

Learning from the Land

An interpretive trail at Chinook



THE WHIDBEY
INSTITUTE

We appreciate the return of this guide for use by our next guest.

Welcome!

*“The trees of the forest have secrets to tell;
don’t go back to sleep!”*

The trail you are about to enjoy has been designed to help you to see things you may never have seen before even if you have walked here dozens of times. We invite you to discover the hidden secrets of the forest—how it began, how it is changing before your eyes, and what it may become.

The trail is about a half mile long. If you read this booklet and think about the questions, it will take you between a half hour and forty-five minutes to complete. Each of the fourteen stations will invite your attention to a different aspect of the forest story.

As you walk, try to put yourself in a different frame of mind than usual. Instead of focusing on the person you are with or on your own inner thoughts, try paying attention to where you are and what is immediately about you. To do that, stop, look, listen, smell, and feel this very particular place.

Have a wonderful walk!

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If you have any questions or suggestions, please call us at 360-341-1884..

THANKS!!!

July, 2011

Here are some common sightings on the Chinook land.....

Common birds

song sparrow	chickadee	nuthatch
winter wren	robin	crow
varied thrush	Swainson's thrush	flicker
Steller's jay	Pacific flycatcher	western tanager
house finch	hairy woodpecker	spotted towhee
pileated woodpecker		black headed grosbeak

Common trees and shrubs

Douglas-fir	western hemlock	white pine
red cedar	red alder	big-leaf maple
madrone	salmonberry	elderberry
salal	Oregon grape	rhododendron
Red huckleberry	Evergreen huckleberry	

Common ferns, mosses, and lichens

sword fern	deer fern	lady fern
wood fern	licorice fern	tree moss
beaked moss	cat's hair moss	cotton moss
snake liverwort	pixie cup lichen	witches' beard

Common mammals and friends

Douglas squirrel	black-tailed deer	raccoon
Flying squirrel	Townsend chipmunk	coyote
European rabbit	European black slug	banana slug

Post #1

Can you read the story?

How is the forest changing? Hidden between the trees, lurking in the topmost branches, pushing back against your footsteps, humming just beneath your hearing, and teasing your nostrils, are hints, and clues about how you can read the landscape and piece together the vivid narrative of the forest. The natural world is not shaped to our convenience, and the changing story will not be neatly arranged .

You will slip into the story's stream at different times. The particular qualities of each place, each bend in the flow will braid you into the chronicle, entwining you into the past and the future. We hope that as you reach the end of the trail and the end of the story you will be able to recite your own account. Perhaps now that you can see the story of a place, you can return home and see the story of your own home.

Pause here for a moment. Take in the details and bring the clues with you to Post #2.

As you walk on: How many different types of trees do you see? Can you hear birds up in the treetops? Take a deep breath; what do you smell?

Post #2

Seeing into the past; looking into the future



Forests may be of different ages. They begin after glaciers, fire, disease, landslide, blowdown, or logging have destroyed the prior forest. The Chinook forest has areas of several different ages. Look now at the area you are in.

The trees with lanky gray trunks and pointed, oval leaves are red alders. Alders are sometimes called a pioneer species because they are the first to grow in an area that has been reduced to bare ground. They grow fast and rarely live more than 60 or 70 years. Notice that these are falling rapidly. If you look closely, you will see that there are no young ones coming up because alders need lots of sun and do not root in water. Can you imagine what this place will be like in 100 years?

To answer that, look closely at the young evergreen trees beneath the alders. They are western red cedars. Unlike alders, they don't mind the shade or the wet. What's more, they can live 1,000 years. Once the alders die away, the cedars will have the place to themselves.

Now, as you move on to the next stop, you might ask yourself, "If cedars will be here in the future, what was here in the past?"

*Swaying gracefully,
alders reach distant sun;
giraffes of the swamp.*



How do we make a space for ourselves on this planet while honoring the right of all other beings to flourish here with us as well?"

