Forest Trails of Klamath County

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of
Klamath County

A Guide to Forested Trails in Klamath County

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CAUTION

Outdoor recreational activities are potentially hazardous. All people participating in such activities must assume responsibility for their own actions and safety. The information contained in "Forest Trails of Klamath County" cannot replace sound judgment, and many potential hazards and risks exist that are not mentioned in this book. Please be cautious and always be prepared for the unexpected.

Exploring the Outdoors

Trail Safety Items

Items that you should pack to make your wilderness experience safer and more pleasant include:

Flashlight	Map
Sunscreen	Compass
Sunglasses	First aid kit
Hat	Extra food and water
Insect repellent	Warm, waterproof
Waterproof matches	clothing
Candle or fuel	Pocket knife
tablets	Whistle

Trail Safety Tips

• Always tell a reliable person exactly where you are going and when you expect to return. Check in with this person when you return.

• Check the bulletin boards at the trailheads for trail information updates. Also, check the weather report before you start a trip.

• Most trails are located in natural areas. Be aware of poisonous plants, stinging insects, snakes, and other wildlife. Please treat plants and wildlife with respect!

• Bring extra water and food. Also, bring clothing for cold and wet weather, even in the summer.

• Wear sunglasses, sunscreen and a wide brimmed hat.

• Open water sources are easily contaminated by human or animal waste. Do not drink water from springs, lakes, ponds and streams without proper treatment. A recommended method of treatment is to bring clear water to a rolling boil for twenty minutes.

If You Are Lost

• Keep calm. Do not walk aimlessly. Trust your map and compass. Shelter and warmth are much more important than food.

• To find your position, climb to a place where you can see the surrounding country.

• When you reach a road, trail or telephone line, follow it. As a last resort follow a stream downhill.

• Before being caught by darkness, select a sheltered spot and prepare camp, shelter and firewood. Stay in this camp all night.

• If you are injured and alone, keep calm. Stay where you are, clear an area down to mineral soil and build a signal fire. Green boughs will create heavy smoke.

• Three signals of any kind, either audible or visible, is the nationwide SOS call. Examples are three blasts from a whistle, or three flashes from a mirror or flashlight. Repeat at regular intervals. If it is recognized by a searching party, it will be answered by two signals. Use it only when in need of help.

Permits and Fees

Northwest Forest Pass permits are required to park within a quarter mile of many trailheads in National Forests. These can be purchased for $5 a day, or $30 for a whole year. There is also a $10 entrance fee to Crater Lake National Park that does not include camping. Permits are sometimes required to access and camp in wilderness areas, but they are free and can usually be filled out at the trailhead. If unsure about a specific trail, call ahead and find out. Please make sure you pay your fees, as they are essential to properly manage our forests and recreation areas.

Klamath County is home to many game animals including deer, antelope, elk, and waterfowl. It is also home to many species of fish, as evidenced by the various species of trout found in streams and lakes throughout the county. Be sure you are aware of and follow all hunting and fishing regulations. State of Oregon licenses are required for hunting and fishing.

Wilderness Areas

Many of the trails in this book are located in wilderness areas. Wilderness areas are roadless areas on public lands that have been designated by Congress to be preserved and protected in their natural condition. When entering a wilderness area, remember to fill out a trip registration card at the trailhead.

Stop at the information kiosk

Always Prepare Well

Know about your route and the area. Be sure to have a map and compass. Take adequate food. Bring clothing and equipment that will keep you warm, dry and comfortable. Select footwear for comfort, safety and the terrain. Know the basics of first aid and navigation. Know what to do in cases of frostbite, hypothermia and avalanche danger.

Trekking Into The Wilderness

Please do not take shortcuts. Doing so creates a scar in the hillside which causes soil erosion. Avoid traveling through meadows and wet areas as they are susceptible to trampling.

Remember This at the Trailhead

Don't leave any food in your vehicle. If you've eaten in your vehicle recently be sure to air it out. There have been incidents of bears breaking into vehicles to get to food left in cars.

Meeting Stock On The Trail

When you meet stock on the trail move off the trail on the downhill side and stand still until the animals pass by. Don't make any sudden movements that could frighten a stock animal and endanger both animal and rider. Offer a courteous greeting and conversation, this can reduce the chance of the stock being scared by you and will allow the stock to relax.

Wildlife

Always observe wildlife from a distance. Do not follow or approach them. Avoid them during sensitive times such as mating and nesting. Never feed animals, and take care to store rations and trash securely.

Camping

Select a campsite that has been used previously and has adequate water runoff. Use plastic under your tent to stay dry without digging a ditch. In order to eliminate further expansion of the camp, try to pitch your tent in an area that has already been used. Bears are present in the wilderness, so hang your food.

Sanitation

Choose a spot at least 200 feet away from trails, water sources and campsites. Dig a cat-hole six inches deep, make your deposit and cover it with the soil that you removed.

Garbage

Carry out all of your garbage and burn only paper. Don't bury your garbage; animals will dig it up and scatter it. Please pick up litter as you encounter it.

Washing

Try a soapless cleanup for all but the toughest dirt. Be sure to use biodegradable soap. For health reasons wash dishes with hot water when possible. Do all washing at least 200 feet away from any water source. Even biodegradable soaps must be kept out of lakes and streams.

Water Pollution

Giardia is present in most streams, rivers, lakes and ponds. You will need to boil, chemically treat or filter all drinking water.

Fires

Use a backpacking stove, it will cook your food faster. If you must have a fire, please use a site with an existing fire ring. Keep fires small and use dead and down material only. Make sure the fire is completely out before leaving. Check for closed fire seasons and fire regulations at ranger stations and local agency offices.

Impact On Other Users

Please blend camps and tents into the environment. Keep your groups small. Speak softly. Save rowdy games and radios for another time.

Using This Guide

Forest Trails of Klamath County provides an opportunity for residents and visitors to learn and experience what forests in the area have to offer. It is intended to be both an educational guide and a recreational guide that can be easily carried on hikes. Identification keys and profiles for each of the most common native conifers located in the county allow the reader to easily identify forest types and the conifers that inhabit them.

An important concept to grasp in order to use this guide is the fact that groups of tree species with the same general environmental requirements commonly grow together, forming forests that are of a particular type. In Klamath County, for example, forest type is mostly dependent on elevation, aspect, and water availability. The trails in this guide are arranged in geographical order, with different trails highlighting different forest types throughout the county.

The six main forest types found in Klamath County are ponderosa pine, subalpine, lodgepole pine, mixed conifer, western juniper woodland and whitebark/lodgepole pine. Many trails in this book will wind through various forest types, so keep that in mind. Trail and forest information is provided for each of the fourteen trails, allowing you to learn about the forests of each specific trail you visit.

Forest Trails of Klamath County is published by the Klamath/Lake Forest Health Partnership. We are a non-profit organization with a mission to promote forest health and forest education throughout Klamath and Lake Counties. We achieve our mission through public outreach with publications and workshops, consultations with land management agencies on forest management decisions and by enhancing forest recreation and education with trail guides and interpretive exhibits.

Our purpose with this guide is to educate the community on the forests of Klamath County. We have targeted the writing towards a secondary school audience, certain that adults will enjoy and learn from the guide and be able to use it to teach younger children. We have included trails of varying difficulty and terrain so everyone can enjoy this guide. The following section will show you how to make the best of this guide so you can start exploring the wonders that our local forests have to offer. If you have any questions, comments or suggestions, please write to trailbook@rabeconsulting.com.

Pick a Trail

There are various ways to pick a trail to visit, and we have included some tools to help you do so. One way to choose a trail is by location. You can refer to page 51 to choose from a map of Klamath County showing the locations of all the trails highlighted in the book. Maybe you want to choose a trail that is close by, or maybe there is a certain part of the county you have always wanted to visit.

You can also look at the beginning of each trail description for a section with a great deal of information that can help you decide which trail to visit. Information at the beginning of each trail description includes trail length, change in elevation, traffic and difficulty.

Another way to choose can be to decide what type of forest you want to visit. It is important to realize that many of the trails in this book wind through more than one forest type. The specific forest type, or types, are listed at the beginning of each trail description.

Review the Trail Information

Once you have chosen a trail, review the section devoted to the trail before you embark on your trip. Make sure you are aware of how to reach the trailhead, as all directions are given from Klamath Falls. Also, make sure you are comfortable with the length and difficulty of the trail. Note that in some cases alternate routes that are shorter and easier are available, and you don't always have to hike the whole trail described. Make sure you have other maps of the area if you are planning to investigate other routes in the vicinity of trails mapped in this guide.

Difficulty

Easy hikes are between 1 and 5 miles, don't have much elevation gain and the trail surface is mostly even.

Moderate hikes are between 4 and 10 miles, can have up to 3,000 feet in elevation gain, and may require good hiking and map reading skills.

Difficult hikes are more than 10 miles, have considerable elvation gain and require good health and map reading skills.

Ownership Acronyms

USFS United States Forest Service

BLM Bureau of Land Management

NPS National Park Service

Traffic

Light use trails are perfect for the person who seeks solitude in their outdoor experience. These trails are often more secluded and harder to hike.

Moderate use trails are secluded but you are bound to run into another person on the trail.

Heavy use trails are those located in or near urban areas and in national parks and wilderness areas. They are used more because there is easy access to them.

Very heavy use trails are overused and heavily impacted. We advise that you visit these during low-use season only.

Group Limit

Wilderness areas have a group limit to minimize impacts on the wilderness. Please obey all group limits.

