium alpestre*), Cascade parsley fern (*Cryptogramma cascadensis*), Brewer's cliff brake (*Pellaea breweri*), mountain sorrel (*Oxyria digyna*), and the colorful rose willowherb (*Epilobium obcordatum*). High overhead, I saw common juniper growing from ledges.

## Floristics

Gearhart Mountain sits in the southern part of the East Slope Cascades Ecoregion, which runs the length of the state (from north to south) and is widest in the southern part of Klamath County (Kagan *et al.* 2004). Anderson *et al.* (1998) place it in the Mazama Ecological Province, which covers Deschutes County and the northern half of Klamath County, and a small portion of Lake County near Gearhart Mountain. Anderson *et al.* (1998) indicate that this province is typified by soils containing Mount Mazama ash.

I compared the flora of Gearhart Mountain Wilderness with that of Crater Lake National Park (Zika 2003) and Steens Mountain (Mansfield 1999). I selected these floras because they are well known, lie at approximately the same latitude in Oregon (between 42° and 43° North Latitude), and represent the southern Cascade Mountains and Intermountain floras, to which the Gearhart Mountain flora is most likely allied.

Although the Gearhart Mountain Wilderness flora is incompletely studied, 250 species in 50 families have been identified. Once the monocots are better known, and plants from lower elevations are included, this number will increase. Only two introduced plant species, common dandelion (*Taraxacum officinale*) and yellow salsify (*Tragopogon dubius*), were observed and these were uncommon.

In Dairy Creek cirque, high cliffs and steep talus slopes merge downslope into wet meadows, ponds, and small creeks.

Crater Lake and Steens Mountain share 119 of the 250 plant species (48%) that were found on Gearhart Mountain. Thus, many wide-ranging species are present in all three areas. However, about half (52%) of the species recorded on Gearhart Mountain, were absent from either Crater Lake or Steens Mountain, indicating their floras are substantially different, which could be expected based on their locations and the lack of dispersal corridors for high elevation plants.

The Gearhart Mountain flora shows an approximate equal relationship with both Crater Lake National Park (167 species or 67% in common) and Steens Mountain (184 species or 74%). This is despite the closer proximity of Gearhart Mountain to Crater Lake (70 miles) than to Steens Mountain (120 miles). When the floras are compared more closely the relationships and differences becomes more apparent. Gearhart Mountain Wilderness shares seven of eight coniferous species with Crater Lake National Park, but only three with Steens Mountain. Similarly, of the ten ericaceous plants (mostly small shrubs) in Gearhart Mountain Wilderness all are also present in Crater Lake National Park, but only three are found on Steens Mountain. Other groups indicate a greater affinity with Steens Mountain. An example is Asteraceae, which is represented by 36 species on Gearhart Mountain. Of these, 31 species (86%) also occur on Steens Mountain, while only 23 (64%) are shared with Crater Lake. Some examples of species common to Gearhart and Steens mountains that are absent from Crater Lake are western juniper, western boneset, bog birch, creeping Oregon grape, sticky geranium, mountain gooseberry, nettle leaved horsemint, rose willowherb, alpine springbeauty, curl-leaf mountain mahogany, roundleaf alumroot, yellow bell (*Fritillaria pudica*), and western peony (*Paeonia brownii*). Another example is discoid goldenweed, which has a distribution limited to sites east of Gearhart Mountain in Oregon (e.g., Steens Mountain and Crane Mountain).

Ten species present on Gearhart Mountain are unknown from either Crater Lake National Park or Steens Mountain, including woolly mule's ears, waterleaf phacelia, blue-leaved penstemon, mountain kittentails, and green-tinged paintbrush. Waterleaf phacelia is a southern Cascadian species, but is not known to occur in Crater Lake National Park. Blue leaved penstemon is endemic to high elevations of Klamath and Lake counties, but is absent in the Cascades. The range of woolly mule's ears includes the Cascade Mountains in California, Klamath Mountains in

Oregon and California, the Warner Mountains in Oregon and California, and other areas in Klamath and Lake counties, Oregon, but does not include Crater Lake National Park. Mountain kittentails range from the Warner Mountains to eastern Washington and Idaho. Green-tinged paintbrush is endemic to Crook, Deschutes, Lake, and Klamath counties (see sidebar).