Post #3

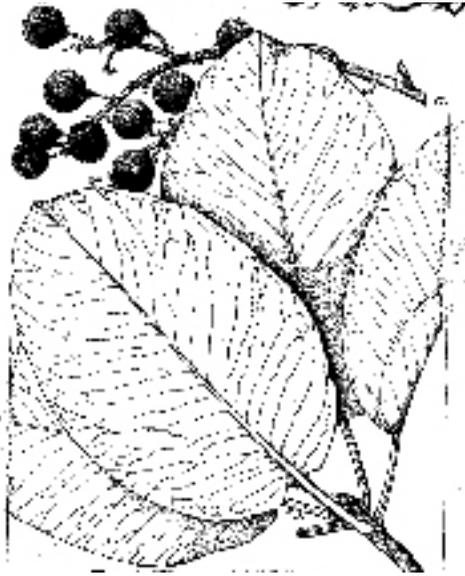
Clues from the past

Look to your left over the wetland. About halfway across, you will see a delicate shrub (green except in winter) growing several feet above the floor. It's a red huckleberry, a deciduous plant that often grows on top of old wood in the forest.

If you look more closely, you'll see that this one is growing right out of the top of an ancient stump; it's a big stump—too big to be an alder. It is a cedar stump, ancestor of the saplings you saw at the last stop. Because of their broad bases, they rarely topple in the wind. Something else must have felled them. Such stumps commonly provide a starting place for new life. This process of new life taking root on old is called layering and is a common sight in our forests. Through out your trek pay close attention to the various roles that old wood plays in the forest.

Also take note of the tall, lanky trees near this post. Look up and notice how they curve and slant, stretching themselves to find the sunlight. Do you recall which trees these are?

But what became of those old cedars? Why is there nothing left of them but the stump? As you walk on, watch for clues. And were they the only kind of tree here?



Madrone is characterized by its brownish-red peeling bark.

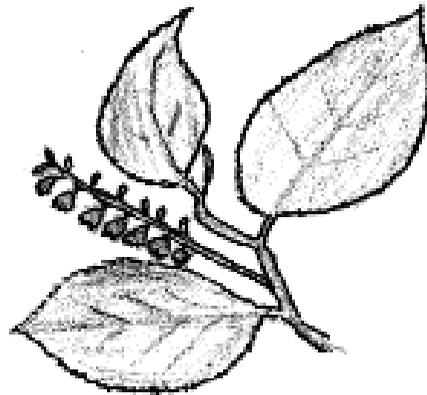
It produces small orange-red berries that are not eaten by humans but are popular with birds.

The madrone tree bark was occasionally eaten and was also used in a variety of medicinal preparations by the Saanish people.

Salal grows in dry areas of the forest, often in full sunlight.

It often forms dense continuous colonies up to five feet high.

The purple berries were a favorite of the first Americans, used in jams and jellies. And to sweeten other foods.



Post #4

From wetland to stream

By now you have probably noticed several things that have changed since the last stop. The alders are fading away and there are more evergreens here. Perhaps you also noticed a new kind of evergreen, one with delicate branches and a nodding tip. This is a western hemlock. If you look closely, you will see another new evergreen with more deeply furrowed bark: a Douglas fir. There are lots on the slope behind you. Why are they here?

Notice that the far side of the valley has begun to slope more sharply so the wetland has become more concentrated and the edges drier. Hemlock and fir like their feet a little drier than cedar. This is a transition zone, an area with more diverse plants as well as more bird and animal life. In the right season, if you listen very carefully, you may hear the rapid call or the long warbling song of the winter wren. And, believe it or not, that little stream, now kept cool by the overhanging hemlocks, could be harboring tiny salmon.

At our next stop we'll take a closer look at what it must be like to be a tree growing here. How deep do you suppose the rich soil of the wetland is, and how far down do those roots go anyway?

*Winter wren's fast trill,
all one hundred five clear notes:
bell ringer for spring.*

Post #5

The Relentless Return of Life

This root mass is from an eighty year old hemlock which fell eleven years ago. The soil here is actually very thin; beneath it is hard clay. The clay holds water like a bathtub--that's one reason this is a wetland. Trees in a wetland tend to send roots sideways rather than down. This tree was like a nail standing on its head.

Notice also how the land is recovering from the tree's fall. Epiphytes-- plants that grow on other plants but are neither parasitic on them nor rooted in the ground-- abound in Whidbey Island forests. You can see some of them on the rootplate ahead of you. Notice also the mosses and lichens that are growing here, establishing a new foothold in the area disturbed by the fall of this giant.