Key to Symbols


Restrooms at trailhead


Picnic area at trailhead


Car camping


Wilderness camping


RV hookups


Dogs not allowed


Dogs on leash allowed


Great birdwatching


Swimming


Backpacking and camping


Fishing with license


X-country skiing


Bicycles allowed


Bicycles prohibited


Horses allowed


Horses prohibited

USGS Maps

All contour maps listed at the beginning of each trail refer to United States Geological Survey (USGS) quadrangles, at a scale of 1:24,000. In cases where two maps are listed, it means that the trail traverses from one map to another and you will need both maps. This might be cumbersome, so we have provided custom made maps in this guide. Please keep in mind that there are many other options available when it comes to maps.

USGS maps are very useful, but there are many other maps out there, including the ones in this book. Most of the time, other agencies such as the Forest Service and the Oregon Department of Forestry put out maps that are geared towards hikers within their particular ownership boundaries. These maps will most likely be more detailed and will contain more updated and specific information.We recommend you stop at a ranger station and pick one up.

Using Maps

A map is a representation of the Earth, or a part of it. We have included topographic maps to guide you through the trails and to help you plan your trip. On topographic maps, the shape and elevation of the Earth's surface is shown by contour lines. Think of contour lines as imaginary lines that join points of equal elevation on the surface of the land. All points along any one contour line are at the same elevation. Thus, closely spaced lines indicate lots of elevation change, whereas widely-spaced lines show the opposite. In this guide, contour lines are shown in gray. Contours make it possible to measure the height of mountains, steepness of slopes and even the depths of the ocean bottom.

The difference in elevation between two adjacent contour lines is called the contour interval, and its value is given on the map. All maps in this guide, unless specified, have the same contour interval. The interval represents the vertical distance you would need to climb or descend from one contour elevation to the next.

Topographic maps in this guide show more than contours. The maps include symbols that represent features such as parking lots, trails, and roads. Make sure you know what each symbol represents to be able to take full advantage of the maps provided.

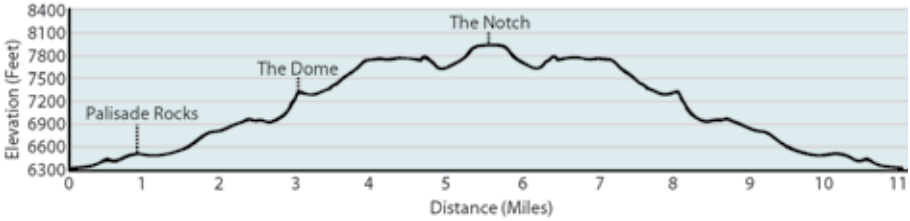
Map Reading Tip

The closed or "Vee" end of a contour line always points upstream. Where contour lines cross or run very close together, you'll find an abrupt drop or canyon.

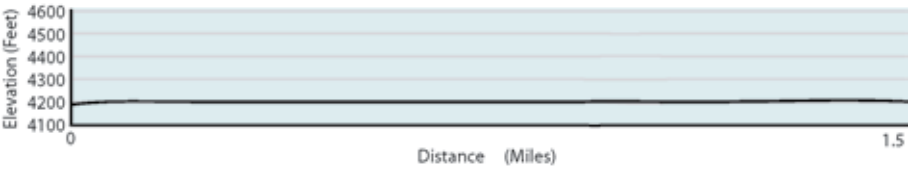
Map Legend

Using Trail Profiles

We have included profiles of each trail to help you navigate and to give you an idea of what the terrain looks like. It is very important NOT to be discouraged by the appearance of the profile, as in many cases the profile might look extremely steep. The line showing the profile is a relationship between distance traveled and elevation gain, it is not intended to represent how steep the trail will look when you hike it. Read about the trail and carefully observe the relationship between elevation gain and distance to give yourself an idea of the terrain. Landmarks are labeled (see example below) on the profile to help you navigate and find your place on the trail.



Profile of a steep and long trail



Profile of a flat and short trail

Set Out on the Trail

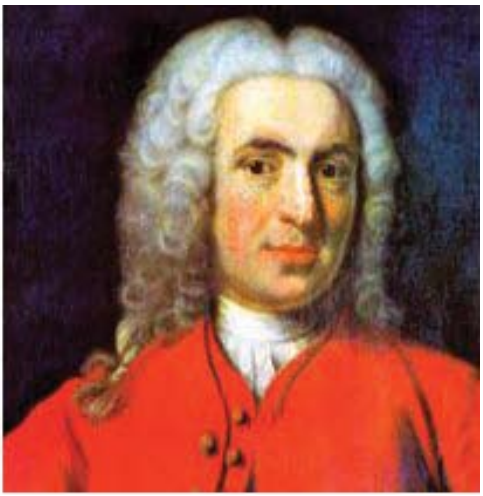
You are almost ready to head out on a unique forest education experience. You have chosen your trail, reviewed the trail information, reviewed the map and profile, packed the necessary gear for a safe trip, gone over the safety tips and left word with a responsible person. The only thing left is making it to the trailhead, which can be the most dangerous part of your trip. Please drive defensively on backcountry roads. Large logging trucks or other vehicles can pop out of nowhere, especially on windy, steep, dusty roads. Once you are on the trailhead, remember to pack this guide along with you. Keep the guide handy, as you might want to refer to it to help you navigate or identify a tree. It will also provide you with interesting facts about the trail and information on geology, plants, fish and wildlife, history and other fun facts.

TREE IDENTIFICATION

You should understand how tree names come to existence in order to avoid confusion when learning about them. All organisms have a common name and a scientific name. While scientific names are unique, common names are not; an organism can have various common names but only one internationally accepted scientific name. For a long time scientists faced the problem that one species of plant or animal might have many different names according to which language you spoke or where you lived. You can imagine that this caused all sorts of problems when scientists got together to talk about their research. They might all be talking about the same tree but using different names, which could become very confusing.

In 1758, a Swedish biologist named Carl Linnaeus decided that everybody should be using the same name to describe the same species and proposed a universal naming system (in Latin) for all creatures. Linnaeus' naming system is known as binomial nomenclature; which means a naming system using two words. It is quite simple, really. Each species has a name consisting of two parts. Scientists call the first name genus, and it always has a capital letter as the first letter. The second name is called the specific name and is always in lower case. You should know that scientific names are italicized and common names are not.

In scientific names, the genus comes before the specific name. For instance, the Latin name for ponderosa pine is *Pinus ponderosa. Pinus* is the genus, and there are four other species in Klamath County that have the same genus (*Pinus albicaulis, Pinus contorta, Pinus lambertiana and Pinus monticola*). The specific name is *ponderosa*, which distinguishes the ponderosa pine from all other pines in the genus Pinus. These Latin names also mean something. *Pinus* comes from the latin word "pie",



Carl Linnaeus

referring to the sap that comes out of pines. The word *ponderosa* is a description of the large, or ponderous size that ponderosa pines can attain. Usually, latin names describe the organism in some way. Sometimes they tell you who first gave the species that name. For example, Pseudotsuga menziesii was named by Archibald Menzies, a Scottish physician and naturalist who discovered the tree on Vancouver Island in 1791.

Softwoods and Hardwoods

A conifer is a tree or shrub bearing cones. Trees that are conifers reproduce by forming a cone rather than a fruit as a container for their seeds. All conifers are also called softwoods, because their wood is relatively soft compared to other trees. Most conifers are evergreen**,** meaning they have leaves that persist and remain green throughout the year. Note that not all conifer trees are evergreen, despite the popular association between "conifer trees" and "evergreen trees." Some conifers, such as the western larch and the dawn redwood, lose their leaves in the winter. Although western larch is not native to Klamath County, you can find many of these trees along a stretch of Clover Creek Road.

Most forests in Klamath County are made up of conifers, so this guide deals mostly with conifers. But the county is also host to many native broadleaf tree species. You will usually find these trees near streams and lakes or where water is available. Forests of oak also occur in the county, mostly near the California border and in the Klamath River Canyon. Broadleaf trees are for the most part deciduous, meaning that their leaves fall off before the winter and grow back after the winter. All broadleaf trees are referred to as hardwoods because their wood is generally harder than that of conifers.

Identifying Klamath County's Conifers

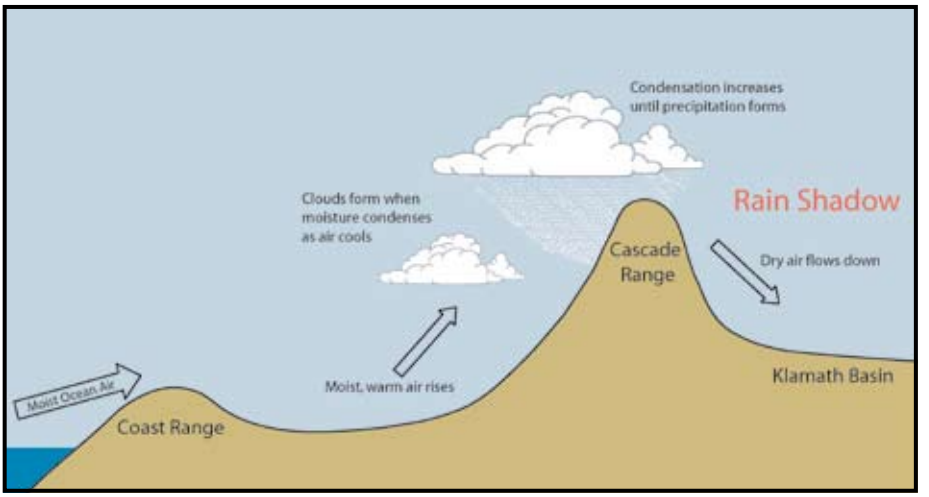
This guide emphasizes conifer identification, as most forests in Klamath County are composed of and dominated by conifers. We have included keys and species descriptions in the following sections that will help you identify the most common species of conifers native to the county. These tools will teach you what specific parts or traits of the trees to look at when trying to identify them. Tree identification might be a tough task at first, but you will quickly find out how fun identifying conifers can be.

