

Northwest Alpines 101®

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Alpine plants native to the Pacific Northwest, from Northern California, U.S.A. to British Columbia, Canada, are relatively unknown in the horticultural trade. Rock garden enthusiasts have cultivated some of them, but relatively few are generally seen. Propagation and production practices have been developed for few of them, which has also limited their successful use.

Many plants that grow in alpine zones have an extended range into zones below the timberline, commonly called the subalpine zone. This sometimes clouds the distinction between alpine and subalpine plants. Although many subalpine plants do not have an extended natural range into alpine zones, the qualities and potential use of some are sufficient for inclusion in this report.

Alpine zones in the Pacific Northwest typically occur at elevations from 3,000 ft (900 m), or less, in the north to 10,000 ft (3,050 m) or more in the south. Here, the timberline drops approximately 1,000 ft (300 m) for each 100 miles (160 km) from south to north. However, the timberline may be highly variable within a mountain range, and may fluctuate on a given mountain, depending upon exposure to climatic conditions and other factors.

Within alpine and subalpine zones, bogs, barren “deserts”, grasslands, meadows, and rock fields may be found. Forests also exist in subalpine zones.

DEFINITIONS

Alpine: Mountain area between upper limit of trees (timberline) and lower limit of, more or less permanent, snow; vegetation and organisms occurring in this area.

Krummholz: Shrubby, stunted trees occurring at or near timberline under windy conditions, sprawling in direction of prevailing wind.

Scree: Unstratified deposit of gravel, rocks, sand, and finer material that was transplanted by a glacier.

Subalpine: Mountain area from timberline downward to an indefinite 1,000 ft (300 m) below timberline; upper mountain zone with trees.

Talus: Heap of rock at base of a cliff or a sheet of coarse debris, such as rocks, covering a mountain slope; talus is one form of scree.

Timberline: Upper limit of tree growth on mountains.

GROWTH INFLUENCES

Principal climatic influences are the cool ocean currents and Pacific airstreams, which affect moisture and temperature regimes. High elevations at which alpine zones exist cause lower temperatures and precipitation as snow more than as rain. Sun and wind at these elevations tend to be more intense. Frost may occur during any summer month.

Alpine zones are characterized by scree and talus, and newly formed soils, often high in sand, silt, clay, and pumice, on the higher slopes. These soils are likely of somewhat lower fertility than higher developed soils. Some soils are well drained, others poorly drained.

Alpine plants are subjected to harsher growing conditions than plants at lower elevations. Their adaptations include foliage that reflects some light; pubescence that shades the intense light and insulates against wind, cold, and blowing soil particles; often deep root systems that strongly anchor and effectively find water and nutrients; short stature for protection from the elements, and adaptation to local soil conditions. They have adapted to the short growing season, during which the plants must flower and fruit in a very short time, often in less than 3 months.

NORTHWEST LIFE ZONES

A life zone is a region with, generally, the same types of plant and animal life, and climate. Life zones differ in climates and, because of climate differences, in elevations.

Common Pacific Northwest alpine and subalpine life zones are Canadian, Hudsonian, and Arctic-Alpine. It is difficult to establish bounds between the zones because of great diversity of climate and geologic features in Northwest mountains. The zones often intergrade in elevation and plant life.

The Canadian Zone, with the lowest elevation, includes many subalpine plants. In the Pacific Northwest it may extend up to 4,000 or 5,000 ft (1,200 to 1,500 m) in the north to 7,500 ft (2,300 m) in the south. Deep canyons and narrow valleys are typical. Rough talus slopes of loose lava are common. Streams are numerous, and lakes, waterfalls, wet cliffs, and small bogs plentiful. Much of this zone is forested.

The Hudsonian Zone includes upper elevation subalpine plants and many alpiners. It extends from the upper edge of the Canadian Zone upward to 5,000 to 7,000 ft (1,500 to 2,100 m) in the north and 10,500 ft (3,200 m) in the south. Heavy winter snow that remains until late spring or early summer is typical. Coniferous forests intersperse with barren lava slopes and ridges with steep sides often covered with large boulders, dry gravelly slopes, and small bogs and meadows.

The Arctic-Alpine Zone is much more restricted and includes only alpine plants. It intergrades with the top of the Hudsonian Zone and extends upward from there. It is typically found only on the highest peaks. Much of this zone is unfit for plant life due to lack of soil. Dry gravelly slopes, rock crevices and spaces between and below boulders with scanty soil accumulations, and occasional depressions with bogs or small streams support the limited plant life. Ground is bare of snow for only 2 to 3 months. This zone may surround glaciers on the highest peaks.