In nature, no niche remains uncolonized for long. A relentless drive fills freshly opened spaces with new life. The so-called "primitive" plants are among the first to arrive on bare ground and provide an important base for the flowering plants. We are sometimes tempted to clean up the forest floor and remove any "useless" dead or rotting wood. But what is lost when we do that?

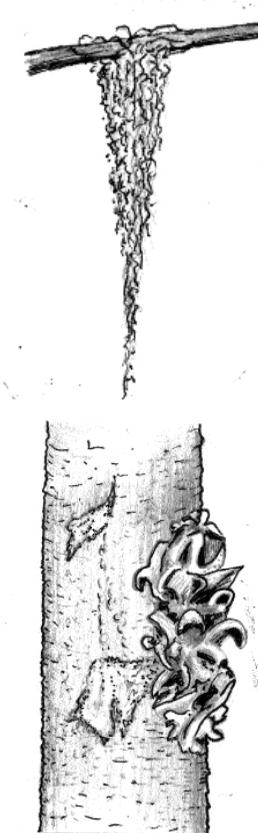
As you walk back, notice how thin the root plate is. Then take note of the huge old stumps on the trail's switchbacks. The thick bark tells us that most of these are Douglas fir. What happened? If you have a hunch, what's your evidence?

*Fallen old hemlock,
your roots, torn from their earth home,
hang out in the sky.*

Lichen is made up of two plants--fungi and the algae they cultivate.

This is a symbiotic relationship, one in which neither species is harmed and both benefit from the other's company.

Lichen has been found in many of the harshest environments on earth, including under the ice in Antarctica!

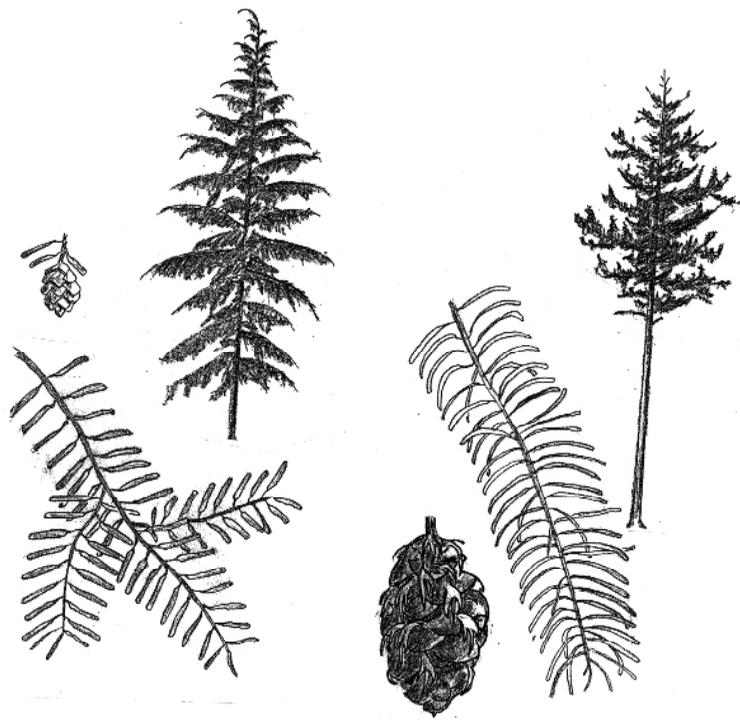


Moss also abounds in the forests of the Northwest.

More than 700 varieties make their home here.

Both Oregon beaked moss and wavy-leafed cotton moss often cover logs in large mats and are often the first plants to return to a disturbed area.





Western hemlock

Douglas fir

Douglas fir prefers drier soils and requires a large amount of sun- new firs will not grow in the shade of their elders.

It is the tallest of the four commonly seen trees, and is often found in areas affected by fire.

Douglas fir wood was a preferred fuel for the first Americans, while the pitch was used for caulking canoes and as a medicinal salve.

Western hemlocks grow best under a canopy formed by other trees and are best identified by their drooping top, otherwise known as a leader.

Their needles are short and flat, and cones are small and numerous.

The high tannin content in the bark was used by the first Americans as a tanning agent, pigment and cleaning solution. Hemlock was also carved into a variety of tools.