Native Conifers of Klamath County

Klamath County is truly a landscape dominated by conifers. Three-fourths of the county is blanketed by coniferous forests, exhibiting many different species of native conifers. This amazing diversity is due to the variability of Klamath County's terrain, elevation and climate. The Cascade Range plays a major role in this, drastically influencing the climate in Klamath County and providing high elevation habitats and varying terrain.

A major influence of the Cascade Range relates to its effect on climate, more specifically the rainshadow effect it creates (see diagram below). The west side of the range receives far greater amounts of precipitation annually than does the east side. This is because the Cascades act as a geographic barrier to moisture-laden masses of air arriving from the Pacific Ocean. As a mass of warm air coming from the ocean reaches the Cascades, it eventually cools to a temperature at which condensation will occur and a cloud will form. This is because air loses its ability to hold water as it cools. As the air mass continues to rise and cool even more, condensation increases until precipitation (rain, snow, hail, etc.) occurs. By the time the air mass reaches the east side of the Cascade Range, it has lost much of its original moisture. This creates the desert environment that is typical of eastern Klamath County.

Consider the extent of Klamath County. The western limits of the county include the crest of the Cascades, reaching elevations over 8,000 feet. East of the Cascades, elevation decreases abruptly towards the Klamath Basin.



The varied topography and climate within the county provide for an incredible range of factors that influence where different conifers will grow. This explains the outstanding diversity of conifers found throughout the county.

Forest Types of Klamath County

A forest type is a designation or name given to a forest based on the most abundant tree species in the stand. Since groups of tree species commonly grow together because their environmental requirements are similar, various forest types can be observed. Forest ecologists will go into a lot of detail when talking about forest types, but to keep it simple we have lumped the county's forests into six different types: whitebark/lodgepole pine forest, subalpine forest, mixed conifer forest, ponderosa pine forest, lodgepole pine forest and western juniper woodland. You will find descriptions of the main forest types found throughout the county on pages 45-50.

Keying Out Klamath County's Common Conifers

On the next page you will find a dichotomous key, a tool you can use to determine the identity of plants to the species level. At first glance the key might look complicated, but it is actually a very useful and easy tool to use. A key consists of a series of choices that will lead you to the correct name of a tree. Follow the instructions and you will have a blast identifying Klamath County's native conifers.

- Start at the top by reading the two choices
- Choose the statement that best describes the tree in question
- Follow the line under the statement you chose
- Repeat until you have identified the tree to a genus level
- Locate the genus description on the page indicated in the chart
- Use the information on that page to key to species level
- Check individual species descriptions for a match
- If unsuccessful, go back and try again. Sometimes backtracking will help you find out where you made a mistake.

Klamath County's Common Conifers

Klamath County's Douglas-fir

This tree has caused botanists a lot of headaches in the past, mainly due to its similar appearance to other conifers. Since its discovery in 1791 by Scottish physician Archibald Menzies, it has been called a pine, a spruce, a hemlock and a true fir. Botanists were finally able to relax in 1867, when the tree was put into its own genus, *Pseudotsuga*. The meaning of the genus name is "false hemlock", expressing that it is not considered a hemlock.The hyphen used in the common name shows that it is not considered a fir either. Refer to page 25 for identification tips, photographs and more information.

Klamath County's Hemlocks

One of the most distinguishing characteristics of hemlocks is the bend on the growing tip of the trees. Both mountain hemlock and western hemlock exist in the county, but only mountain hemlock is treated in this guide as it is a lot more common than western hemlock. However, throughout the state of Oregon, western hemlock is more common. Refer to page 27 for identification tips, photographs and more information.

Klamath County's Spruce

The only native spruce that grows in the county is Engelmann spruce. Refer to page 39 for identification tips, photographs and more information.

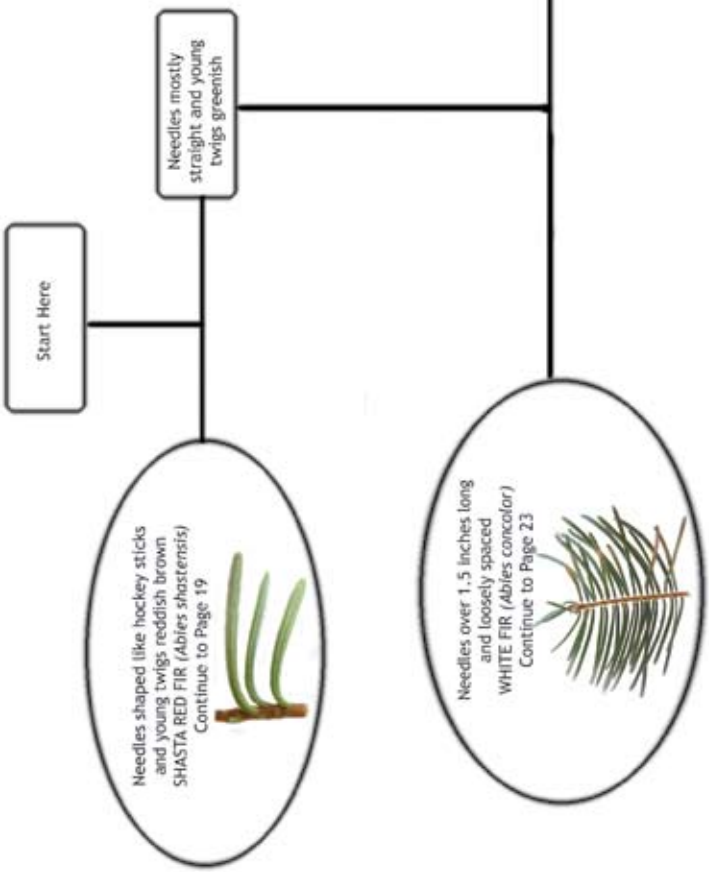
Klamath County's True Firs

True firs are named this way to distinguish them from Douglas-fir, another common conifer in Klamath County. True firs are sometimes called balsam firs because of the tiny pockets of balsam found on the bark of young trees. There are about 40 different species of true firs growing in the northern hemisphere. Klamath County has three common species of true fir that are mentioned in this book, and two less common true firs that are not mentioned (grand fir and noble fir). All true firs in Klamath County are incredibly similar, so distinguishing them is one of the hardest identification tasks. Also, firs are known to hybridize, which means that the different species of true firs interbreed with each other. This makes the identification task much harder, so don't be discouraged if you have trouble identifying true firs. However, there are some good tips you can learn to differentiate the true firs mentioned in this book. On the next page is a key that will help, and make sure you refer to the photos and descriptions of each individual species.

Keep in mind these key identifying features for true firs:

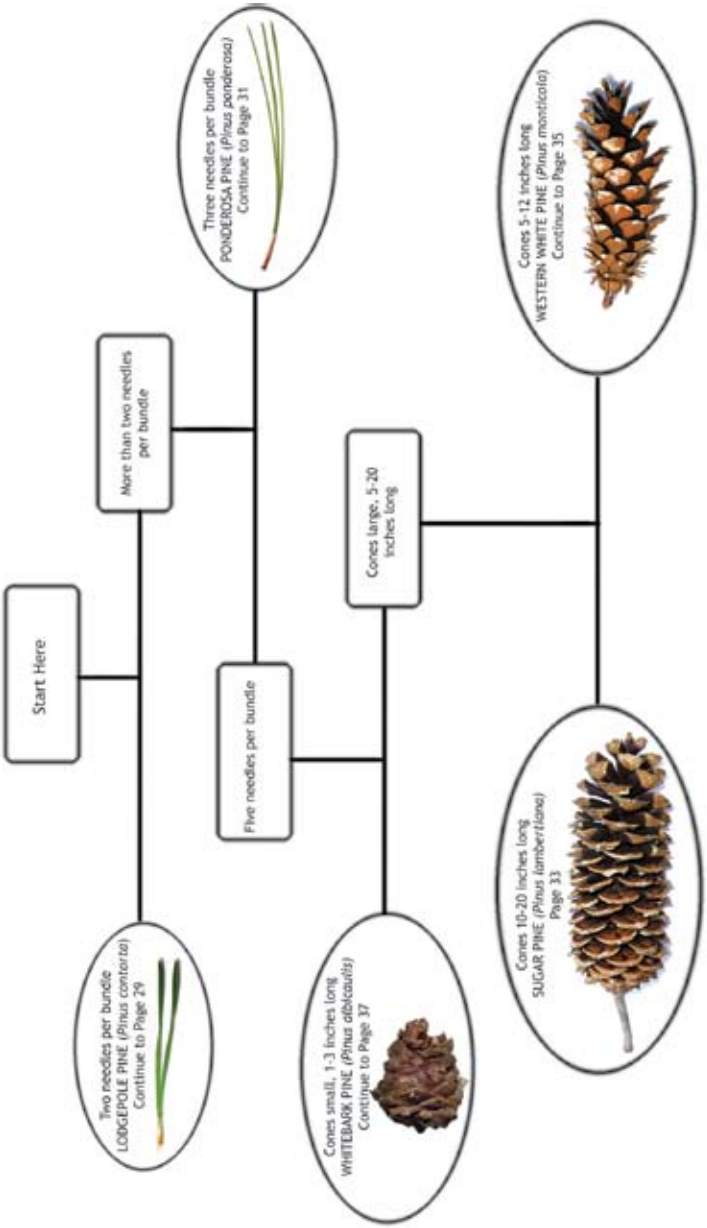
- Cones are found perched on top of branches
- Cones fall apart before or shortly after they fall off the tree
- Young stems have fragrant resin blisters
- Buds are rounded

Resin blisters

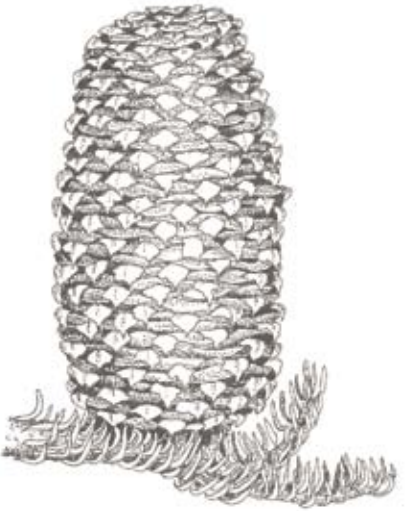


Klamath County's Pines

The main parts to look at when distinguishing among the five native pines that grow in the county are the needles and the cones. The only pine in the county with two needles per bundle is lodgepole pine. Ponderosa pine has three needles per bundle. Sugar pine, western white pine and whitebark pine all have five needles per bundle but can be easily identified by looking at the cones. Use the key below to help you identify pine trees.



