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U.S. Department of the Interior

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San Juan Island

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San Juan Island National Historical Park



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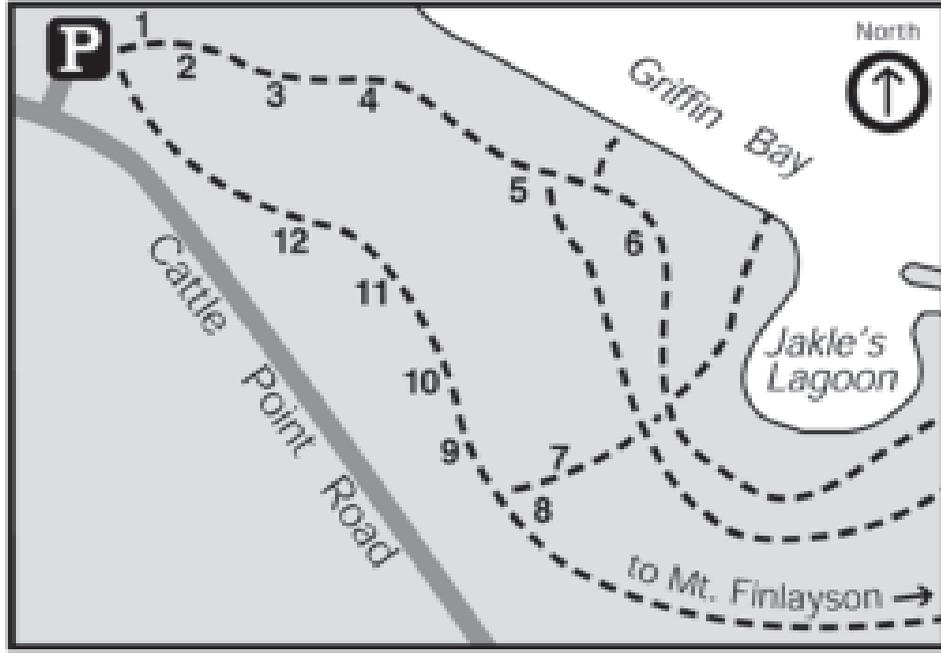
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Reprinted on recycled paper, November 2012

Jakle's Lagoon

A Nature Walk





Welcome to this self-guided walk in the Jakle's Lagoon Natural Area. From a distance you may have wondered at the rather sharp contrast between the forest and the grassland along the hilltop. Why are these two adjoining natural communities so visibly different? What are the more subtle differences between them? Find out the answers in this guide. Its numbered map and text correspond to like-numbered trail markers, the first of which lies just ahead.

The loop trail you will follow is about one mile in length. The trail is wide and the surface mostly level with very few rocks or roots. Be sure to pace yourself on the one short, but rather steep, uphill section of the trail. About half of the walk will be in forest and the other half on the edge of the open grassland. Bring water and allow an hour to complete the walk.

Remember: San Juan Island National Historical Park is your national park. Please help protect and preserve it by staying on trails, packing out trash, not picking flowers and not collecting artifacts or natural features.



One more thing: As you make your way back to the parking area take another look at the broad panorama to the south. Four other national park units are visible: Olympic, Mount Rainier, Ebey's Landing, and North Cascades. These five represent an American legacy of preserving and protecting landscapes and historic places for the benefit of future generations. Today our National Park System is nearly 400 parks strong. From mountain peak to seashore, from glacier to desert, and from Liberty Bell to battlefield, national park sites are a uniquely American idea. In the late 1950s and early 1960s U.S. Senators Warren G. Magnuson and Henry M. Jackson pushed for the creation of a park on San Juan Island. On September 9, 1966, Congress approved the creation of San Juan Island National Historical Park.

Happy Trails

In a short distance you have explored two distinct and unique natural communities: forest and grassland. You have either encountered or seen signs of some of the plants and animals that make their homes in these communities. On this journey you also traveled through an ecotone, the zone of transition between two distinct natural communities. You have learned about or observed adaptations that enable these plants and animals to live where they do. In your future travels on San Juan Island and other places, take notice of the natural areas you pass through. Think about what adaptations a particular tree or shrub or grass may have that enables it to survive and thrive in a certain location. Look for wildlife or signs of wildlife and consider what strategies they have adopted to help them live in their world. The natural world is a tapestry of living things that have adapted to survive in different habitats. Explore the variety. Experience the diversity. Enjoy!

Descend the trail to the parking area, passing by large boulders—glacial erratics—left behind by glaciers that receded some 15,000 years ago.