Post #6

Nurse Logs: a Forest Oasis

There is a long log behind the post. It is a nurse log. Nurse logs and other rotting wood are the foundation for healthy forest. In this climate a large nurse log will require just about as much time to decompose completely as it took to grow in the first place. Nurse logs provide seedbeds and nourishment for tree and shrub seedlings, giving them the resources they need to flourish and protecting them from ground-browsing insects and animals.

Nurse logs retain water, releasing it slowly through the long, dry summer when only 3" of rain falls. Sinking their roots into the moist interior, seedlings grow faster than their companions on the ground.

Can you identify the plants living in the nurse log?
Are there any animals or insects living on or near the nurse log?

On hillsides nurse logs control erosion and provide a variety of habitats and food sources for forest creatures. When you take the wood out of a forest, even the dead or fallen wood, you sharply affect the diversity of life that the forest area can sustain, and limit the forest's ability to maintain a balanced level of health.

Now take a look at the big stump just up the trail on the left: this is Post #7.

*Fallen tree looks dead;
but no, it's a birthing place.
Life-filled plants spring forth.*

The **pileated woodpecker** is a red-crested bird the size of a crow.

It often drills large, rectangular holes in snags to find ants.

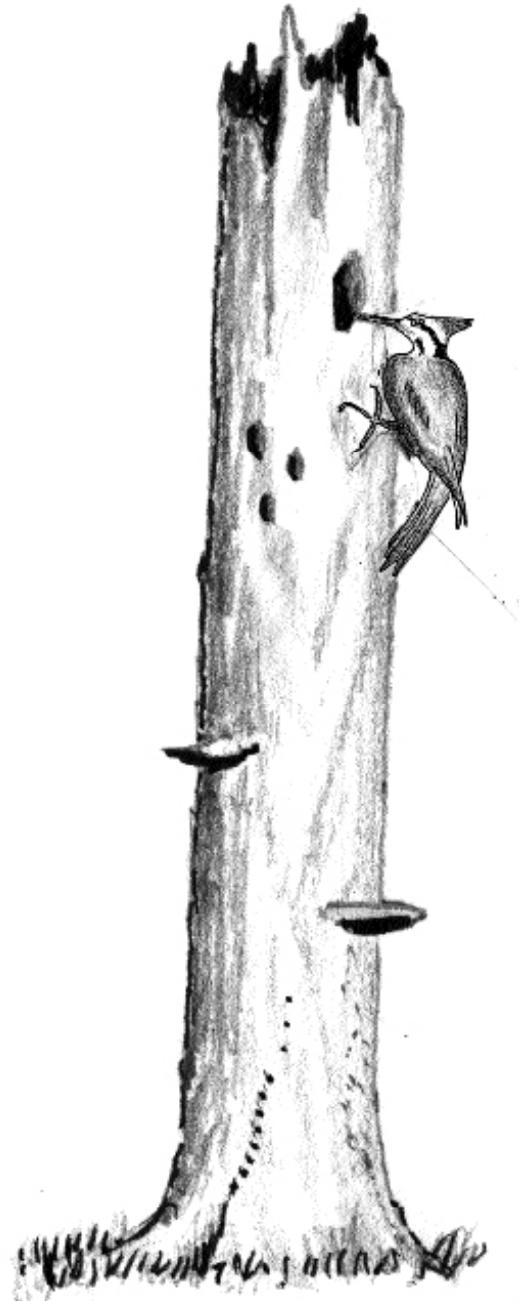
These birds prefer large trees for nesting, and each pair is incredibly protective of their territory.

Its loud, ringing call resonates through trees, often attracting other birds to their feeding excavation.

Red rimmed polypores are a shelf fungi that can be found on many snags and fallen trees.

They add a new layer of tissue every growing season, resulting in tree-like rings.

Once the shelf fungi has moved into a snag, the single organism grows through the heartwood of the tree.



Post #7

Springboards and brushfires

Stumps like this are probably the single most obvious clue to what the forest was once like here and what happened to it. As you examine these stumps, here are some things you might notice.

They are large and their tops are flat. Clearly they were old growth trees cut by a saw. Now notice the notches. These held the springboards, metal-tipped planks where the loggers stood. Most of the stumps on the hillside here are Douglas fir, still the prime lumber tree of our Cascadia bioregion. If you look more carefully, you will also notice that the thick, plated bark appears to be burned in places. How can we explain this?