SHASTA RED FIR
Abies shastensis



Identifying Shasta Red Fir

This large tree is found at an elevation between 4,500 and 8,000 feet, and is very abundant along the Cascade Range in Klamath County. Shasta red fir has a reddish-brown trunk and can be identified most easily by examining its cones, which are larger than any other fir found in the county. They stand up straight on branches and are about five inches long. The cones are a dead giveaway as they have short, crinkled, yellow bracts projecting a short distance out from between the scales. The cones ripen in September and begin breaking up. Seeds begin coming off and each seed gracefully flies away. Shasta red firs have rigid, silvery-green needles that are upturned, shaped like hockey sticks, and no more than one and a half inch long.

Fire

Shasta red fir can tolerate an occasional small fire, but is usually killed by more intense fires. Shasta red fir has a fire interval (number of years between two successive fire events at a specific site) of about 70 to 130 years, but these events are usually patchy and of low severity. In Klamath County, lightning is the main cause of fires throughout high elevation red fir habitat. Luckily, lightning-ignited fires in higher elevation forests are usually small, burning out in a matter of days.

Damaging Agents

The major insect pest of Shasta red fir is the fir engraver beetle (*Scolytus ventralis*). Fir dwarf mistletoe (*Arceuthobium abietinum* ssp. *magnificae*) damages Shasta red fir significantly and occurs throughout its range. Damage includes a decrease in seed production and diminished growth and strength. When infected, Shasta red fir becomes more susceptible to additional attacks by insects and fungi, often resulting in the death of the tree. The commercial value of the wood from infected trees is very low. Crowded stands make it easy for parasites to spread rapidly and inflict more damage on the trees.

Uses in Nature, Today, and Yesterday

Many plants and animals, some of which are rare or endangered, rely on old-growth Shasta red fir forests for habitat. Snags (large, dead trees that remain standing) along with stumps and logs in these forests are used frequently by marten and squirrels. Shasta red fir cones are cut and stored for the winter by squirrels, and deer graze on new growth when it appears in the spring.

Shasta red fir trees are a very important component of our watersheds. During the winter, large amounts of snow accumulate in tightly packed stands of Shasta red fir. These stands provide protection from the sun, slowing the melting process and providing organisms in the watershed with much needed water throughout the summer. Some red fir products include firewood, Christmas trees, coarse lumber and plywood.

SUBALPINE FIR
Abies lasiocarpa

Identifying Subalpine Fir

The spire shaped crown of this fir makes it recognizable from other conifers in Klamath County. The shape is a very convenient trait, as it prevents heavy snow from accumulating and breaking the branches. Subalpine fir is a moisture loving tree that occurs on the slopes of the Cascades throughout the length of Klamath County, usually between 5,500 and 7,000 feet. In some places it sneaks down to lower elevations occupying stream bottoms and lavaflows. Subalpine fir needles are blunt tipped, flattened, and roughly one inch long. Bark on young trees is thin, gray and smooth, while older trees have a scaly appearance. However, you will rarely see exposed bark due to dense, low-growing branches. Mature subalpine fir seeds have a large wing and are spread mostly by the wind in the fall as cones on the tree disintegrate. Cones are purplish, and nearly all are produced on the uppermost part of the crown.

Fire

Subalpine fir is one of the least fire-resistant western conifers. It is very susceptible to fire because it has very thin, flammable bark. It also has shallow roots that lie close to the surface and are very sensitive to soil heating during fires. Low-growing branches and crowded stands also boost potential fire injury, along with highly flammable needles and accumulation of lichens.

Balsam woolly aphid under a microscope (USFS)

Damaging Agents

Many insects attack subalpine fir, the most harmful being the balsam woolly aphid.The aphid is a tiny sucking insect that gets its nourishment from living bark of the main stem and branches. It also injects a toxin that kills trees that are under heavy attack. The aphid is an introduced species that came from Europe and causes severe damage to fir forests. The balsam woolly aphid has almost eradicated subalpine fir from some native stands in the Cascades. It is very hard to control this insect, but scientists are now trying biological controls. This control method introduces natural enemies of the aphid to infested areas in hopes of eradicating the pest.

Uses in Nature, Today and Yesterday

Native Americans used parts of subalpine fir for all kinds of purposes. A hair tonic was made from a mixture of powdered needles and deer grease. Finely ground needles were sprinkled on open cuts, and resin collected from the bark could be boiled for use in wounds as an antiseptic or in tea as a cold-remedy. Boughs were collected for their pleasant aroma, and crushed needles were used as a fragrance for skin and clothing.

Subalpine fir wood is light-weight, soft, and low in strength. It is easy to work, glues well, and holds nails and screws fairly well. Subalpine fir has fantastic pulping properties, but is primarily used for products like lumber for home construction and prefabricated wood products. Large amounts of preservatives are necessary when it is used for poles and pilings, though, because it tends to decompose very quickly. Presently, the optical industry uses resin from the bark as a sticky cement for lenses and microscope slides.

WHITE FIR
Abies concolor

Identifying White Fir

Except for a few stragglers to the north, Klamath County marks the northernmost boundary of white fir distribution in North America. In Klamath County it can be hard to differentiate between white fir and grand fir as they interbreed and their offspring can have characteristics of both. White fir bark is thin, smooth and whitish gray on young trees. Resin pockets are also found on young trees. On older trees the bark is thick, grayish-brown colored and deeply furrowed. Cones are found almost exclusively in the higher parts of the tree and they disperse their seeds during September to October. Cones are green when young and turn brown when they mature. The word concolor means of uniform color, referring to the needles, which are pale blue green on both surfaces. Needles are two inches long and can be arranged flat, in U-shape, or in V-shape around the twig.

Fire

White fir saplings are susceptible to fire damage or kill, but trees become more resistant with age and size. In the mixed conifer forests of Klamath County, white fir is considered more fire resistant than other species of true fir found around it. Past fire history is evidenced by the presence of fire scars, which scientists study in order to understand the relationship of fire and the forest. Unfortunately, fire scars sometimes provide an entry site for a variety of disease and decay organisms. Wounds inflicted by these fires are usually at the base of trees, where accumulated fuels like needles, leaves, twigs, branches and other debris concentrate heat as they burn. Fire in these hotspots can heat through tree bark and kill living tissue. Over time the charred bark sloughs away, leaving a smooth, light-colored scar.

Fire scar

DamagingAgents

White fir dwarf mistletoe causes major damage to white fir. Heavy infections cause spike tops, loss of vigor, and increased susceptibility to bark beetle attack. Dwarf mistletoe is a widespread problem in Oregon. The most damaging insect is the fir engraver beetle. This bark beetle is found over the entire range of white fir and causes serious damage during times of peak infestation.

Uses in Nature, Today and Yesterday

The wood of white firs is especially suitable for making paper. It is also used for plywood, framing, decking, planking, beams, posts and many other construction uses. It is even used in mobile homes.You might have not realized it, but there is a good chance there has been a white fir in your own living room. Their perfect form and the smell these trees release, makes them very popular as Christmas trees.

Identification Tip

Stop and smell the leaves! Crush a few white fir needles in your hand to release an aromatic citrus scent.

DOUGLAS-FIR
Pseudotsuga menziesii

Identifying Douglas-Fir

Douglas-fir, Oregon's official state tree since 1939, is a pyramid-shaped tree that grows over 200 feet in height. However, trees in Klamath County tend to be smaller in size. Typically, this massive tree has a straight trunk and can live up to 700 years. In older trees the bark is very thick, dark gray and furrowed. Single needles are yellow-green to blue-green and very fragrant. Needle tips are blunt or slightly rounded. The cones are green when young, turning to brown as they age. Between each of the papery scales is a triple-pronged bract that looks like the two hind feet and tail of a mouse which has its head poked inside the cone. This tree is named after David Douglas, a 19th-century Scottish botanist who is hailed to be the greatest seed and plant collector to ever walk the earth. The scientific name of the tree comes from Scottish physician Archibald Menzies, who discovered the tree in 1791.

David Douglas

Fire

Douglas-fir is more fire resistant than many of the species found with it in Klamath County. Mature trees can survive moderately intense fires, as they are protected by a thick, corky bark that also surrounds the roots. Another defense against fire is the lack of low branches on tall trees, which makes it difficult for fire to reach the crown and kill the tree.

Damaging Agents

Douglas-fir is host to hundreds of fungi, but relatively few of these cause serious problems. Of the many heart rot fungi (more than 300) attacking Douglas-fir, the most damaging and widespread is red ring rot. Knots and scars resulting from fire, lightning, and falling trees are the main entry points for fungi.

Uses In Nature, Today and Yesterday

The Douglas squirrel gathers and stores huge quantities of Douglas-fir cones. In the fall, they cut green cones from the limbs and bury them in special piles called middens. Sometimes generations of squirrels use these same eating areas and a midden may be over three feet high. They are sure signs that a squirrel lives nearby.

