Alpine Wildflower Nature Trail

OLYMPIC NATIONAL PARK

• WASHINGTON •

HOW TO USE THIS TRAIL

This self-guiding trail is about one-third of a mile long. It is a loop trail that will bring you back to the starting point.

Follow the lettered markers. They are keyed to the lettered paragraphs in this booklet.

You will also find small numbered markers along or near the trail. These correspond with numbers in the list of plants starting on page 6.

"Though wildflowers wilt if you pick them, they stay fresh in your mind if you know their names."

— Donald Culross Peattie

GLACIER LILY

INTRODUCTION

Wherever you find it, high mountain country is typically the scene of some of Nature's finest flower shows. Why is this? Chiefly because here the short growing season demands that plants grow, bloom, and seed all within a short time. Consequently many species are in bloom at the same time, as if competing with one another in a floral beauty contest.

Hurricane Hill has a particularly rich floral community, hence the location of the Alpine Wildflower trail here. Sunlit grassy slopes, tree-shaded glades, melting snowbanks, and a scattering of rocky outcroppings are some of the different plant habitats you will encounter, each with a different floral pattern.

One reminder— wildflowers keep best on film. Please limit your flower collecting, while in the park, to your camera. Thank you!

A. HURRICANE HILL HAS NORTHERN CLIMATE. You have climbed more than a vertical mile since you left Port Angeles. The elevation of Hurricane Hill is 5,757 feet.

Upward and northward have similar effects on climate. Short summers and long winters are characteristic of both high altitudes and high latitudes. Hurricane Hill, therefore, has a climate that is in many respects similar to that of regions far to the north. Summer days here are commonly sunny and warm, but night temperatures even during the growing season often fall near the freezing point.

B. MOUNTAIN FLOWERS. You saw that the vegetation changed as you drove up from sea level. Since the temperature at this altitude is similar to that at sea level a thousand miles or more to the north, the plant life, too, is similar in many respects to that of northern regions. In fact, many of the plants above tree line in the Olympics are identical with those of Alaska, northern Canada and Greenland. Others, although not identical, have a growth form that is markedly similar.

Toward the back of the book, you will find names and descriptions of plants that are labeled with numbered markers along the trail.

C. HABITATS. The place where a plant or animal lives is its habitat. The irregular shape of the ground here provides many different habitats. There are sunny and warm south slopes, and shady and cool north slopes. Some habitats are dry, others moist, some have deep soil, others little or none at all. Some places are exposed to the full force of the wind and some places are protected.

Each kind of plant has its own set of characteristics which enable it to grow and reproduce in a particular envi-

ronment. Thus different habitats usually have different plants. You will see striking differences between dry spots and moist spots, cool places and warm places, and between rocky and sandy soils.

D. TREE LINE. Tree line in mountains is the upper limit of tree growth. At the equator it may be as high as 15,000 feet, but it becomes progressively lower toward the poles. Tree line in the Olympics is about 5,500 feet. You can see that it is not an even line—it may be higher or lower depending on local conditions such as direction of the slope and position on a ridge or in a valley.

Temperature may be the most important factor in determining tree line, but snow depth and wind also influence the distribution of trees here. Even though other conditions may be favorable, trees cannot grow where the snow piles up so deeply it does not melt until midsummer or later. Where the snow blows away, the ground may be too dry for tree growth.

The most common high elevation tree in these mountains is the alpine fir *(Abies lasiocarpa)*. You can recognize it easily by its slender, symmetrical, "cathedral-spire" shape. Look for the cones that are smooth, grayish-purple, and upright on the branches usually near the top of the tree.

E. WATER. Water is perhaps the single most important influence on the life of a plant. Land plants must endure an almost continuous loss of water through their leaves to the air, and at the same time keep enough in their stems and leaves to maintain life. They do this by constantly absorbing water into their roots from the soil.

Many plants have developed special devices and processes to help them live in dry habitats. Leaves with a dense covering of hair lose water more slowly because the hair cuts down the evaporation rate from the leaf. This is just one example of many different water-conserving devices in the plant world. Were it not for these devices, much of Hurricane Hill would be bare, for much of it is dry. The high altitude, which increases the evaporation rate, places an additional burden on plants here.