Forest fires on this side of the Cascades occurred historically only every 300 to 500 years, so the odds against that are pretty strong. The Native Americans used fire to keep areas open for planting, but probably not here. The best bet is that the brush was burned after logging. These often caused forest fires.

Take a moment to imagine what this place must have been like before it was logged and burned to a barren hillside. Restore those stumps to full-grown trees. What would it feel like? What would you smell? What sounds might you hear?

But human beings are not the only creatures to change the forest. Some "creative destruction" is essential for forest health.



In this old photo from 1905 by Darius Kinsey, you can see the springboards where the loggers are standing. We trust that his friends will give the fellow in the notch ample warning.

Post #8

Creative destruction in the forest

As you moved up the slope, you saw a number of rotting trees and ancient stumps. Often the first sign that a tree is dying is the appearance of shelf fungi on its trunk. The red-rimmed polypore is one of the most common here. In addition to its shelf, most of this fungus is actually a maze of fine hairs called hyphae growing throughout the snag that help to decompose the wood.

Standing dead trees, called snags, form an important part of the forest ecosystem. They provide habitat for life of all kinds: bark beetles, carpenter ants, woodpeckers, squirrels and raccoons. As many as 1,000 different organisms may live on a single snag! Each in its own way breaks down the tree, restoring it to the soil. Thus, beetles and ants open pathways for fungi which draw moisture and speed decay. Other insects then attract woodpeckers that open larger holes which may shelter chickadees or squirrels.

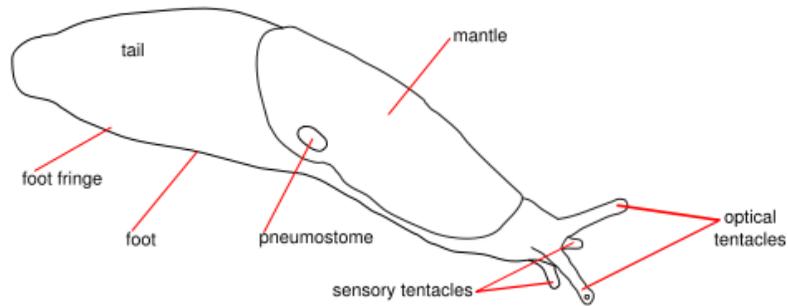
As you move along, look at the trees around you. Do you see a full range of types and sizes, or are they fairly uniform? How about the shrubs—how do they compare with those in the wetland?

*Fungus shelves jut out,
stepping stones up the dry tree trunk:
dead tree harbors life.*

The **banana slug** is the native species to the Pacific Northwest.

It is often bright yellow, but may also be greenish and have brown or black spots.

These slugs are the second largest variety in the world. They assist in the decomposition of forest matter while spreading their thick, protective mucus over the terrain.



Slug anatomy

European black slugs are invasive in the Northwest.

They are brown or black and produce a foul tasting mucus.

Like all slugs the European black is a hermaphrodite, which allows it to reproduce with itself when necessary.

When picked up, the slug will contract and rock from side to side to confuse predators.

Post #9 Forest succession

You have probably noted that the larger trees here are the same kind and are pretty much the same size. They are Douglas fir, between eighty and ninety years old. Since we learned earlier that this hillside was probably burned over after it was logged, we can now date the operation at around 1910. But why did it come back as Douglas fir? Why not cedar as in the wetland?

After fire, this slope was quite hot and dry. Douglas fir do better than cedar in those conditions. Note that the undergrowth is not as lush here as in other areas of the forest. That's because when trees of the same age grow up, the canopy all rises at the same rate. At a certain point the canopy closes over, limiting the diversity of the understory to the more shade tolerant plants.

So it would seem that, barring disaster, for the next century or two this hillside will be dominated by Douglas fir. But what then? Is there life after Doug- fir? Look carefully at the young trees around you—the ones that are ten to twenty feet high. Most are hemlock with a few cedars. Not one is a Douglas fir; young Doug- fir will not grow in the shade of their elders. So the forest itself will evolve yet again over the course of 400 to 500 years to become dominated by shade tolerant hemlock and cedar—at least until a new disturbance starts the cycle all over again.

We have been looking up. Now, look down. What do you see?

Sword ferns abound on the trail, and are known as one of the most useful plants because of their tolerance and adaptability.

They can handle the acidic soils under cedars and redwoods unlike many other plants.