Douglas-fir is one of the world's most important timber trees. Great strength, stiffness and moderate weight make it an invaluable timber product. The tree was crucial to American soldiers in World War II as well, being used for everything from foot lockers to portable huts and even the rails of stretchers that carried injured soldiers.

Native Americans boiled the bark into a dye, used its pitch on sores, and also made a tea from pitch to use as a cold remedy. "Douglas-fir sugar" was also made by natives. The sugar was harvested from young branch-tips where it accumulated in the sunniest locations in the form of frost-like grains. One tribe prepared their catch of the day in a very unique fashion. They stuffed it with rotten, powdered Douglas-fir, buried the fish in a pit lined with the same material, and then roasted it.

MOUNTAIN HEMLOCK
(*Tsuga mertensiana)*

Identifying Mountain Hemlock

Found along the Coast Ranges and Cascade Range at roughly 5,200 to 7,500 feet, this tree often occupies the highest forested zone. Mountain hemlock can be easily recognized from a distance by the novice tree detective, as it is the only tree in subalpine forests with a drooping leader. Get closer and observe the short, glossy needles arranged in a starlike fashion around each shoot. The bark is typically gray to reddish-brown and cracked into narrow ridges. Mountain hemlock trees grow very slowly, sometimes reaching 800 years in age.

Mountain hemlock can grow on a wide variety of soils and harsh habitats. It can grow on lava flows and exposed ridges, taking on a variety of growth forms to adapt to the harshness of its habitat. On exposed ridges at high elevations it commonly takes the shape of a low-spreading shrub or dwarfed tree.

Fire

Mountain hemlock is not well adapted to fire, and is easily killed by it. The rare fires that do come to cool, wet subalpine forests generally occur as infrequent crown fires. When fires do occur in mountain hemlock forests, they are almost always severe, stand-decimating fires.

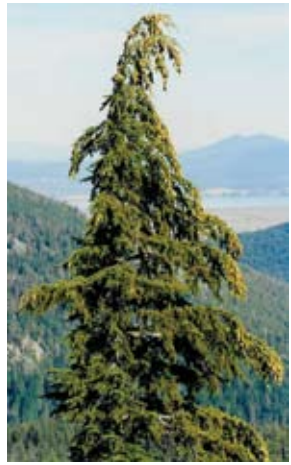
The word tsuga, found in the scientific name of mountain hemlock, is Japanese. It comes from "tsu-ga", the word for "tree" and "mother".

栂

Damaging Agents

Among Klamath County's high elevation conifers, mountain hemlock is the most susceptible tree to infection by laminated root rot. This fungus spreads underground along tree roots, killing trees in a circular area that expands outward. There have been pockets of laminated root rot in mountain hemlock that have tainted areas of more than 100 acres.

Uses in Nature, Today and Yesterday



Mountain hemlock is vital to the protection of its watershed, capturing runoff from heavy mountain snowpacks. Hemlock groves provide cover, nesting sites, and seeds for birds, as well as foliage for mountain goats and other hoofed browsers.

The high altitudes at which mountain hemlock occurs, and the returns on cutting those gnarled stands, render it unimportant as commercial timber. It is, however, harvested on a small scale near its lower elevation limits and sold together with western hemlock. Western hemlock does occur in Klamath County, but is not nearly as abundant as mountain hemlock.

Other uses for this moderately strong and light colored wood are railway ties, interior finish, crates, and kitchen cabinets. It is frequently incorporated into landscaping as an ornamental in the Pacific Northwest. Pioneers made tea from the leafy twigs and brooms from the branches.

LODEGEPOLE PINE

Pinus contorta

Identifying Lodgepole Pine

The trick to identifying lodgepole pine is in looking at the needles, as it is the only pine in Oregon with two needles per bundle. Needles are short (1 to 3 inches) and twisted. The cones are also a giveaway, as they are smaller than the cones of any other pine found in Klamath County. The bark of this tree is thin, dark and scaly. Lodgepole pine has a slim and straight form that was advantageous to Native Americans for building lodges, hence its name. Because of its wide elevation range, lodgepole is common throughout the county. It grows in both pure stands and mixed with other conifers. Lodgepole pine and whitebark pine can be confused, and they grow together at high elevations. Due to high winds and a heavy snowpack, both trees take on a similar growth form and might be hard to distinguish. The key is to look at the needle bundles.

Fire

Lodgepole pine forests are sensitive to fire, mostly because of their shallow roots and thin bark. When fires occur, they are usually intense because of the large amount of wood that accumulates. Insect and dwarf mistletoe infestations, old age, windfall and snow breakage are all natural factors that contribute to mortality in lodgepole pine. High mortality translates into more dead trees on the ground and a greater risk of having highly intense fires.

Damaging Agents


Dwarf mistletoe

Dwarf mistletoe is the most serious parasite to attack lodgepole pine. The root system of this plant grows under the bark layer of the pine tree where it derives food, nutrients and water. This makes trees grow slower, reduces their ability to make seeds, predisposes them to insect infestation and diseases, and can even cause premature death. In Klamath County, squirrels and other animals that eat lodgepole pine seeds can cause significant loss of seeds. Luckily, the tree produces incredible amounts of seed in order to survive.

Uses in Nature, Today and Yesterday

Lodgepole pine is an important food source for birds and squirrels that take advantage of large seed crops. The uniform size of lodgepole pine makes harvesting efficient and allows for production of posts, house logs, paper, furniture, and firewood. Native Americans boiled the inner bark of lodgepole pine for food and used its trunks for lodge construction. They also used the pitch of the tree as a base for medicines and chewed on it to relieve sore throats.

Reproduction in Pines

Pine trees bear both male and female cones. Female cones have woody scales and male cones are papery. In the spring, the male cones produce enormous quantities of pollen and the wind carries the pollen to the female cones to fertilize them. The seeds then take one or two years to mature.


Female cones


Male cones

PONDEROSA PINE
Pinus ponderosa

Identifying Ponderosa Pine

This tree, the most widely distributed pine in North America**,** is named for its ponderous size. Young ponderosas have dark-colored bark with narrow furrows. Adults are very easy to recognize, as they have bright golden bark cut into pieces that resemble the pieces of a jigsaw puzzle. Ponderosa pine cones are egg-shaped and easy to identify. Be careful when handling the cones, they are armed with stiff prickles. Pine needles in this tree are found in bundles of three, and can be up to ten inches long.

Fire

Fire is an integral part of the ecology of ponderosa pine. Ponderosa pine has evolved with a thick, fire-resistant bark that allows it to survive most fires. Mature trees will self-prune, leaving a smooth trunk which reduces aerial fire spread. Other fire adaptations include deep roots, high foliar moisture content and minimal lichen growth. Seedlings prefer the mineral-soil seedbeds created by fire.

Fire in a ponderosa pine stand

Damaging Agents

Nearly 200 insect species may affect ponderosa pine from its cone stage to maturity. Several insect species destroy seeds before they germinate, the most damaging being the ponderosa pine cone beetle. Bark beetles are the biggest threat to the species, killing thousands of pines during outbreaks. The beetles occur naturally, and have played a critical role in the development and regeneration of forests. However, forests today are more susceptible to attack due to overcrowding of stands. You can identify a ponderosa pine that has been attacked because its leaves turn red one year after the attack. Another piece of evidence is the tiny bore holes on the trunk left by the beetles.

Uses in Nature, Today and Yesterday

Ponderosa pine needles, cones, buds, pollen, twigs, seeds and associated fungi and insects provide food for many species of birds and mammals. Small mammals also eat the stems and roots. Many bird species including sparrows, chickadees and finches, eat ponderosa pine seeds. Bald eagles, abundant throughout the range of ponderosa pine in Klamath County, use the tree for cover, perching and nesting.

Ponderosa pine is second in Oregon's timber supply. Old-growth ponderosa pine produces high-grade lumber and is an important raw material for molding, mill work, cabinets, doors and windows. It is widely used for soil stabilization and watershed protection. Native Americans in the Pacific Northwest used the inner cambial layer as food and converted the resin into a medicinal balm for rheumatism, backaches and dandruff.

SUGAR PINE
Pinus lambertiana

Identifying Sugar Pine

Sugar pine is the tallest of all pines, growing up to 200 feet and surviving between 400 to 500 years. Mature sugar pine cones are among the largest of all conifers, a key identifying feature. Cones are found dangling from the tips of upper limbs, seriously weighing them down. Its needles are 3 inches long and it has five needles per bundle. Its sap contains a sugary substance. The bark is cinnamon- to gray-brown, deeply furrowed and scaly. Sugar pine usually occurs in mixed-conifer forests and is not found growing in pure stands. In Klamath County you might confuse sugar pine with western white pine as they are very similar in form and both have 5 needles per bundle. Refer to the next page to see how to differentiate between these two species.

Fire

Sugar pine is resistant to moderately intense fires. It has adapted a thick, fire-resistant bark and open canopy that retards aerial fire spread.

Damaging Agents

White pine blister rust

Sugar pine is highly susceptible to white pine blister rust caused by a rust fungus (*Cronartium ribicola*), a species introduced to North America from France. It is a problematic pathogen that also infects western white pine and whitebark pine. The fungus enters trees through the needles, spreads to the branches and eventually reaches the main stem. Seedlings and young trees are more susceptible and killed faster than large trees because the fungus has a shorter distance to travel from the leaves to the stems. The fungus has a close relationship with gooseberries, which serve as an alternate host for the rust fungus. An alternate host is a second plant species that is required to help host the entire life cycle of an insect pest or disease. This means that the only way the fungus can spread is if gooseberries are present in the forest.