F. SNOW AND THE PLANTS. The snow affects mountain plants in two very important ways. (1) It provides moisture for their growth. Since the wind distributes the snow unevenly, some habitats have more moisture than others. (2) It limits the length of the growing season by melting early or late or not at all, according to its depth and protection from the sun.

The edge of a shrinking snow bank, such as this one, is followed by a succession of plants during the summer—until

there is too little summer left for plants to grow, flower, and fruit.

Some plants begin to grow beneath the snow—the glacier lily for example. This is possible because enough light to start growth can penetrate snow 12 inches or more. You may see this happening at station 'K' during the early part of the summer.

G. SHADE PLANTS. Plants require light for photosynthesis (food manufacture). Some require less than others. This habitat, which has considerable shade, is filled with plants which can do well in shade. Here the air is cooler and moister, and these conditions are important for some plants.

Some plants seem to do well in either sun or partial shade, the subalpine lupine for example. Others grow well in full sunlight where the soil moisture is ample, but are restricted to shady habitats where the soil is drier. Thus what appears to be a preference for shade may actually be a requirement for high soil moisture. It is often difficult to tell what particular factors are most important to a plant in any one habitat.

H. ROCK PLANTS. Stonecrops growing here have an especially interesting way of enduring dry environments. Their leaves are succulent, that is, they contain large volumes of water. When it rains, stonecrops absorb water until their leaves become very full, and this stored water tides them through dry periods. The well-known water storing ability of cacti, which use their stems for this purpose, has enabled them to survive in some of the harshest environments on earth.

I. WIND. Krummholz is the German word for the stunted, twisted tree growth commonly found at timberline. The force of the wind, bending and twisting the young seedlings, "trains" them into the sometimes grotesque positions we see. Equally important is the abrasive action of strong winds carrying sand and snow particles. This often kills the buds and twigs on the upper, more exposed parts of the tree, while permitting the lower branches to grow well. The "skirts" on many alpine firs represent the part of the tree protected by winter-long blankets of snow.

J. PLANT PIONEERS. The crust-like plants growing on rocks are lichens (pronounced like-ens). They are pioneer plants—the first to grow on bare rock. They help to convert rock into soil by etching it with their weak acids. Dust collects among the lichen plants and they add their own plant bodies. Thus in time a thin soil is formed in

which other, more demanding kinds of plants can grow.

Many lichens and mosses have the ability to remain alive in an air-dry condition for long periods.

K. BIRDS YOU MAY SEE. Many kinds of birds may be seen in the high country. Some nest and rear their young here. Others appear when certain foods become plentiful.

The appearance of grasshoppers on Hurricane Ridge is an annual event that begins about the first of August. So abundant are they, some years, that much of the herbaceous plant life is devoured. The grasshoppers are an attraction for some birds, especially the blue grouse, sparrow hawk, and common raven.

THE FOLLOWING ARE THE BIRDS THAT YOU ARE MOST LIKELY TO SEE IN THE HURRICANE RIDGE AREA

HORNED LARK. A bird of the ground, a little smaller than a robin, generally seen on the open ridges. It can be identified by the two black, horn-like feather tufts on the head of the male.

SPARROW HAWK. A small hawk with a rusty tail; commonly hovering in the air. Numerous on the ridges during grasshopper season.

RED-TAILED HAWK. A large hawk with broad, blunt wings, commonly seen soaring in lazy circles. On the adults the tail is red on top.

BALD EAGLE. Occasionally seen soaring high above the ridges.

BLUE GROUSE. The female and her brood may be seen in the meadows in early summer feeding on the American bistort. This bird is common on the meadows during grasshopper season.

COMMON RAVEN. A large crow that makes coarse gutteral croaks; common in the meadows during grasshopper season.

GRAY JAY. A silent black and gray bird, a little larger than a robin. It may appear at your picnic expecting a handout. Also called camp robber or Oregon jay.

JUNCO. A sparrow-size bird with black head and white outer tail feathers, nesting on the ridges.