My analysis indicates that Gearhart Mountain's flora blends elements from each of the neighboring floristic provinces. Based on the 250 species that have been recorded, the flora of Gearhart Mountain Wilderness shows greater affinity with floras to the east than with other regions. Cronquist *et al.* (1972) drew the western boundary of the Lake floristic section of the Intermountain West only 15 miles east of Gearhart Mountain, so it is geographically very close to that region.

### *Castilleja chlorotica* Piper

Green-tinged paintbrush is endemic to central Oregon: the Eastern Cascades and Foothills ecoregion, from Cook and Deschutes counties south to Klamath and Lake counties (USDA Forest Service 2007). It is found in a diversity of habitats, but mostly in forest openings on seasonally dry, south and west slopes, and summits from 4,300 to over 8,000 feet elevation, where soils are shallow, rocky, and often have a high content of volcanic ash. The plants are typically about a foot tall, the foliage is sticky, and the leaves have a wavy margin. Although the overall color is a bright green (hence its scientific and common names), the stem and bracts can be tinted reddish or purple. It is the only green paintbrush in central Oregon. A hemi-parasite of big sagebrush and bitterbrush, and possibly other shrubs, green-tinged paintbrush obtains water and minerals from its deep-rooted hosts.

Its heritage ranking is G3, owing to its rarity. All known populations (~180) are on Federal lands with the majority on Fremont National Forest in Lake County (USDA Forest Service 2007). Some populations are quite large and the Forest Service estimates that the total number of plants is ~0.5 million. It has three major areas of distribution: Gearhart Mountain and Winter Rim on Fremont National Forest, and Wake, Pistol, and Wagon buttes in Deschutes National Forest (USDA Forest Service 2007).

This species was first collected in 1896 near the summit of Gearhart Mountain by John Leiberg, a botanist who was collecting for the National Herbarium of the Smithsonian Institution (Walker 2000). At the time, Leiberg was collecting in eastern Oregon with Fredrick Coville, who was Chief Botanist at National Herbarium. Later that summer Leiberg and Coville collected at Crater Lake National Park (Horn 2005). The holotype specimen (labeled "Gayhart Buttes") is at the Smithsonian Institution. It was described in 1920 by C.V. Piper.

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## Vascular Plant List

Nomenclature follows the 2007 Oregon Flora Project checklist. Names of taxa native to Oregon are printed in italic *Garamond*; alien taxa are in italic *Gill Sans*, a sans-serif type. Species that have special Federal or State status are noted by an asterisk before the scientific name.

## FERNS AND THEIR ALLIES

**DENNSTAEDTIACEAE (Bracken Family)**
*Pteridium aquilinum* (L.) Kuhn (bracken)
**DRYOPTERIDACEAE (Wood Fern Family)**
*Athyrium alpestre* (Hoppe) Clairv. (American alpine lady fern)
*Athyrium filix-femina* (L.) Mert. (lady fern)
*Cystopteris fragilis* (L.) Bernh. (brittle fern)
*Polystichum scopulinum* (D.C. Eaton) Maxon (rock sword fern)
**ISOETACEAE (Quillwort Family)**
*Isoetes bolanderi* Engelm. (Bolander's quillwort)
**PTERIDACEAE (Brake Family)**
*Cheilanthes gracillima* D.C. Eaton (lace lipfern)
*Cryptogramma cascadensis* E.R. Alverson (Cascade parsley fern)
*Pellaea breweri* D.C. Eaton (Brewer's cliff brake)

Lace lipfern (*Cheilanthes gracillima*) fills rock crevices at Palisade Rocks and cliffs above 7,500 feet elevation on the south side of the mountain. Photo by Ron Larson.