Uses In Nature, Today and Yesterday

Birds and mammals use sugar pine as a source of food and shelter. Squirrels and white-headed woodpeckers have been noted to occupy sugar pine trees. Sugar pine wood is light and resists deformity. It is easily milled and is used for molding, window and door frames, window sashes, doors and other special products like piano keys and organ pipes. However, a serious problem with sugar pine wood in Klamath County is "ring shake". Old logs seldom produce good timber because of bacteria-caused separations along the annual rings. The separations makes the wood split easily and hard to work with.

Native Americans used the pitch from sugar pine to repair canoes and to fasten arrowheads and feathers to shafts. The resin was also a sugary treat to them, although it had somewhat of a laxative effect.

Sugar Pine	Western White Pine
Cones up to 20 inches long	Cones 5 to 12 inches
Young bark broken in narrow plates	Young bark noticeably smooth
Old bark broken in long plates	Older bark broken into squares
All sides of needle have white lines	2 sides of needles have white lines

WESTERN WHITE PINE

Pinus monticola

Identifying Western White Pine

Western white pine gets its common name from the light color of the wood. It is found from approximately 6,000 to 7,000 feet in elevation, which is why it was given the scientific name *monticola* (means "inhabiting mountains"). It can reach 200 feet in height, 8 feet in diameter and can live more than 400 years. The needles are 2 to 4 inches long and are in bundles of five. The bark on young trees is smooth and grayish green, but on mature trees becomes grayish brown, scaly, and separated into rectangular plates. The crown is narrow and composed of regularly-spaced branches. In dense stands western white pine self-prunes well, leaving a long, clean trunk. Western white pine cones are 5 to 12 inches long and slender, with thin scales that turn up on the ends. Sugar pine is very similar to this tree, but can be distinguished because it has much longer, fatter cones.

Fire

Mature western white pine is rated moderate in fire resistance. The factors that make it somewhat susceptible to fire are its moderately thick bark and flammable foliage, as well as its hanging lower limbs. It is important to note that dense stands, lichen growth and resinous bark can increase western white pine's susceptibility to fire. Young trees with their thin bark are also very susceptible to fatal injury by fire.

Damaging Agents

Seedling mortality is quite high in the first year due to snow mold, rodents, late season drought, and elevated soil temperatures on dry sites. The most serious damaging agent of western white pine is white pine blister rust, which also affects sugar pine seriously. This rust was introduced into this country at the turn of the century from infected seedlings that had been imported from nurseries in France.

Uses In Nature, Today and Yesterday

The seeds of western white pine are an important part of the diet of red squirrels and deer mice. Western white pine is highly valued as a timber species. Its wood is straight-grained, non-resinous, lightweight, and exhibits dimensional stability. These qualities make the wood useful in the production of window and door sashes. The wood is also used in the production of doors, paneling, dimension stock, matches and toothpicks. It takes nails without splitting, and it takes a nice finish. The wood is also excellent for carving.

Native Americans chewed the resin, wove baskets from the bark, concocted a poultice for dressing wounds from the pitch, and collected the cambium in the spring for food. Presently, cones of western white pine are collected as novelty items. The tree is also planted as an ornamental, which means it is used to landscape gardens.

WHITEBARK PINE
Pinus albicaulis

Identifying Whitebark Pine

Whitebark pine occurs in the highest elevation forests of Klamath County, right at and above the treeline. Whitebark pine is a small- to medium-sized tree that ranges between 40 and 60 feet in height at maturity. The tree gets its name from the bark characteristics of young trees which have smooth, whitish, peeling bark. The bark of older trees will develop white patches and will not exceed a half-inch in thickness. Cones are serotinous; that is, they do not open at maturity but remain on the tree for several years with ripened seeds inside. Needles cluster near the ends of branches and are dull green with white lines all over. Needles are in bundles of five and about 1.5 to 2.5 inches long.

Fire

Whitebark pine is a pioneer species after fire or other disturbances. Mature trees usually survive low- and moderate-severity surface fires. One factor affecting this tree is the frequency of lightning strikes where it grows. Whitebark pine experiences fire frequently; however, fire is usually unable to spread widely due to discontinuous canopies and sparse understory fuels.

Damaging Agents

White pine blister rust is the greatest threat to whitebark pine. Also, animals love to eat the trees seeds, sometimes having a detrimental effect on the regeneration of trees.

Uses In Nature, Today and Yesterday

This pine protects watersheds by reducing soil erosion and slowing snow runoff . Rodents and birds eat the seeds and the trunks provide nesting sites for birds. Mainly due to the species' inaccessibility, whitebark pine wood is not considered commercially valuable. Whitebark pine seeds were also a traditional Native American food.

Whitebark Pine and the Clark's Nutcracker

The cones of whitebark pine do not naturally drop to the ground, they remain on the tree and are picked apart by a bird with which they share an intimate association: the Clark's nutcracker. Scientists refer to this association as a symbiotic relationship. The birds break apart the cones in the fall to collect the large, protein- and fat-rich seeds held within. The seeds are then carried by the birds to several caches where they are stored for winter and spring. Since not all seeds are eaten, several end up germinating in these caches. For this reason it is not uncommon to find several trees growing in a crowded clump. Just look at the picture below.

ENGELMANN SPRUCE
Picea engelmannii

Identifying Engelmann Spruce

Engelmann spruce is a large, high-elevation mountain conifer in Klamath County, commonly reaching up to 150 feet in height. The tree has bluish-green, four-sided needles that are 1 inch long, flexible and sharp. They are evenly arranged around the twig and emit a rank odor when crushed. Engelmann spruce cones are 1 to 2.5 inches long and dangle from the branches. They are light brown and have thin, flexible scales that are somewhat wavy. The tree has a pyramidal shape and a straight trunk.

Fire

Engelmann spruce is very fire sensitive and is generally killed even by low-intensity fires. It is very susceptible to fire because it has a thin bark that does little to protect it. Resin found in the bark, its leaves, and heavy build up of lichen growth make the tree more flammable. Also, the tree's shallow roots are damaged when the soil is heated during a fire.

Damaging Agents

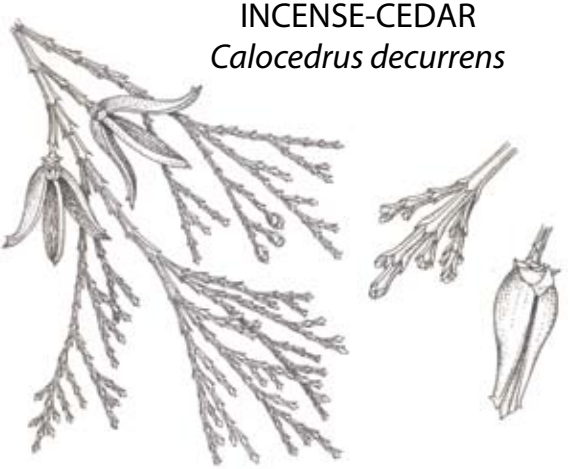
The most common disease of Engelmann spruce is caused by wood-rotting fungi which results in root or butt decay. The spruce beetle is the most serious insect pest of Engelmann spruce. Outbreaks are associated with extensive windthrow because downed trees provide a good food supply, causing a rapid expansion of beetle populations.

Uses In Nature, Today and Yesterday

Engelmann spruce seeds are eaten by several species of small mammals and birds. The tree is an important commercial wood in the United States. The wood is white, odorless, lightweight, straight-grained, soft, stiff and can be readily air-dried. It is easy to work, glues well, holds nails fairly well but has only average paint-holding properties. The wood is primarily used for lumber for home construction and for prefabricated wood products. It is also commonly used for specialty items such as food containers, violins, pianos and aircraft parts.

Native Americans used Engelmann spruce for numerous purposes. The bark was often peeled into sheets and used for making canoes, baskets, and roofing. They occasionally ate the inner bark. The fibrous roots were used to make rope, and the boughs and needles to make incense, body scents and cleansing agents. Various teas and poultices were made from Engelmann spruce for medicinal purposes.

INCENSE-CEDAR
Calocedrus decurrens



Identifying Incense-Cedar

Incense-cedar is a medium-sized tree with a reddish-brown, furrowed and shaggy bark. It reaches 70 to 100 feet in height, and commonly lives up to 500 years. This vibrant tree is usually found mixed with other conifer species, rarely found in pure stands. The leaves of incense-cedar are a key identifying feature. They are overlapping scales that are fragrant when crushed. The cones are also very unique, resembling a duck's bill when closed and a flying goose when open. They are about 1 inch long, purplish-red when young, and yellowish-brown when mature. The word incense in the name refers to the fragrance of the wood and leaves.

Fire

Incense-cedar is highly susceptible to fire. Incense-cedar seedlings have very flammable bark and foliage, and are usually totally consumed by fire.

Damaging Agents

The most damaging agent to incense-cedar is pocket dry rot. Fire scars provide the most prevalent point of entry for the spores of this damaging fungus. Many species of insects are found on incense-cedar, but few cause any serious damage.

Uses In Nature, Today and Yesterday

Its seeds are eaten by small mammals but are not a preferred food of chipmunks. The presence of oils in the seeds may make them untasty to many animals.

Incense-cedar wood is resistant to decay, making it very desirable for exterior use. Much of the top quality incense-cedar is used in the manufacture of pencils; it is the world's leading pencil wood. Incense-cedar is also used to make cedar chests.

Incense-cedar limbs were used by Native Americans to make bows. Bark from large cedar trees was used to cover the sides of structures, while oak poles provided the infrastructure.

Incense-cedar open cones

WESTERN JUNIPER
Juniperus occidentalis

Identifying Western Juniper

Western juniper typically grows 15 to 30 feet, developing a full crown and heavy limbs at maturity. It is slow-growing and long-lived. In many cases it lives more than 1,000 years. It has a characteristic short, bushy shape, dark blue "berries" and tiny scale-like needles. The needles are scratchy to the touch, dotted with resin. Mature bark is reddish-brown to grayish-brown, furrowed and shreddy. Juniper berries are really cones; they ripen in mid-September and have a whitish coating that can be rubbed off. Cone-berries contain 1 to 4 brownish seeds.