As older fronds of the fern die they become an excellent habitat for amphibians.

The **coastal wood fern** is much softer than the architectural sword fern.

This plant is feathery and can be found growing on the northern slopes in coastal areas.

The first Americans used ferns to decorate woven baskets.



Sword fern

Lady fern

Licorice fern

Wood fern

Post #10 The First Plants

When the land is scraped or burned to mineral soil, among the first plants to return are the lichens and mosses. Lichens are the hardiest plants on earth, accomplished by a simple trick: they are part fungus, part algae. The first provides protection; the second, food. Since they don't need nourishment from soil, they can live on rocks with little moisture.

Mosses do almost as well, and though they do need moisture, they too can live on very poor soil and are often the first true plants to return to fire-scorched earth. As they form an organic mat over lichens or mineral soil, the seeds of flowering plants will take root. Without moss, a nurse log would be hard pressed to support new growth.

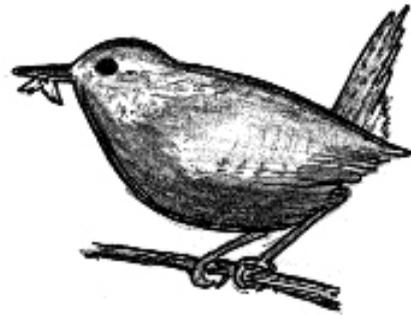
Those tufts of "Spanish moss" you see hanging on older trees are actually a lichen called witches' hair. When it falls to the ground, it adds essential nutrients to the earth. Years ago, a common lichen called Lungwort thrived here, providing a major complement of nitrogen to the soil. When the forests were clear-cut, however, it was wiped out.

Whole worlds disappear when the great trees are taken. It would require a thousand years or more to restore these forests to anything like their earlier condition. But is that even possible?

The **winter wren** is a very small bird with uniformly brown plumage and a thin, pointed bill.

Its song is the most distinguishing feature, with a loud continuous trill lasting 5-10 seconds.

These tiny birds sometimes roost communally in cold weather and may produce several nests in a year.

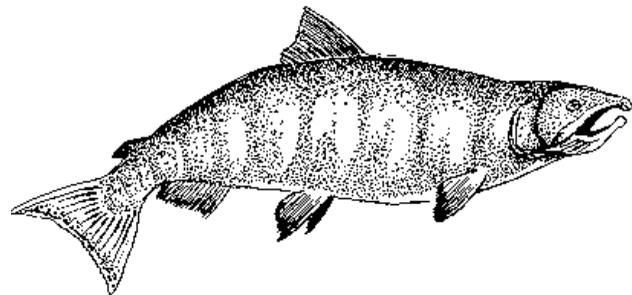


Winter wren

Chinook salmon spawn and swim in freshwater streams and estuaries.

They feed on insects and crustaceans while young, moving on to fish as they age.

Human changes in habitat, particularly destruction of the wetlands, have dramatically affected the salmon population, though recently several projects have been created to restore the delicate ecosystem of which the salmon is a part.



Post #11 The Great Healers

Back at the beginning of this walk, we met the alders—gray, leafy, lanky members of the birch family. They are often scorned as “weed trees,” of little value. Indeed, they do grow weeds, appearing early as tiny seedlings in almost any soil damp enough to allow them to germinate. Adept at rooting in poor soil, their secret weapon is nitrogen-producing bacteria in little nodules of their roots. In a sense, they feed themselves as they get started—and they leave the soil richer for those that follow.

Using this nitrogen fixer, coupled with their capacity to grow very rapidly, they have taken over this old pasture before you. But like Doug-fir, they are not shade-tolerant so we can expect that the land that they have so effectively enriched will be occupied within a century or less by you guessed it—hemlocks and cedars.

You might have noticed that the alders here are less lanky than those back in the wetland and tend to have more branches lower on their trunks. Why do you suppose that is? Perhaps there will be a clue at the next stop...

*Once, I tried to count
the myriad shades of green:
impossible task.*



Salmonberry is also often found in areas with decaying wood or that were previously disturbed.

The berries are yellow or red and delicious, ripening during the summer months.

This common shrub was an important food for native peoples, and the berries were often eaten with salmon roe.

Red huckleberry usually grows on a stump or fallen log, but is also found in soil rich in decaying wood.

It is distinguished by bright red berries in summer and can grow up to 13 feet tall.