## GYMNOSPERMS

**CUPRESSACEAE (Cypress Family)**
*Juniperus communis* L. var. *montana* Ait. (common juniper)
*Juniperus occidentalis* Hook. (western juniper)
**PINACEAE (Pine Family)**
*Abies concolor* (Gord. & Glend.) Lindl. ex Hildebr. (Sierra white fir)
*Pinus albicaulis* Engelm. (whitebark pine)
*Pinus contorta* Douglas ex Loud. var. *latifolia* Engelm. (lodgepole pine)
*Pinus lambertiana* Douglas (sugar pine)
*Pinus monticola* Douglas ex D. Don (western white pine)
*Pinus ponderosa* Douglas ex C. Lawson (ponderosa pine)

## DICOTYLEDONS

**APIACEAE (Carrot Family)**
*Ligusticum grayi* J.M. Coult. & Rose (Gray's lovage)
*Lomatium triternatum* (Pursh) J.M. Coult. & Rose (nineleaf biscuitroot)
*Osmorhiza berteroi* DC. (sweet cicely)
*Sanicula graveolens* Poepp. (Sierra sanicle)
*Sphenosciadium capitellatum* A. Gray (ranger's buttons)
**APOCYNACEAE (Dogbane Family)**
*Apocynum androsaemifolium* L. (bitter dogbane)
**ASTERACEAE (Sunflower Family)**
*Achillea millefolium* L. (yarrow)
*Ageratina occidentalis* (Hook.) R.M. King & H. Rob. (western boneset)
*Agoseris aurantiaca* (Hook.) Greene (orange agoseris)
*Antennaria rosea* Greene (rosy pussytoe)
*Arnica cordifolia* Hook. (heart leaf arnica)
*Arnica longifolia* D.C. Eaton (longleaf arnica)
*Arnica mollis* Hook. (hairy arnica)
*Arnica parryi* A.Gray (Parry's arnica)
*Artemisia arbuscula* Nutt. ssp. *arbuscula* (low sagebrush)
*Artemisia tridentata* Nutt. ssp. *vaseyana* (Rydb.) Beetle (mountain big sagebrush)
*Balsamorhiza sagittata* (Pursh) Nutt. (arrowleaf balsamroot)
*Cirsium scariosum* Nutt. (elk thistle)
*Crepis occidentalis* Nutt. (western hawksbeard)
*Ericameria bloomeri* (A. Gray) J.F. Macbr. (Bloomer's goldenweed)
**Ericameria discoidea* (Nutt.) G.L. Nesom (discoid goldenweed)
*Ericameria nauseosa* (Pall. ex Pursh) G.L. Nesom & G.I. Baird (rubber rabbitbrush)
*Erigeron compositus* Pursh (cutleaf daisy)
*Erigeron glacialis* (Nutt.) A Nelson (subalpine daisy)
*Erigeron inornatus* (A. Gray) (California rayless daisy)
*Eriophyllum lanatum* (Pursh) J. Forbes var. *achillaeoides* (DC.) Jeps. (Oregon sunshine)
*Hieracium albiflorum* Hook. (white flowered hawkweed)
*Hieracium scouleri* Hook. (western hawkweed)
*Kyhosia* (*Madia*) *bolanderi* (A. Gray) B.G. Baldwin (Bolander's tarweed)
*Madia exigua* (Sm.) A. Gray (little tarweed)
*Microseris nutans* (Hook.) Sch. Bip. (nodding microseris)
*Packera subnuda* (DC.) Trock & T.M. Barkley [*Senecio cymbalaroides*] (alpine groundsel)
*Senecio fremontii* var. *exaltatus* Torr. & A. Gray. (dwarf mountain groundsel)
*Senecio integerrimus* Nutt. (common groundsel)
*Senecio triangularis* Hook. (arrowleaf groundsel)
*Solidago canadensis* L. (Canada goldenrod)
*Stephanomeria lactucina* A. Gray (large flowered wirelettuce)
*Symphyotrichum* (*Aster*) *ascendens* (Lindl.) G.L. Nesom (long leafed aster)
*Symphyotrichum* (*Aster*) *foliaceum* (Lindl.) G.L. Nesom (leafy bracted aster)
*Taraxacum officinale* Weber ex F.H. Wigg. (common dandelion)
*Tragopogon dubius* Scop. (yellow salsify)
*Wyethia mollis* A. Gray (woolly mule's ears)
**BERBERIDACEAE (Barberry Family)**
*Berberis repens* Lindl. (creeping Oregon grape)
**BETULACEAE (Birch Family)**
*Alnus incana* (L.) Moench ssp. *tenuifolia* (Nutt.) Breitung (mountain alder)
*Betula glandulosa* Michx. (bog birch)
**BORAGINACEAE (Borage Family)**
*Cryptantha ambigua* (A. Gray) Greene (obscure cryptantha)
*Hackelia micrantha* (Eastw.) J.L.Gentry (blue stickseed)