Fire

Young western juniper have thin bark and are easily killed by fires. Western juniper needles are not easily ignited when moist. Older trees with thicker bark are a bit more resistant and will survive a moderate fire if their crown is not scorched. This proves to be advantageous, as bigger trees that survive fires provide a seed source to regenerate.

Damaging Agents

This hardy tree is very tough. It can resist attacks by many insects and diseases.

Uses In Nature, Today and Yesterday

Juniper berries

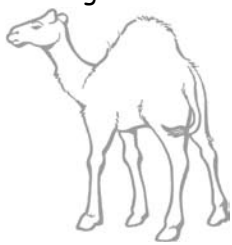
Western juniper seed is dispersed slowly by water, but dispersion is accelerated when animals like rabbits, ground squirrels, mule deer, elk and coyotes eat and re-deposit them farther away. It is used primarily as an emergency food source eaten by deer and other big game during severe winters. Birds also help spread the seeds, which are thought to germinate faster after the seed cone has been consumed by animals.

The oils of western juniper are used as flavoring or scenting agents in medicines, beverages, condiments, aerosols, insecticides, soaps and men's cosmetics. The wood is used in toys, sporting goods, jewelry boxes, suitcase and closet liners, clocks and pencils. Shavings from juniper are used for pet bedding. Juniper foliage is also used for Christmas wreaths and other decorations, and has even been added to chicken feed to produce gin-flavored eggs for humans. Western juniper was used during the homestead era for firewood, charcoal, corrals, poles and fence posts. Some Native American cultures used western juniper wood in making bow staves and also ate the berries.

Western Juniper Extends Its Range

Western juniper's ability to survive under extremely dry conditions makes it a very competitive species. It has been extending its range since the arrival of European settlers and the introduction of fire suppression to the landscape. One negative effect of the expansion of western juniper into adjacent plant communities is loss of diversity and productivity of native plants. In Klamath County, foresters and land managers are working to control the expansion of this tree's range.

The "camel" of Klamath County trees. Juniper can live with less water in drier climates than any other Oregon tree.



Subalpine Forests

Subalpine forests occur above 6,000 feet in the Cascade Mountains, fringing the edge of the timberline. These forests grow in an area of transition between the treeless alpine tundra above and the forest below. The area above the treeline is known as the alpine zone, while the wooded region just below the treeline is called the subalpine zone. Howling winter winds blast trees with snow and ice, preventing them from growing above winter snowbanks.

Crater Lake National Park

Conifers in subalpine forests are adapted to the strong winds, heavy snowpack and frigid temperatures atop the high peaks of Klamath County. Subalpine forests vary widely, but the subalpine forests we suggest you visit are dominated mostly by Shasta red fir, mountain hemlock and subalpine fir. Other species you may see include western white pine, lodegepole pine, whitebark pine and Engelmann spruce. Branches of the spruce and fir trees are short, brittle and they grow close together to buffer the wind. Both of these species have narrow, pointed crowns that help shed snow.

The trees of subalpine forests are adapted to a harsh environment, but they are not immune to the forces of winter. The uprooting and blow down of subalpine trees by wind (windthrow) is a natural disturbance. Trees that are knocked down and remain on the forest floor pose a fire hazard and also make the forest more susceptible to attacks by insects and disease. Windthrow can occur where cutting of the forest exposes the remaining trees to new wind stress.

Another interesting fact is that the amount of accumulated fuels in subalpine forests is greater than forests at lower elevations. A colder climate slows the decomposition of organic matter on the ground, which accumulates and can become a fire hazard.

Whitebark-Lodgepole Pine Forests

Whitebark-lodgepole pine forests have a sporadic distribution at high elevations in Klamath County. Small pockets of this forest type are found on mountain tops throughout the Cascades and in the Gearhart Mountain Wilderness Area.

Whitebark pine krummholz

Whitebark pine and lodgepole pine dominate the forest, while mountain hemlock, white fir and western white pine can also be found. One of the most interesting things to look for in these high elevation forests is the growth form known as krummholz. Krummholz means "crooked wood" in German, and refers to the stunted and contorted growth that results from environmental stress. Krummholz grow only as tall as the insulating snow layer permits; strong winds and bitter winter temperatures prevent growth above this level. For this reason, you will find that the lodgepole and whitebark pines at high elevations in these forests are stunted and look crooked. At lower elevations, where more favorable conditions exist, lodgepole and whitebark pines will grow tall and upright.

Small mammals living in whitebark/lodgepole pine forests also have to deal with bitter temperatures and wind. In the winter, they will usually stay under the heavy snow that provides them insulation. In the fall, the whitebark pine provides food for several species, including the important Clark's nutcracker. The nutcracker is a bird that is the major seed disperser of whitebark pine. Clark's nutcrackers will cache huge numbers of whitebark pine seeds (up to 100,000 seeds per bird each year).

Whitebark-lodgepole pine forest on Mount Scott

Mixed Conifer Forests

In Klamath County, mixed conifer forests occur at middle elevations along the eastern side of the Cascade Range, occupying a band below the high elevation subalpine forest. In mixed conifer forests, there are relatively few pure stands of any single species. The typical dominant tree in this band is Douglas-fir, with appearances by Engelmann spruce, white fir, grand fir, western white pine, sugar pine and incense-cedar. Trails climbing up the east side of the Cascades offer a diverse array of conifers that are definitely a treat to any tree lover. Serviceberry (*Amelanchier alnifolia*) and snowberry (*Symphoricarpus mollis*) are typical shrubs that can be found living along with the conifers. Common herbs that can be found include strawberry (*Fragaria virginiana*), common yarrow (*Achillea millefolium*) and white vein pyrola (*Pyrola picta*).

This forest type is also found in patches at middle elevations on the mountains east of the Cascades, but Douglas-fir is replaced by other conifers as the dominant species. In fact, you can distinguish the mixed conifer type of eastern Klamath County because it lacks Douglas-fir. In these particular forests, typical dominant conifers include ponderosa pine at lower elevations and white fir above the ponderosa-dominated stands.

Fire is a very important factor in managing mixed conifer forests. Natural- and human-caused fires historically burned regularly through the forests to create open stands. Fire suppression has resulted in crowding of stands and hazard from fire and insects. For this reason, thinning and fire management in Klamath County are increasing, thereby returning forests to healthy and productive conditions.

Lodgepole Pine Forests

Gearhart Mountain Wilderness

Lodgepole pine forests are found in climates with short, dry summers and snowy winters. They commonly occur in frost pockets and on both excessively wet or dry soils. Lodgepole pine forests are more abundant in the northern half of Klamath County, although pure and nearly pure stands of lodgepole pine are found throughout the county. Lodgepole pine is a pioneer species, meaning that it rapidly colonizes disturbed sites. Most lodgepole pine stands develop after fire or logging. In Klamath County, there are vast stands of lodgepole pine that developed on volcanic pumice and ash.

Lodgepole pine typically grows in dense stands. They are very susceptible to insect attacks, especially mountain pine beetles, and are frequently in danger from fire. Lodgepole pine forests are quiet and contain little animal life. They are open and possess little understory.

Highway 97, south of Chemult

Ponderosa Pine Forests

Ponderosa pine forests are dominated by ponderosa pine, which usually grow in pure stands. However, they may be mixed with lodgepole pine, grand fir, Douglas-fir, western white pine, incense-cedar, or white fir. In Klamath County, these forests are found on southern aspects and other warm, dry locations between 4,000 and 6,000 feet in elevation. You can also find fascinating ponderosa pine forests on volcanic pumice soils formed after the eruption of Mount Mazama.

Open forest trail

Early explorers described the ponderosa forests throughout the county as majestic, open stands with many grasses and occasional shrubs beneath. What the explorers saw were forests that had been shaped by frequent ground fires, both human-caused and natural. Historically, small and frequent fires discouraged accumulation of fuels. Adult ponderosa easily survived these fires, unharmed due to their thick, fire-resistant bark. Since the time explorers first arrived to the area, the practice of fire suppression has allowed small shrubs and trees to flourish and has left many stands over-crowded with more shade-tolerant species. These forests are now very susceptible to insects and fire.

A major source of timber, ponderosa pine forests are also important as wildlife habitat, for recreational use and for aesthetic values. Birds you might encounter include the northern flicker, red-tailed hawk, and Steller's jay. At lower elevations, ponderosa pine forest can be important winter range for mule deer and elk.