When you reach the parking area please return this trail guide to the box for others to use. Thanks!

Pioneers

Douglas- firs are the most common trees in this dense forest. Notice that most have branches only near the top of their trunks. Douglas-fir trees require plenty of sunlight to thrive. Also observe that they are roughly the same size, meaning the same age. Cores taken from some of the trees indicate an age of approximately 75 years. Knowing that Douglas-firs require abundant sunlight and that these trees are of similar age provides a hint that the Jakle’s Lagoon forest is not a pristine area, but was once logged to provide open farmland. Douglas-firs are a pioneer species, the first to move into an open area. As the forest reestablished itself, the young Douglas-firs thrived in the sunlight. Eventually they grew so high and thick that light was blocked to all but the tops of the trees, causing the lower branches to die and fall off.



Notice the young trees growing in the shadow of the Douglas-firs. These are young hemlocks and cedars that can grow in the shade of older, taller trees. These shade-tolerant species will eventually transform this forest into one in which they will predominate. Look for more evidence of this change a little further up the trail.

Fun facts: Douglas-fir trees can live up to a thousand years, grow to an average of 4 to 8 feet in diameter and reach heights of more than 200 feet.

Forest Nurseries

Nurse logs are the nurseries of the forest. Facing the numbered post, look for the nurse log about 15 feet off the trail with the row of young saplings growing on it. The log is slowly decaying while providing many benefits for the forest residents. The rotting wood of the nurse log is rich in nutrients. It provides an ideal growing space for seedlings and may help them outgrow any competition sprouting below on the forest floor. As you hike be alert for several trees shooting up in perfect alignment or a tree that appears to be growing on “stilt-like” roots. These are examples of trees that sprouted on nurse logs or stumps that have rotted away.

Most young seedlings sprouting from nurse logs are **Western hemlocks**, which are characterized by graceful, soft foliage and a drooping top. A short distance down the trail, on the left side, a stump has a number of young hemlock seedlings sprouting from its cut surface. Can you find it? Large dead trees in also provide food and shelter for many species of insects, birds,

and mammals. Here on San Juan Island, foxes and raccoons use hollow logs for shelter, while river otters burrow into the soft duff at the base of the logs.



Birds of Prey

Extend your arms as wide as you can and imagine yourself a bird flying in the forest where you were just hiking. To aid them in slipping among the trees, forest birds of prey such as the Cooper’s hawk and saw-whet owl have short wingspans. Not so the red-tailed hawks and bald eagles that soar over the prairie on giant wings. They spot their prey from great distances, maneuver easily in open skies, then swoop down for the kill.



Cooper's Hawk

Forest birds of prey:

Cooper's hawk - 29-37" wingspan

Northern saw-whet owl - 17"



Grassland birds of prey:

Red-tailed hawk - 50" wingspan

Bald eagle - 70-90"

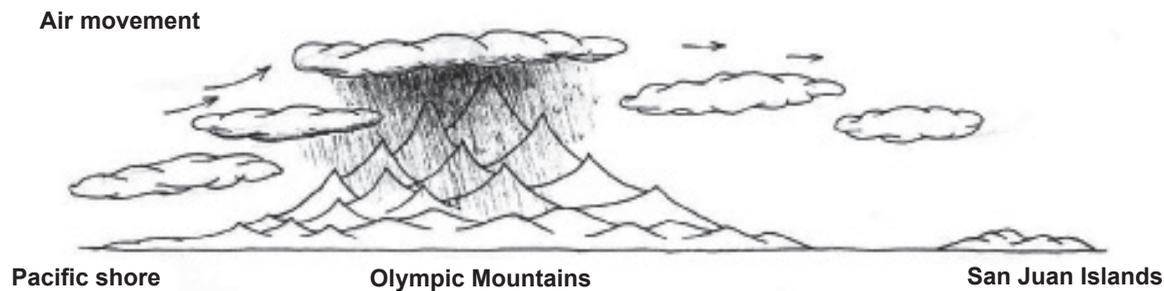
Vulture - 69"



Rain shadow

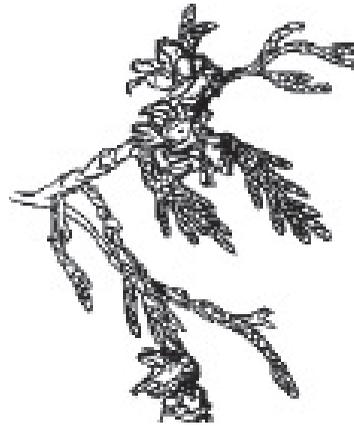
Gaze out onto the waters of the Strait of Juan de Fuca. Across the strait on clear days the Olympic Mountains rise to the southwest. The Olympics play an important role in the climate and flora found on San Juan Island. The relatively warm, moisture-laden winds blow in from the Pacific Ocean. When they hit the coastal ranges of Washington the air is cooled as it rises up the mountain slopes. Cooler air can not hold as much moisture so it is released, falling as rain.