*Mertensia ciliata* (Torr.) G. Don. (broad leaved bluebells)
*Mertensia longifolia* (Nutt.) G. Don. (leafy bluebell)
*Myosotis laxa* Lehm. (small forget-me-not)
*Plagiobothrys bracteatus* (Howell) I.M. Johnst. (bracted plagiobothrys)

**BRASSICACEAE (Mustard Family)**
*Arabis drummondii* A. Gray (Drummond's rockcress)
*Arabis holboellii* Hornem. (Holboell's rockcress)
*Arabis lyallii* S. Watson var. *nubigena* (J.F. Macbr. & Payson) Rollins (Lyall's rockcress)
*Arabis platysperma* A. Gray (flatseed rockcress)
*Arabis sparsiflora* Nutt. var. *sparsiflora* (sicklepod rockcress)
*Barbarea orthoceras* Ledeb. (American wintercress)
*Cardamine cordifolia* var. *lyallii* (S. Watson) A. Nelson & J.F. Macbr. (large mountain bittercress)
*Descurainia incisa* (Engelm. ex A. Gray) Britton (mountain tansy mustard)
*Rorippa curvisiliqua* (Hook.) Bessey ex Britton (curvepod yellowcress)

**CAPRIFOLIACEAE (Honeysuckle Family)**
*Lonicera involucrata* (Rich.) Banks ex Spreng. var. *involucrata* (black twinberry)
*Sambucus mexicana* C. Presl ex DC. (blue elderberry)
*Symphoricarpos albus* (L.) S.F. Blake var. *laevigatus* Fernald (common snowberry)
*Symphoricarpos mollis* Nutt. (creeping snowberry)

**CARYOPHYLLACEAE (Pink Family)**
*Arenaria aculeata* S. Watson (prickly sandwort)
*Arenaria capillaris* Poir. (mountain sandwort)
*Pseudostellaria jamesiana* (Torr.) W.A. Weber & R.L. Hartman (sticky chickweed)

Nuttall's linanthus, a white-flowered forb that is widely distributed east of the Cascades and Sierras, grows on the south side of the mountain in both forested and open sites. Photo by Ron Larson.

*Silene douglasii* Hook. (Douglas' catchfly)
*Silene oregana* S. Watson (Oregon catchfly)

**CONVOLVULACEAE (Morning-glory Family)**
*Calystegia occidentalis* ssp. *occidentalis* (A. Gray) Brummitt (western morning glory)

**CRASSULACEAE (Stonecrop Family)**
*Sedum stenopetalum* Pursh. spp. *stenopetalum* (wormleaf stonecrop)

**ERICACEAE (Heath Family)**
*Arctostaphylos nevadensis* A. Gray (pinemat manzanita)
*Arctostaphylos patula* Greene (greenleaf manzanita)
*Chimaphila umbellata* (L.) W. Bartram var. *occidentalis* (Rydb.) S.F. Blake (prince's pine)
*Kalmia microphylla* (Hook.) A. Heller (alpine laurel)
*Orthilia secunda* (L.) House (side bells wintergreen)
*Phyllodoce empetriformis* (Smith) D. Don (pink mountain heather)
*Pterospora andromedea* Nutt. (pinedrops)
*Pyrola asarifolia* Michx. (bog wintergreen)
*Pyrola picta* Smith (white vein wintergreen)
*Vaccinium cespitosum* Michx. (dwarf huckleberry)