RED-SHAFTED FLICKER. A large woodpecker with a black bib, red under the wings, and white rump. Unlike other woodpeckers, it often feeds on the ground.

L. NORTH SLOPES AND SOUTH SLOPES. The direction and steepness of a slope is often important in determining which plants grow there. On north facing slopes, soil temperature is lower, and snowbanks linger well into

the summer. This is because the sun's rays strike the slope at a very acute angle. The opposite effect appears on south slopes, where the sun's rays may strike the ground at nearly a 90 degree angle. The result is not only a warmer soil, but a drier one. Often we find that plants which are adapted to a warm, dry lowland extend far into the mountains on south facing slopes.

M. ANIMALS YOU MAY SEE. Although the park is home to an estimated 4,000 to 5,000 Roosevelt elk, none have been seen on Hurricane Ridge since about 1920. However, they do venture onto the meadow one half mile west of Hurricane Hill. With continuing protection it is hoped that elk will again use Hurricane Ridge and its adjacent meadows and alpine parks as a summering ground.

BLACK-TAILED DEER are fairly common in the Hurricane Ridge area. They generally bed down in some secluded spot during the day and come out to feed during the early morning and evening. **Please do not feed them.** The unnatural foods are harmful to them, and you are in danger of being injured if you should frighten one while feeding it.

BLACK BEAR. If you scan the meadows below the ridges you may see one or more of these animals foraging for food.

OLYMPIC MARMOT. A shrill whistle is the marmot's note of alarm at the approach of danger. Marmots, related to the woodchuck of eastern states, live in burrows. This is one of the best spots in the park to observe marmots.

CHIPMUNKS. These sprightly little animals are very active during the day. They feed on fruits, seeds, and fungi. They also seek food scraps in picnic areas and campgrounds.

THE NUMBERS ON THE SMALL MARKERS CORRESPOND TO THE NUMBERS IN THE FOLLOWING LIST

All the 53 plants in this list may be seen along this nature trail at one time or another during the summer.

1. ***Alpine Timothy*** *(Phleum alpinum).* This widely distributed grass can be found in the arctic regions of both hemispheres, and south in the mountains to Mexico and South America. It is closely related to the grass from which timothy hay is made.

2. ***Bluegrass*** *(Poa).* Among the many species of bluegrass is the famous Kentucky bluegrass, a valuable pasture and lawn grass. The kinds found here are not adaptable to lawns, however.

3. Sedge *(Carex).* The grass-like plant is not a grass but a sedge, of which there are many species. You can tell a sedge by its stem, which is triangular in cross section.

4. Woodrush *(Luzula).* Also members of the sedge family, woodrushes are adapted to the cool and moist habitats of northern or mountainous regions.

5. False Hellebore *(Veratrum viride).* The large, striking leaves of this member of the lily family belie its small, inconspicuous flowers.

6. Olympic Onion *(Allium crenulatum).* Onions are members of the lily family. This particular kind was first found in the Olympics, hence its name.

7. Lambstongue Fawnlily *(Erythronium grandiflorum).* This beautiful yellow flower is also called glacier lily. It grows only where the ground is moist, such as next to melting snowbanks. It commonly pushes through the thinning banks—evidence that sufficient light penetrates the snow to stimulate growth.

8. American Bistort *(Polygonum bistortoides).* This member of the buckwheat family is conspicuous because of its abundance in the alpine meadows throughout the Olympics. Its small white flowers form dense clusters at the tops of tall, thin stems.

9. Lanceleaf Springbeauty *(Claytonia lanceolata).* This member of the purslane family has white flowers lightly veined with pink, and a single pair of fleshy leaves. Springbeautys are also known as miner's lettuce.

10. Subalpine Springbeauty *(Claytonia asarifolia).* This plant is similar to Number 9 except for its broader, long-stemmed leaves that arise from the base of the plant. It grows best in moist, shady spots.

11. Fescue Sandwort *(Arenaria formosa).* You can identify this small, white-flowered plant by its short, grass-like leaves that are mostly at the base of the plant. It belongs to the pink family.

12. Catchfly *(Silene macouni).* This plant is a member of the pink family. It gets its name from the fact that small insects often are caught in the sticky exudation on the flower stems and inflated calyx.