Huckleberries were eaten by the first Americans, and its leaves and bark occasionally made a soothing syrup to be gargled.



Post #12

How light affects growth

Welcome to the Labyrinth. If you are curious about this structure, you may read about it in a separate brochure that you will find at the Farmhouse. For now though, we want to explore how light can provide a clue about the history and probable future of the forest.

As you look around, ask yourself, how long has this clearing been here? Which came first, the Labyrinth or the clearing? Take a moment to contemplate these questions and breathe in the atmosphere.

If you said that the clearing was here first, you're right. Notice that in many places the green branches on the trees come down very near the ground. This is called crown depth. In general, trees with lots of light have a low crown depth, many living branches, and a chubby trunk. Those that grow in a dark forest may have slender trunks and living branches on the top fifth or less. With insufficient light, lower branches die as the tree stretches upward rather than sideways for light. Notice the variable crown depths here. Can you explain the differences?

You might also have noticed the kinky-looking tree with hard, shiny leaves across the way. That's a sun-loving madrone and thus gives us another hint about the history of this little spot.

Red cedar can best be identified by its stringy bark and flattened braid-like leaves.

These trees can live for more than 1000 years!

The western red cedar was the favorite tree of the first Americans, and was used for everything from dugout canoes to clothing created from the bark.



Red alders are leggy trees with oval leaves, dropping them in late November.

Little cones on the branch tips are the easy identifier of this tree.

The first Americans used this tree for dye, utensils, and for its antibiotic qualities.

Alder is used today for smoking salmon and furniture.



Post #13 A place of healing and hope

As you skirt this area surrounding the Sanctuary, we invite you to make special note of how the land is already beginning to heal itself.

We are perhaps appropriately dismayed when we come across places in the forest that have been ravaged by fire, disease, or the effects of human activity. It feels as though something has been desecrated. Surely this is the case for many places in what we think of as "the natural world." The purpose of this Sanctuary is both to shelter and to remind us that all Creation is sacred and must be treated with deep reverence.

The land's capacity to heal itself is an innate property of all life. Indeed, were it not for the destructive forces in nature, there would be no creative forces either. "Disturbance," ecologists tell us, is an essential part of the natural cycle—vital for the renewal and re-invigoration of the forest. Nature is a remarkable healer if left to itself, but we humans have left our footprint virtually everywhere on the planet and perhaps it is now our task to learn how to heal some of the damage and walk more lightly.

Take a moment to imagine how it will look here in 10 years, 25 years, or 100 years? Then ask yourself, "How do we make a space for ourselves on this planet while honoring the right of all other beings to flourish here with us as well?"

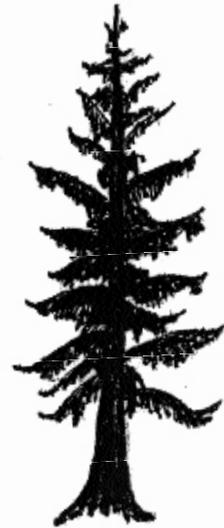
Profiles and comparative sizes of mature trees on Chinook land



Western hemlock



Douglas fir



Western red cedar



Red alder



Post #14

As you return home...

We hope that you are completing this tour with freshly honed senses and a pocketful of useful questions to ask the next time you are walking in a forest—whether here on Whidbey Island or miles away in another part of the world. As our ancestors have always known, life is a constant dance between what changes and what stays the same. The forest here is recovering from the dramatic effects of decades of human activity. If left alone for another thousand years, it might recover some of the rich and complex web of mosses, lichens, ferns, flowers, animals, birds, shrubs and trees that once dominated the landscape.

But this will never happen. Human beings have left too large a footprint on our planet for this ever to be the case, even if we ourselves were to disappear. The climate has been changed forever, and as a result the ecosystem will never be the same again.

At the same time, there is a great deal that we can do to slow the rate of change and to restore the land to something like the more balanced evolution that characterized forest growth before humans arrived. If you are interested in what you can do, we recommend that you pick up a copy of the resource list, return home and take a walk in your own back yard, then talk with others about what you are learning and become part of the great work of restoring a more sustainable and loving relationship between humans and the earth on which we all depend.

Watch out for stinging nettles on the path!

The formic acid in the tiny hairs on its stems and leaves can cause an irritating rash.