**FABACEAE (Pea Family)**
*Astragalus filipes* Torr. ex A. Gray (threadstalk milkvetch)
*Lupinus argenteus* Pursh (silver lupine)
*Lupinus latifolius* J. Agardh (broad leaved lupine)
*Lupinus lepidus* Douglas ex Lindl. (dwarf lupine)
*Lupinus leucophyllus* Douglas ex Lindl. (Eggleston's lupine)
*Lupinus polyphyllus* Lindl. (meadow lupine)
*Trifolium longipes* Nutt. (longstalk clover)
*Vicia americana* Muhl. ex Willd. var. *americana* (American vetch)

**GENTIANACEAE (Gentian Family)**
*Gentianopsis simplex* (A. Gray) H.H. Iltis (one flowered gentian)

**GERANIACEAE (Geranium Family)**
*Geranium viscosissimum* Fisch. & C.A. Mey. ex C.A. Mey. (sticky geranium)

**GROSSULARIACEAE (Gooseberry Family)**
*Ribes cereum* Douglas (wax currant)
*Ribes erythrocarpum* Cov. & Leib. (Crater Lake currant)
*Ribes montigenum* McClatchie (mountain gooseberry)
*Ribes viscosissimum* Pursh (sticky currant)

**HYDROPHYLLACEAE (Waterleaf Family)**
*Hydrophyllum capitatum* Douglas (ballhead waterleaf)
*Nemophilia pedunculata* Douglas ex Benth (meadow nemophilia)
*Phacelia hastata* Douglas ex Lehm. (silverleaf phacelia)
*Phacelia hydrophylloides* A. Gray (waterleaf phacelia)

**HYPERICACEAE (St. John'swort Family)**
*Hypericum anagalloides* Cham. & Schltdl. (bog St. John's wort)

**LAMIACEAE (Mint Family)**
*Agastache urticifolia* (Benth.) Kuntze (nettle leaved horsemint)
*Monardella odoratissima* Benth. (coyote mint)

**MALVACEAE (Mallow Family)**
*Sidalcea oregana* (Nutt.) A. Gray (Oregon checker mallow)

**ONAGRACEAE (Evening Primrose Family)**
*Chamerion* (*Epilobium*) *angustifolium* (L.) Holub (fireweed)
*Epilobium obcordatum* A. Gray (rose willowherb)
*Gayophytum diffusum* Torr. & A. Gray ssp. *diffusum* (spreading groundsmoke)

**PAEONIACEAE (Peony Family)**
*Paeonia brownii* Douglas ex Hook. (western peony)

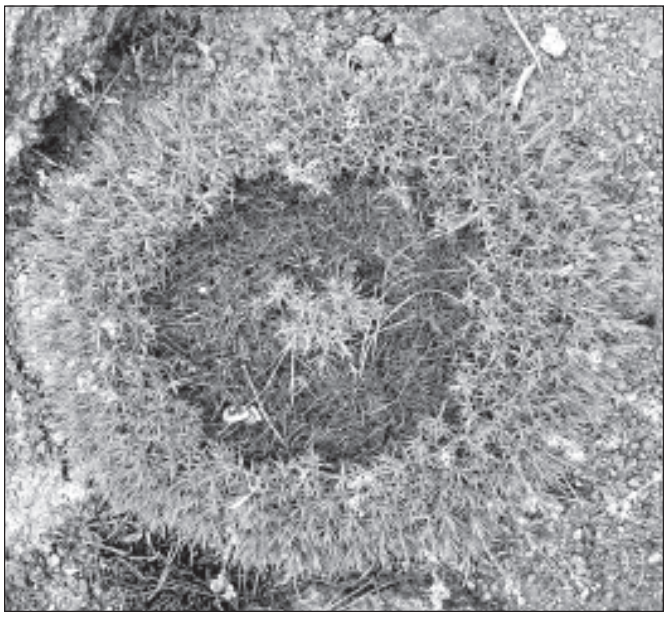
Pine white butterfly on rabbitbrush (*Ericameria nauseosa*), August 28, 2005. Photo by Ron Larson.