Most alpine and subalpine areas in Pacific Northwest are in two or more life zones, whereas lower elevations are almost wholly within a single life zone.

NORTHWEST ALPINE AND SUBALPINE PLANTS

Following is a list of alpine and subalpine plants found in the Pacific Northwest. This list is not inclusive of all existing species but a selection of the more common, interesting, and/or attractive ones.

Pinaceae — pine family.

Abies lasiocarpa, alpine fir; *Pinus albicaulis*, whitebark pine; *Tsuga mertensiana*, mountain hemlock.

Ophioglossaceae — grape fern family.

Botrychium pumicola, pumice grape fern.

Cupressaceae — cypress family.

Juniperus communis var. *saxatilis*, mountain juniper.

Apiaceae — parsley family.

Lomatium cous, cous; *L. oreganum*, Oregon lomatium.

Asteraceae — aster daisy family.

Achillea millefolium, yarrow; *Agoseris aurantiaca*, orange agoseris; *Antennaria media*, alpine pussytoes; *A. lanata*, woolly pussytoes; *A. rosea*, rosy pussytoes; *A. umbrinella*, umber pussytoes; *Arnica cordifolia*, heartleaf arnica; *A. parryi*, Parry's arnica; *Aster alpigenus*, alpine aster; *A. cusickii*, Cusick's aster; *A. ledophyllus*, Cascade aster; *Chaenactis alpina*, alpine chaenactis; *C. douglasii*, hoary chaenactis; *Cirsium remotifolium* (syn. *C. callilepis*), mountain thistle; *C. peckii*, Steens mountain thistle; *Ericameria discoidea*, discoid goldenweed; *E. greenei*, Greene's goldenweed; *Erigeron cascadenis*, cascade daisy; *E. compositus*, dwarf mountain fleabane; *E. peregrinus*, subalpine daisy; *Hulsea nana*, dwarf hulsea; *Hymenoxys hoopesii*, tall mountain helenium; *Nothocalais alpestris*, alpine lake agoseris; *Raillardella argentea*, slender raillardella; *Senecio canus*, woolly groundsel; *S. crassulus*, thick leaved groundsel; *S. cymbalarioides*, alpine meadow butterweed; *S. fremontii*, dwarf mountain butterweed; *Townsendia parryi*, Parry's townsendia.

Betulaceae — birch family.

Betula glandulosa, bog birch.

Brassicaceae — mustard family.

Arabis lemmonii, Lemmon's rockcress; *A. lyallii*, Lyall's rockcress; *A. platysperma*, flatseed rockcress; *Cardamine bellidifolia*, alpine bittercress; *Draba albertina*, slender draba; *D. aureola*, alpine draba; *D. cusickii*, Cusick's draba; *Erysimum arenicola*, cascade wallflower; *Phoenicaulis cheiranthoides*, daggerpod; *Thlaspi montanum*, alpine candytuft.

Caprifoliaceae — honeysuckle family

Lonicera utahensis, rocky mountain honeysuckle.

Caryophyllaceae - pink family.

Arenaria aculeata, prickly sandwort; *A. capillaris*, mountain sandwort; *A. congesta*, ballhead sandwort; *A. pumicola*, pumice sandwort; *Cerastium arvense*, field chickweed; *C. beeringianum*, alpine chickweed; *Minuartia rubella*, reddish sandwort; *Silene suksdorfii*, cascade alpine catchfly.

Crassulaceae — stonecrop family.

Sedum divergens, spreading stonecrop; *S. lanceolatum*, lanceleaved stonecrop; *S. oregonense*, creamy stonecrop.

Ericaceae — heath family.

Cassiope mertensiana, White Mountain heather; *Gaultheria humifusa*, alpine wintergreen; *Phyllodoce empetrifomis*, red mountain heather; *P. glanduliflora*, yellow mountain heather; *Rhododendron albiflorum*, white rhododendron; *Vaccinium caespitosum*, dwarf huckleberry; *V. deliciosum*, blue leaf huckleberry; *V. uliginosum* subsp. *occidentale*, western huckleberry; *V. scoparium*, grouseberry, whortleberry.

Fabaceae — pea family.

Astragalus whitneyi, balloon milkvetch; *Lupinus argenteus*, tailcup lupine; *L. arbustus*, spurred lupine; *L. lepidus* subsp. *ashlandensis*, Mt. Ashland lupine; *L. lepidus* var. *lobbii*, alpine lupine.

Gentianaceae — gentian family.

Gentiana calycosa, mountain bog gentian; *G. newberryi*, Newberry's gentian.

Grossulariaceae — currant family.