Look for notched leaves on three to seven foot stems during the summer.

However, stinging nettle is not all bite.

It is useful for tea and soup, and native peoples made fishing nets from its dried fibers.



Where to go to learn more.....

- The following books are particularly useful.

Plants of the Pacific Northwest Coast, Jim Pojar & Andy MacKinnon (The best all-around field guide)

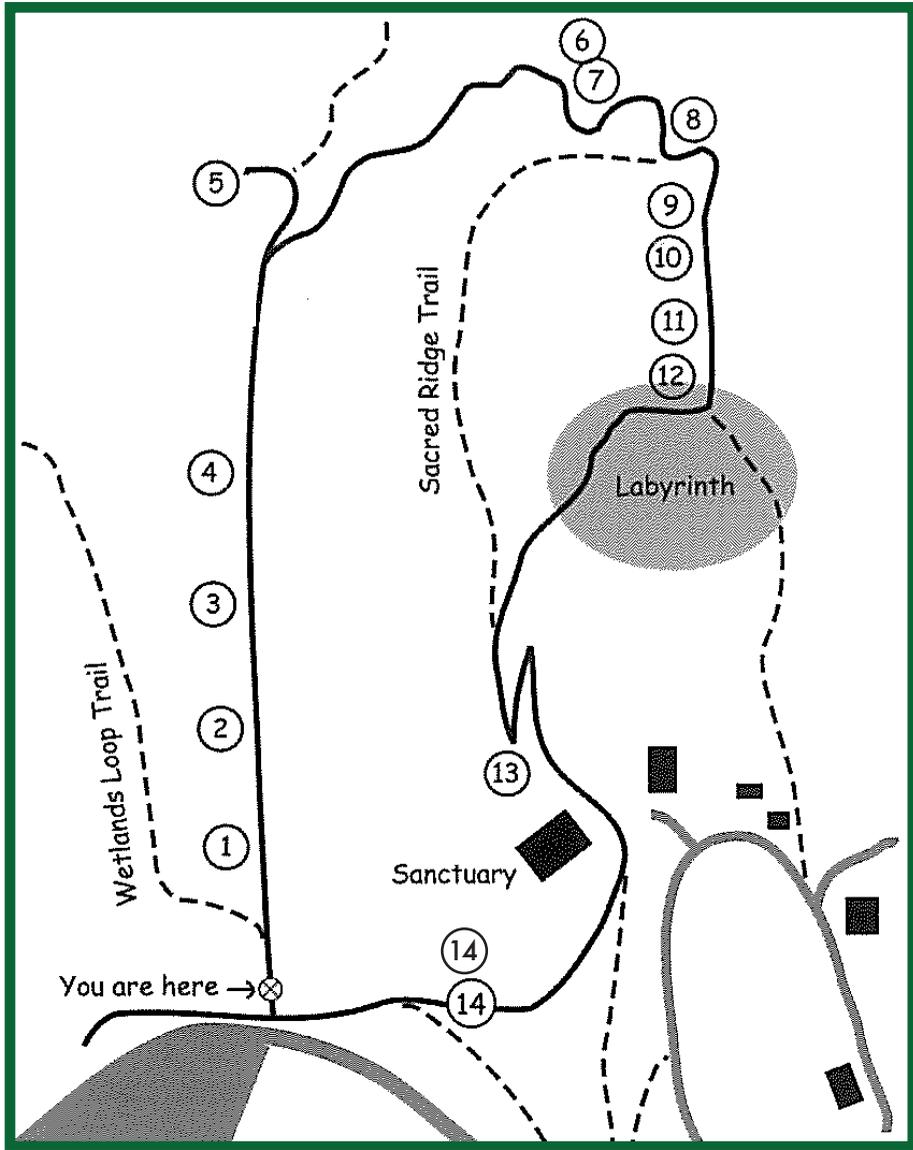
The Natural History of Puget Sound County, Arthur Kruckeberg (The definitive big picture of the region)

Land Use, Environment, and Social Change, Richard White (Award-winning history of Island County)

The Olympic Rain Forest, Ruth Kirk with Jerry Franklin (Superb photos and text on forest ecology)

Reading the Forested Landscape, Tom Wessels (The inspiration for this interpretive trail)

- Your own back yard!



Interpretive Trail at Chinook