**FUMARIACEAE (Fumitory Family)**
*Dicentra uniflora* Kellogg (steer's head)
**POLEMONIACEAE (Phlox Family)**
*Collomia grandiflora* Douglas ex Lindl. (large flowered collomia)
*Collomia linearis* Nutt. (narrow leafed collomia)
*Collomia tinctoria* Kellogg (yellow staining collomia)
*Ipomopsis aggregata* (Pursh) V.E. Grant (scarlet gilia)
*Leptosiphon* (*Linanthus*) *bicolor* (Nutt.) Jeps. (bicolored linanthus)
*Leptosiphon* (*Linanthus*) *ciliatus* (Benth.) Jeps. (wiskerbrush)
*Leptosiphon* (*Linanthus*) *harknessii* (Curran) J.M. Porter & L.S. Johnson (three-seed linanthus)
*Leptosiphon* (*Linanthastrum*) *nuttallii* (A.Gray) J.M. Porter & L.S. Johnson (Nuttall's linathastrum)
*Linanthus* (*Leptodactylon*) *pungens* (Torr.) J.M. Porter & L.S. Johnson (prickly phlox)
*Phlox diffusa* Benth. (spreading phlox)
*Phlox gracilis* (Hook.) Greene (slender phlox)
*Polemonium occidentale* Greene (western Jacob's ladder)
**POLYGONACEAE (Buckwheat Family)**
*Eriogonum elatum* Douglas ex Benth. (tall buckwheat)
*Eriogonum nudum* Douglas ex Benth. (bearstem buckwheat)
*Eriogonum spergulinum* A. Gray var. *reddingianum* (spurry buckwheat)
*Eriogonum umbellatum* Torr. (sulphur flower buckwheat)
*Eriogonum vimineum* Douglas ex Benth. (broom buckwheat)
*Oxyria digyna* (L.) Hill ( mountain sorrel)
*Bistorta bistortoides* (Pursh) Small (American bistort)
*Rumex acetosella* L. (sheep sorrel)
**PORTULACACEAE (Purslane Family)**
*Calyptridium* (*Spraguea*) *umbellatum* (Torr.) Greene (pussypaws)
*Claytonia megarhiza* (A.Gray) Parry ex S. Watson (alpine springbeauty)
*Lewisia nevadensis* (A. Gray) B.L. Rob. (Nevada lewisia)
*Lewisia pygmaea* (A. Gray) B.L. Rob. (dwarf lewisia)
*Lewisia triphylla* (S. Watson) B.L. Rob. (threeleaf lewisia)
*Montia linearis* (Douglas ex Hook.) Greene (narrowleaf montia)
**PRIMULACEAE (Primrose Family)**
*Dodecatheon alpinum* (A. Gray) Greene (alpine shooting star)
**RANUNCULACEAE (Buttercup Family)**
*Aconitum columbianum* Nutt. var. *columbianum* (Columbia monkshood)
*Actaea rubra* (Aiton) Willd. (western red baneberry)
*Aquilegia formosa* Fisch. (red columbine)
*Caltha leptosepala* DC. (marsh marigold)
*Delphinium depauperatum* Nutt. (slim larkspur)
*Delphinium nuttallianum* Pritz. ex Walp. (upland larkspur)
*Ranunculus alismifolius* Geyer (plaintain leaved buttercup)
*Ranunculus populago* Greene (mountain buttercup)
*Thalictrum sparsiflorum* Turcz. ex Fisher & C.A. Meyer (few flowered meadowrue)
**RHAMNACEAE (Buckthorn Family)**
*Ceanothus prostratus* Benth. (Mahala mat)
*Ceanothus velutinus* Douglas ex Hook.(tobacco brush)
*Rhamnus alnifolia* L'Hér. (alder buckthorn)
**ROSACEAE (Rose Family)**
*Amelanchier alnifolia* (Nutt.) Nutt. ex M. Roem. (western serviceberry)
*Cercocarpus ledifolius* Nutt. (curl-leaf mountain mahogany)
*Fragaria vesca* L. (wood strawberry)
*Fragaria virginica* Duchesne (broad petal strawberry)
*Geum macrophyllum* Willd. (large leaved avens)
*Holodiscus dumosus* (Nutt. ex Hook) A. Heller (mountain spray)
*Horkelia fusca* Lindl. (pink pinwheels)
*Potentilla glandulosa* Lindl. (sticky cinquefoil)
*Potentilla gracilis* Douglas ex Hook. (graceful cinquefoil)
*Potentilla versicolor* Rydb. (varying cinquefoil)
*Prunus emarginata* (Douglas ex Hook) Walp. (bitter cherry)
*Purshia tridentata* (Pursh) DC. (bitterbush)
*Rubus parviflorus* Nutt. (thimbleberry)
*Sibbaldia procumbens* L.(creeping sibbaldia)
*Sorbus scopulina* Greene (Rocky Mountain mountain ash)
**RUBIACEAE (Madder Family)**
*Kelloggia galoides* Torr. (kelloggia)
**SALICACEAE (Willow Family)**
*Populus tremuloides* Michx. (quaking aspen)
**SAXIFRAGACEAE (Saxifrage Family)**
*Heuchera cylindrica* Douglas ex Hook (roundleaf alumroot)
*Lithophragma glabrum* Nutt. (smooth fringecup)
*Lithophragma tenellum* Nutt. (slender woodland star)
*Mitella pentandra* Hook. (mitrewort)
*Saxifraga nidifica* Greene (nesting saxifrage)
*Saxifraga oregana* Howell (Oregon saxifrage)
**SCROPHULARIACEAE (Figwort Family)**
*Castilleja applegatei* Fernald (wavy leaf paintbrush)
*Castilleja miniata* Douglas ex Hook. (scarlet paintbrush)