Ribes erythrocarpum, Crater Lake currant.

Hydrophyllaceae — waterleaf family.

Phacelia hastata var. *alpina*, whiteleaf phacelia; *P. hastata* var. *compacta*, dwarf silverleaf phacelia; *P. sericea*, silky phacelia.

Lamiaceae — mint family.

Monardella odoratissima, mountain monardella.

Onagraceae — evening primrose family.

Epilobium anagallidifolium, alpine willow herb.

Polemoniaceae — phlox family.

Collomia debilis, alpine collomia; *C. larsenii*, Larsen's alpine collomia; *Phlox dif-fusa*, spreading phlox; *Polemonium pulcherrimum*, showy polemonium.

Polygonaceae — buckwheat family.

Eriogonum flavum, yellow buckwheat; *E. heracleoides* var. *angustifolium*, Wyeth buckwheat; *E. heracleoides* var. *heracleoides*, Wyeth buckwheat; *E. marifolium*, mountain buckwheat; *E. ovalifolium*, cushion buckwheat; *E. pyrifolium* var. *coryphaeum*, alpine buckwheat; *E. sphaerocephalum*, rock buckwheat; *E. umbellatum* var. *hausknechtii*, sulfur buckwheat; *E. umbellatum* var. *umbellatum*, sulfur buckwheat; *Oxyria digyna*, mountain sorrel; *Polygonum newberryi*, Newberry's fleecflower.

Portulacaceae — purslane family.

Calyptridium umbellatum, pussypaws; *Claytonia lanceolata*, western springbeauty.

Primulaceae — primrose family.

Douglasia laevigata, smooth douglasia.

Ranunculaceae — buttercup family.

Anemone drummondii, Drummond's anemone; *A. occidentalis*, western pasqueflower; *Ranunculus eschscholtzii*, subalpine buttercup.

Rosaceae — rose family.

Dryas octapetala, white dryas; *Ivesia gordonii*, Gordon's ivesia; *Luetkea pectinata*, partridgefoot; *Potentilla brevifolia*, short leaved cinquefoil; *P. concinna*, early cinquefoil; *P. diversifolia*, varileaf cinquefoil; *P. drummondii* subsp. *breweri*, Brewer's cinquefoil; *P. flabellifolia*, fanleaf cinquefoil; *P. fruticosa*, shrubby cinquefoil; *Sibbaldia procumbens*, creeping sibbaldia.

Salicaceae — willow family.

Salix eastwoodiae (syn. *S. commutata*), undergreen willow; *S. geyeriana*, Geyer willow.

Saxifragaceae — saxifrage family.

Elmera racemosa, hairy elmera; *Heuchera cylindrica*, roundleaf alumroot; *H. micrantha*, small flowered alumroot; *Mitella breweri*, Brewer's mitrewort; *M. pentandra*, alpine mitrewort; *Saxifraga bronchialis*, matted saxifrage; *S. oppositifolia*, purple saxifrage, *S. tolmiei*, alpine saxifrage.

Scrophulariaceae — figwort family.

Castilleja arachnoidea, cotton paintbrush; *C. chrysantha*, common Wallowa paintbrush; *C. glandulifera*, glandular Indian paintbrush; *C. hispida*, harsh paintbrush; *C. miniata*, scarlet paintbrush; *C. parviflora*, magenta paintbrush; *C. pilosa*, Steens mountain paintbrush; *C. pruinosa*, frosted paintbrush; *C. rhexifolia*, rhexia leaved paintbrush; *C. schizotricha*, split hair Indian paintbrush; *C. suksdorfii*, Suksdorf's paintbrush; *Mimulus breweri*, Brewer's monkeyflower; *M. lewisii*, Lewis' monkeyflower; *M. primuloides*, primrose monkeyflower; *M. tilingii*, mountain monkeyflower; *Pedicularis attollens*, little elephant head; *P. groenlandica*, elephant head; *P. bracteosa*, bracted lousewort; *P. contorta*, white coiled beak lousewort; *Penstemon davidsonii*, Davidson's penstemon; *P. procerus* var. *brachyanthus*, small flowered penstemon; *P. procerus* var. *formosus*, small flowered penstemon; *P. procerus* var. *procerus*, small flowered penstemon; *P. rupicola*, rock penstemon; *Veronica cusickii*, Cusick's speedwell; *V. wormskjoldii*, American alpine speedwell.

Liliaceae — lily family.

Erythronium grandiflorum, yellow fawn or glacier lily; *E. montanum*, alpine or avalanche lily. Nomenclature is according to the Oregon Plant Atlas of Oregon Flora Project, Oregon State University, 2003.

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