The Olympics provide a barrier, protecting San Juan Island from the 150 inches of rain that fall on the west side of the Olympic Peninsula. This **rain shadow** explains why, in late summer, the grasslands are dried golden brown.



Tree of life

Breathe in the pleasant aroma. The **Western Redcedar** is a fragrant tree, commonly found in moist areas. However, the rainfall on this end of San Juan Island averages only about 20 inches per year. The Western redcedar is able to grow here because the forest lies on the north-facing slope of Mt. Finlayson—away from the drying effects of wind and sun.



As mentioned earlier, Western redcedar and Western hemlock are **shade-tolerant** species that can sprout in the shadow of Douglas-firs. Left undisturbed by logging or fire, they will eventually take over the forest. Western redcedars may live for a thousand years, the older trees often having dead spiked tops or multiple-stemmed candelabra shapes. Notice how the fern-like leaves drape gracefully from the main branches.



Fun Facts: Cedar trees were prized by Northwest Coast and Coast Salish peoples, who used them to fashion clothing, canoes, totem and mortuary poles, bent wood boxes, baskets, rope, tools and planks for houses.

Undercover

The **sword fern** is the most common fern you will encounter on this walk. It thrives in moist forests, where it may grow to four feet tall and remains green throughout the year. Look closely at each leaflet on the **fronds** (leaves). The small knob at the base reminded people of the hilt of a sword, hence the name. The small round brown bumps on the underside of the leaves are called **sori** (spore cases) and contain reproductive spores.



The tough, wiry shrub with leathery, evergreen leaves growing along the trail is called **salal**. Salal can grow up to 15 feet high. It is one of the most common understory shrubs in coniferous forests and may be found in dense thickets in coastal forests. Touch a salal leaf. Salal leaves are **alternate**, which means they grow along the stem singly at different intervals, first on one side of the stem, then on the other. The leaves are thick, shiny, egg-shaped, and finely toothed.



Oceanspray is a large shrub that can grow to 20 feet high with several main stems. The large clusters of small white flowers give oceanspray its name. The deciduous leaves are alternate, dull green, hairy, and broadly egg-shaped to triangular. Oceanspray is commonly called **ironwood** because of its strength and hard wood.



Grasslands

In sharp contrast to the forest where plants have evolved strategies to survive in a world of reduced sunlight, the full sunshine of the open prairie presents unique challenges to plants inhabiting this exposed environment.



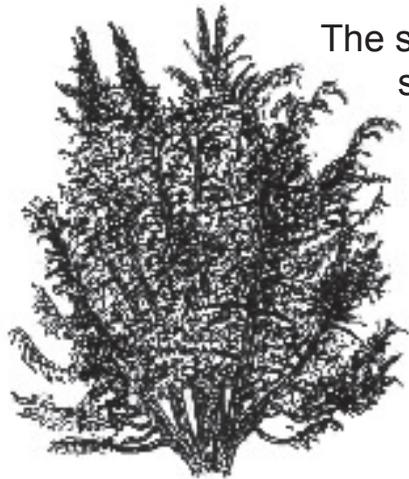
Grasses have long, thin blades standing vertically to avoid too much sunshine and to minimize moisture loss from the drying effects of sun and wind. Look for plants other than grasses. In spring and early summer carpets of **wildflowers** delight the eye. As with grasses, these plants must be able to withstand direct sunlight and periods of dryness. Hairy or fuzzy or small, finely-divided leaves help wildflowers retain moisture. Food reserves are stored underground in root systems that typically extend deep into the ground to capture precious soil moisture and avoid competition with shallow-rooted grasses.

Small mammals, insects, non-poisonous snakes, and ground-nesting birds live in the open grasslands. **Townsend meadow voles** (above) and **white-footed mice** burrow through matted vegetation that forms runways and tunnels. Inspect the grasses for evidence of these pathways. Some lead to nests or burrows. The occupants must venture out in the open in search of food—always a potentially dangerous activity for creatures so small. By tunneling through the tangled mat of grass, voles and mice are partially hidden from predators such as owls, hawks and foxes.

Fun Facts: Voles and mice are prolific breeders. Each female can have 2-3 litters per year with an average litter size of 4-6. This high reproduction rate is necessary to compensate for high mortality. Survival is tough for animals so low on the food chain.