13. Hudsonian Anemone *(Anemone hudsoniana).* This member of the buttercup family with whitish flowers and hairy, segmented leaves is also attractive later with its numerous, neatly compact, globe-shaped fruits.

14. Western Meadowrue *(Thalictrum occidentale).* Another member of the buttercup family, this delicate, graceful plant may remind you of the maidenhair fern.

No. 15. SUBALPINE BUTTERCUP

No. 21. SIEVERSIA

15. Subalpine Buttercup *(Ranunculus eschscholtzi).* The glossy or waxy sheen of the flower distinguishes buttercups from similar plants. Look for this one in moist places, especially near melting snow.

16. Necklace Erysimum *(Erysimum torulosum).* Also known as mountain wallflower, this conspicuous, yellow flower is a member of the mustard family.

17. Yellowdot Saxifrage *(Saxifraga austromontana).* This small, hardy, mountain plant has a cluster of stiff, narrow, pointed leaves at the base. The flowers are white, dotted with yellow, orange, or red.

18. Alumroot *(Heuchera racemosa).* This plant belongs to the saxifrage family. It characteristically grows on steep north and east slopes where it forms conspicuous groups or patches of cream-colored flowers. The name is given because the large woody root is very astringent.

19. Partridge Foot *(Luetkea pectinata).* This member of the rose family can be recognized by the moss-like leaves.

20. Cinquefoil *(Potentilla).* There are at least two species of this yellow-flowered member of the rose family on Hurricane Hill. You may at first confuse them with the buttercup, but these flowers are velvety in appearance, while the buttercup is shiny.

21. Sieversia *(Sieversia campanulata).* This member of the rose family has nodding, pink to reddish flowers. It is also known as pink plume, which name refers to the pink feathery plume that comprises the fruit.

22. Subalpine Lupine *(Lupinus subalpinus).* This blue-flowered member of the pea family is one of the most conspicuous flowers on Hurricane Ridge because of its abundance, size, and deep color.

23. Longstalk Clover *(Trifolium longipes).* This member of the pea family is easily recognized as a clover.

24. Yellow Oxytrope *(Oxytropis luteola).* This member of the pea family is related to the plant known in the range country as loco weed because of its effect when eaten by livestock. Its flowers are light yellow and its leaves are featherlike, being composed of many hairy leaflets.

25. Hook Violet *(Viola adunca).* A purple violet with white center.

26. Pioneer Violet *(Viola glabella).* A yellow-flowered violet.

27. Red Willowweed *(Epilobium latifolium).* This small relative of the fireweed blooms on cool, shady slopes in late summer. Its flowers are deep purplish pink.

28. Cascade Lomatium *(Lomatium).* This plant with numerous, small, yellow flowers arranged like an umbrella is a member of the parsley family.

29. Common Cowparsnip *(Heracleum lanatum).* This robust plant with its umbrellas of white flowers is a member of the parsley family. It is widespread, and grows near sea level as well as in the mountains.

30. Mapleleaf Currant *(Ribes acerifolium).*

31. Prickly Currant *(Ribes lacustre).*

32. Red Mountainheath *(Phyllodoce empetriformis).* Although there are no true heathers in our country this red-flowered, evergreen shrub is often called red heather.

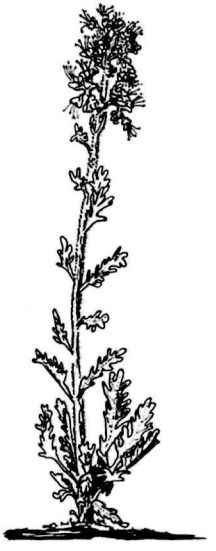
33. Smooth Douglasia *(Douglasia laevigata).* This brilliant, red-flowered, mountain plant is a member of the primrose family. It is common at tree line and above in the Olympic Mountains.

34. Skunkleaf Polemonium *(Polemonium pulcherrimum).* The reason for the name is generally apparent in the neighborhood of this blue-flowered plant. It belongs to the phlox family and is sometimes called Jacob's ladder.