**Castilleja chlorotica* Piper (green-tinged paintbrush)
*Collinsia parviflora* Douglas ex Lindl.(small flowered blue-eyed Mary)
*Collinsia rattanii* A. Gray (Rattan's collinsia)
*Mimetanthe pilosa* (Benth.) Greene (hairy monkeyflower)
*Mimulus guttatus* DC. (common yellow monkeyflower)
*Mimulus moschatus* Douglas ex. Lindl. (musk monkeyflower)
*Mimulus nanus* Hook. & Arn. (dwarf monkeyflower)
*Mimulus primuloides* Benth. (primrose monkeyflower)
*Pedicularis groenlandica* Retz. (elephant's head pedicularis)
*Penstemon davidsonii* Greene var. *davidsonii* (Davidson's penstemon)
*Penstemon deustus* Douglas ex Lindl. (hotrock beardtongue)
**Penstemon glaucinus* Pennell (blue leaved penstemon)
*Penstemon laetus* A. Gray var. *roezlii* (Roezli's penstemon)
*Penstemon rydbergii* A. Nelson (Rydberg's penstemon)
*Synthyris missurica* Pennell (western mountain kittentails)
*Veronica wormskjoldii* Roem. & Schult. (American alpine speedwell)
**SOLANACEAE (Nightshade Family)**
*Leucophysalis nana* (A. Gray) Averett (dwarf chamaesaracha)
**VALERIANACEAE (Valerian Family)**
*Valeriana californica* A.Heller (California valerian)
*Valeriana occidentalis* A.Heller (western valerian)
**VIOLACEAE (Violet Family)**
*Viola glabella* Nutt. ex Torr. & A. Gray (stream violet)
*Viola macloskeyi* Lloyd (small white violet)
*Viola purpurea* Kellogg (goosefoot violet)
*Viola vallicola* A. Nelson (yellow valley violet)

## MONOCOTYLEDONS

**CYPERACEAE (Sedge Family)**
*Carex fracta* Mack. (fragile-sheathed sedge)
*Carex inops* L.H. Bailey (long-stolon sedge)
*Carex jonesii* L.H. Bailey (Jones' sedge)
*Scirpus microcarpus* J. Presl & C. Presl (small-fruited sedge)



Common on dry, pumice- or rock-dominated soils, prickly sandwort (*Arenaria aculeata*) forms a ring as the plant grows outward after the inner part dies. Photo by Ron Larson.