Arid plateau

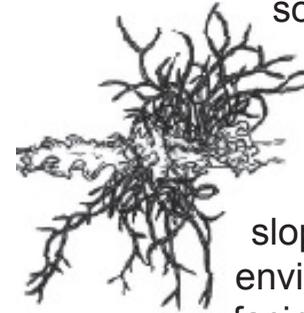
Does the air feel and smell different from when you were in the forest? Does the soil feel moist or dry? In contrast to the forest that you first walked through, you are now in an area that is quite dry. The Mt. Finlayson ridge faces south, so the direct sunlight contributes to further drying of the grassland environment. Exposure to sun and wind, along with thin soils, prevents moisture from building up and contributes to its loss even in the rainy winter season. This south part of San Juan Island is the driest, receiving only about 20 inches of rain per year, as compared to about 36 inches at the island's northern end. Summer winds prevail from the south, bringing warm, drying air to the prairie and turning the grass golden.



The semi-arid, open environment attracts species such as the **Rocky Mountain juniper** trees 100 feet in front of you. These junipers are well adapted to survive with as little as 10 inches of rain per year. The small, tough, scale-like leaves minimize water loss. The Rocky Mountain juniper requires plenty of sunlight and is intolerant of shade.

Coverings

Lichens and **mosses** are the upholstery and carpets of the forest, making their home on living trees, dead wood, rocks, and soil. Lichens come in a variety of colors but grayish and greenish are most common. Varieties may be crusty, leafy, stringy, or branching; some may look like they've been painted on a surface.



Bend down and touch them gently. Mosses may be plush and soft, fuzzy and dry, or moist and thick. Lichens and mosses thrive in damp, moist environments. On this densely forested north-facing slope, plants receive little direct sunlight. The resulting environment is cooler and moister than that on the south-facing slope. When moisture is plentiful, lichens and mosses are soft and lush. When the weather is dry they become tough or even crusty to the touch and may be thought dead. However, they are merely dormant. When moisture returns they spring back and resume their slow growth. Lichens also absorb nutrients and moisture from the air, which makes them extremely sensitive to air pollution, and excellent indicators of environmental health. What do you think of the air quality here on San Juan Island? Unfortunately, pollutants and acid rain can intrude from urban environments to affect even our most remote and pristine parks.

Fun Facts: Lichens represent a symbiotic relationship between an alga and a fungus. The two live together and help each other. The algae produce food while the fungi provide protection.

At the trail junction turn left.

Woodpeckers

Look closely at the large rectangular holes in the tree. Now is a good time to listen quietly. If you hear slow, resounding “ratta-tat” or “thunk, thunk, thunk”), it may be the drumming of a bird who chiseled the holes, the **Pileated woodpecker**, on the hunt for a snack of insects or larvae. The Pileated woodpecker is a large bird, up to 16 inches long, and makes holes as large as 4 by 12 inches. As you might expect, Pileated woodpeckers live in dense forests with abundant food supplies. This forest is also the home to other species of woodpeckers: Downy and Hairy woodpeckers and the Northern flicker.

Fun Facts: Woodpeckers have extra padding in their skulls to absorb the impact from the pounding. They also have strong, sharp-pointed bills for digging holes, and their tongues are long enough to reach into the holes and remove the insects. They have stiff tail feathers and two rear-facing claws to help hold themselves upright on tree trunks .

Continue to the trail intersection. You may wish to turn left and venture down the short trail to view Jakle’s Lagoon and the shore of Griffin Bay. Otherwise, turn right and head up hill. Cross the main trail and continue climbing. Listen to the forest sounds as you go.



Transitions

Take a moment to catch your breath and glance about. What is happening to the forest around you? Have you noticed a more open, spacious feel to the surroundings? The number and size of the trees is decreasing and the undergrowth is thinning. You are passing through an **ecotone**, a transition zone between two different natural communities. In this instance, forest is giving way to grassland. As you near the top, fewer trees are present and most are Douglas-firs. Unlike their forest cousins, these young **pioneers**, reminiscent of Christmas trees, receive enough sunlight to flourish and support branches low on their trunks.

Sculpted trees

Whew! You have climbed onto the grassy expanse of Mt. Finlayson ridge. Do you think it would be easy to be a tree up here? This area is exposed to harsh, powerful winds. The combination of thin soils and shallow root systems make trees in the open grassland vulnerable to blow down, especially in winter. Look for trees that are bent, folded, or deformed by the force of the winds.



At the trail junction turn right.