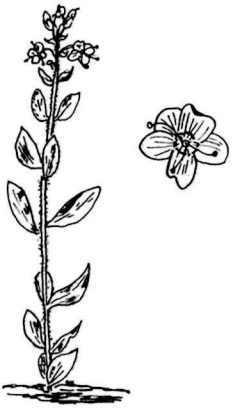
35. Spreading Phlox *(Phlox diffusa).* The low, matted

No. 25. HOOK VIOLET

No. 35. SPREADING PHLOX



No. 36. SILKY PHACELIA



No. 38. ALPINE SPEEDWELL

form of this colorful plant helps it prosper despite the drying winds of the high ridges. Its streamlined contour and dense branching help break the force of the wind, protecting the inner leaves and twigs. "Cushion plants" such as this are common in alpine habitats.

36. *Silky Phacelia* *(Phacelia sericea).* This member of the waterleaf family with its deep purplish flowers and silky foliage is one of the most attractive of the mountain plants. The pollen-bearing organs, called stamens, protrude conspicuously from the flower.

37. *Western Waterleaf* *(Hydrophyllum congestum).* This is a true shade plant of the subalpine parks.

38. *Alpine Speedwell* *(Veronica alpina).* This small, blue-flowered member of the figwort family grows also in Alaska, Greenland, northern Canada, and northern Eurasia.

39. *Bracted Pedicularis* *(Pedicularis bracteosa).* A member of the figwort family, this flower is also called Indian warrior because the flowering head resembles a type of Indian headdress.

40. *Magenta Paintbrush* *(Castilleja oreopola).* The beauty of the paintbrush is not in its flowers but in its brightly colored floral leaves that grow below and around the flowers. Notice that the leaves have 3 to 5 lobes. A member of the figwort family.

41. *Scarlet Paintbrush* *(Castilleja miniata).* See No. 40. The leaves of this species are not lobed.

42. *Owl Clover* *(Orthocarpus imbricatus).* This flower is related to the paintbrushes and closely resembles them. The colorful bracts form a compact head and this probably accounts for the clover part of the name.

43. *Sitka Valerian* *(Valeriana sitchensis).* This white, sweet-scented flower is also known as wild heliotrope.

44. *American Harebell* *(Campanula petiolata).* This widely distributed flower is common from sea level to high elevations.

45. *Aster Fleabane* *(Erigeron salsuginosus).* This flower has a yellow center around which there are 30 to 60 purple rays that fade to white as the flower ages. It is also known as mountain daisy.

46. *Rose Pussytoes* *(Antennaria rosea).* The woolly and pinkish flower heads will serve to identify this small plant.

47. *Common Yarrow* *(Achillea millefolium).* The finely dissected leaves of this widespread, white-flowered plant have a feathery appearance and are fragrant.

48. *Sagebrush* *(Artemisia).* This plant is related to the sagebrush found in eastern Washington and other dry areas of the West.

49. *Arnica* *(Arnica).* At least two species of this yellow-flowered composite can be found along this trail. You can distinguish arnica from similar flowers by its leaves, which are opposite on the stem.

50. *Arrowleaf Groundsel* *(Senecio triangularis).* This robust, yellow-flowered plant has arrow-shaped or triangular leaves with toothed edges.

51. *Indian Thistle* *(Cirsium edule).* This thistle is found at all elevations.

52. *American Saussurea* *(Saussurea americana).* This stout plant is leafy to the top and has small, violet-blue flowers.

53. *Agoseris* *(Agoseris).* Notice that all the leaves arise from the base of the plant and that there is only one flower head to each slender stalk.

No. 44. AMERICAN HAREBELL

No. 45. ASTER FLEABANE

This booklet is produced by the

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A non-profit organization cooperating with
the National Park Service
in preserving and interpreting the Park.

We hope that this nature trail has helped you to understand and enjoy Olympic National Park. Your suggestions as to how this trail and its guide booklet may be improved will be appreciated.

MORE INFORMATION

101 Wildflowers of Olympic National Park
by Grant and Wenonah Sharpe

OTHER NATURE TRAILS IN THE PARK

Rain Forest Nature Trail – Hoh Valley
Marymere Falls Nature Trail – Lake Crescent