**IRIDACEAE (Iris Family)**
*Iris missouriensis* Nutt. (western blueflag)
*Sisyrinchium idahoense* E.P. Bicknell (Idaho blue eyed grass)
**JUNCACEAE (Rush Family)**
*Juncus mertensianus* Bong. (Mertens' rush)
*Juncus orthophyllus* Coville (straight leaved rush)
*Luzula multiflora* (Ehrh.) Lej. ssp. *multiflora* (common woodrush)
*Luzula spicata* (L.) DC. (spiked woodrush)
**LILIACEAE (Lily Family)**
*Allium campanulatum* Wats. (Sierra onion)
*Allium tolmiei* Baker var. *tolmiei* (Tolmie's onion)
*Allium validum* S. Watson (swamp onion)
*Fritillaria atropurpurea* Nutt. (chocolate lily)
*Fritillaria pudica* (Pursh) Spreng. (yellow bell)
*Lilium washingtonianum* Kellogg (Washington lily)
*Maianthemum* (*Smilacina*) *racemosum* (L.) Link (western Solomon plume)
*Maianthemum* (*Smilacina*) *stellatum* (L.) Link (starry false Solomon's seal)
*Triteleia* (*Brodiaea*) *hyacinthina* (Lindl.) Greene (hyacinth brodiaea)
*Veratrum californicum* Durand (California false hellebore)
**ORCHIDACEAE (Orchid Family)**
*Corallorhiza maculata* (Raf.) Raf. (spotted coralroot)
*Goodyera oblongifolia* Raf. (western rattlesnake plantain)
*Listera caurina* Piper (northwest twayblade)
*Piperia unalascensis* (Sprengel) Rydb. (Alaska rein orchid)
*Platanthera dilatata* (Pursh) Lindl. ex Beck var. *leucostachys* (Lindl.) Leur (white bog orchid)
*Platanthera sparsiflora* (S. Watson) Schltr. (sparse flowered bog orchid)
*Platanthera stricta* Lindl. (slender bog orchid)
*Spiranthes romanzoffiana* Cham. (hooded ladies tresses)
**POACEAE (Grass Family)**
*Achnatherum occidentale* (Thurb. ex S. Watson) Barkworth (western needlegrass)
*Agrostis scabra* Willd. (winter bentgrass)
*Bromus carinatus* Hook.& Arn. (California brome)
*Bromus orcuttianus* Vasey var. *orcuttianus* (Orcutt's brome)
*Deschampsia danthonioides* (Trin.) Munro (annual hairgrass)
*Elymus elymoides* (Raf.) Swezey (bottle brush squirreltail)
*Melica bulbosa* Geyer ex Porter & J.M. Coult. (oniongrass)
*Muhlenbergia filiformis* (Thurb. ex S. Warson) Rydb. (pullup muhly)
*Phleum alpinum* L. (mountain timothy)
*Poa secunda* J. Presl (Sandberg bluegrass)

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Ron Larson received a BS from Oregon State University in 1969, and advanced degrees from universities in Canada and Puerto Rico. He is an aquatic biologist with the US Fish and Wildlife Service in Klamath Falls. Ron is a member of the Klamath Basin Chapter of NPSO and has led field trips including some to the Gearhart Mountain Wilderness. He is one of the coauthors of the recently-published book, *Common Plants of the Upper Klamath Basin*. Ron enjoys all aspects of native plants, including photography, gardening, and their identification. He spends his winters dreaming of mountain meadows filled with flowers and buzzing with bees.

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