Open forest trail

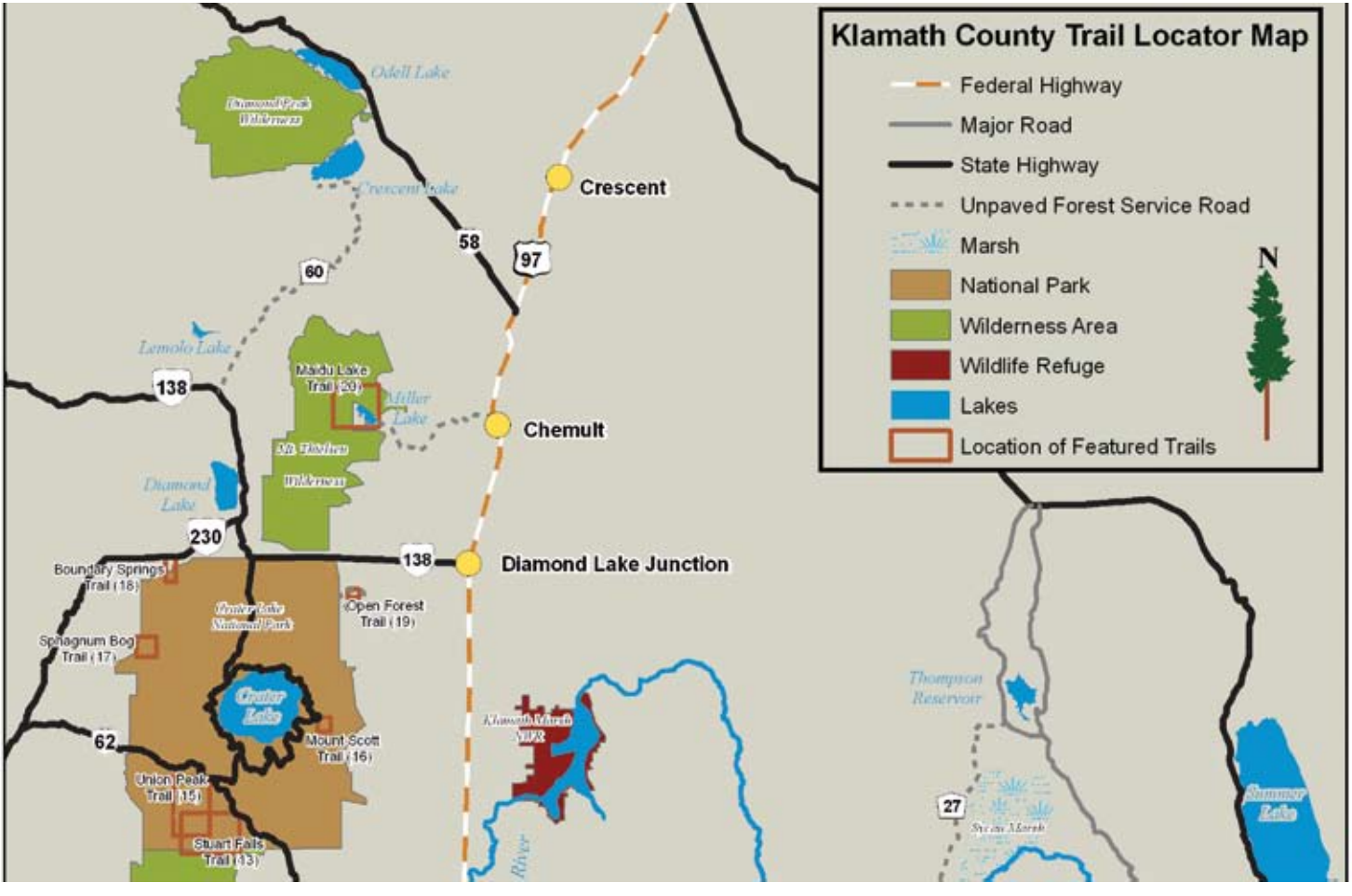
Western Juniper Woodland

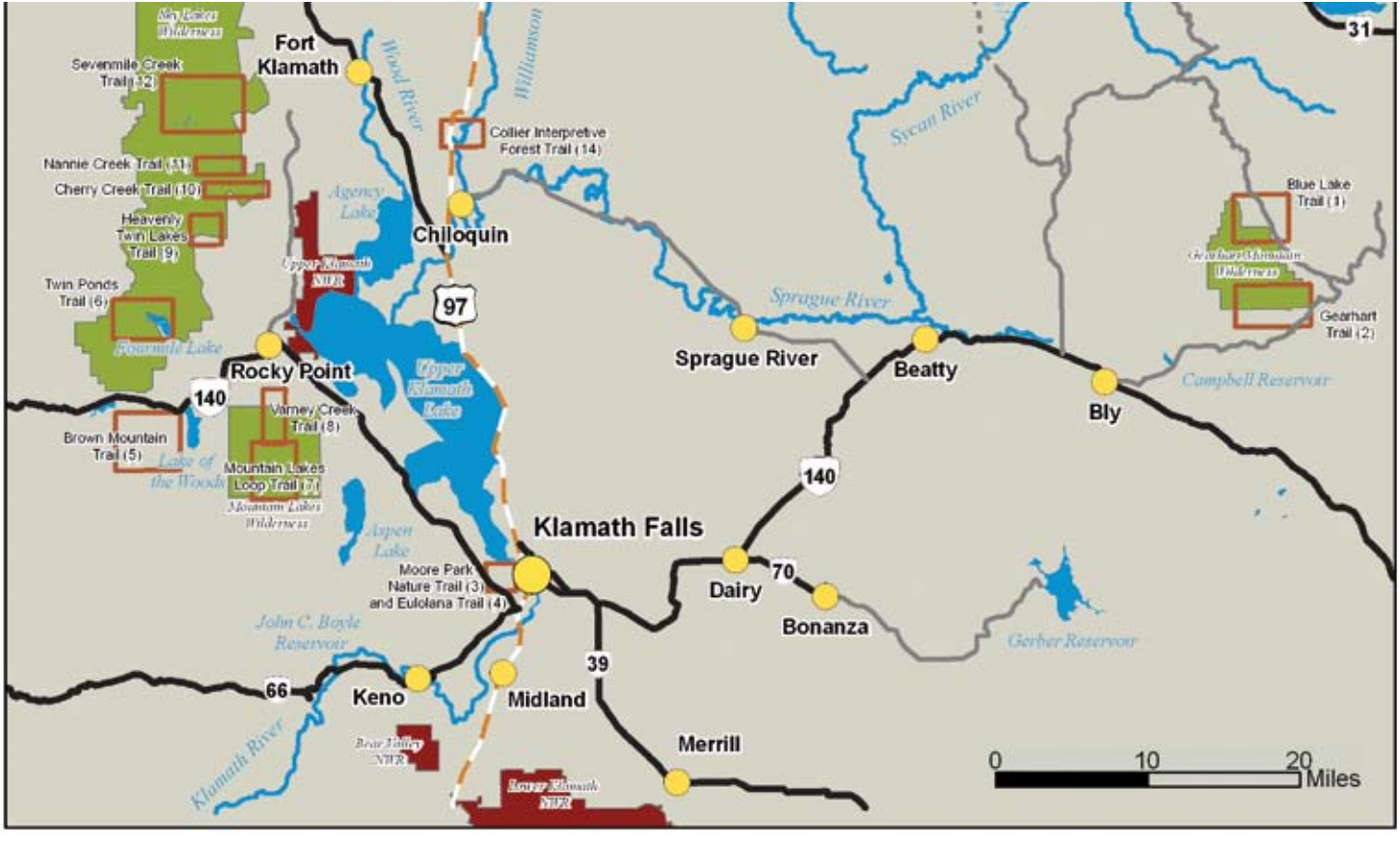
Western juniper woodlands are found between 4,000 and 4,600 feet in elevation throughout southeastern Klamath County. Western juniper forests are found in climates with hot, dry summers and cold, dry winters. They are the driest forests in the Pacific Northwest, and look more like treed shrublands than forests. Western juniper is the dominant tree, typically surrounded by big sagebrush, bitterbrush, bluebunch wheatgrass and many other grasses.

Western juniper has adapted to survive under extremely dry conditions, dominating sites by out-competing other vegetation for soil, water and nutrients. Historically, juniper expansion was controlled by fires that killed young juniper seedlings. However, fire suppression has permitted western juniper to expand rapidly into adjacent plant communities.

Woodland expansion during the past 100 years has reduced the diversity of plants and wildlife. Management of western juniper woodlands is an important concern in Klamath County, and land management agencies are trying to control the spread of western juniper. The most cost-effective means of preventing juniper dominance is the use of prescribed fire. Restoration of a site can also be accomplished by hand crews.

Gerber Recreation Area


Klamath County Trail Locator Map
Federal Highway
Major Road
State Highway
Unpaved Forest Service Road
Marsh
National Park
Wilderness Area
Wildlife Refuge
Lakes
Location of Featured Trails
N
Odell Lake
Diamond Peak Wilderness
Crescent Lake
Crescent
58
97
60
Lemolo Lake
138
Maidu Lake Trail (20)
Miller Lake
Chemult
Mt. Thielsen Wilderness
Diamond Lake
230
138
Diamond Lake Junction
Boundary Springs Trail (18)
Crater Lake National Park
Open Forest Trail (19)
Sphagnum Bog Trail (17)
Crater Lake
62
Mount Scott Trail (16)
Union Peak Trail (15)
Stuart Falls Trail (13)
Klamath Marsh NWR
Thompson Reservoir
27
Summer Lake


Fort Klamath
Sevenmile Creek Trail (12)
Nannie Creek Trail (11)
Cherry Creek Trail (10)
Heavenly Twin Lakes Trail (9)
Twin Ponds Trail (6)
Fourmile Lake
Wood River
Williamson
Collier Interpretive Forest Trail (14)
Agency Lake
Chiloquin
Upper Klamath NWR
97
Rocky Point
140
Varney Creek Trail (8)
Brown Mountain Trail (5)
Lake of the Woods
Mountain Lakes Loop Trail (7)
Mountain Lakes Wilderness
Upper Klamath Lake
Aspen Lake
Moore Park Nature Trail (3) and Eulolana Trail (4)
Klamath Falls
John C. Boyle Reservoir
66
Keno
Midland
39
Merrill
Klamath River
Bear Valley NWR
Lower Klamath NWR
Sycan River
Sprague River
Sprague River
Beatty
Bly
31
Blue Lake Trail (1)
Gearhart Mountain Wilderness
Gearhart Trail (2)
Campbell Reservoir
140
70
Dairy
Bonanza
Gerber Reservoir
0
10
20
Miles

Blue Lake
1

Gearhart Mountain Wilderness - Lodgepole Pine Forest

Difficulty: Moderate
Traffic: Moderate
Length: 7 miles round trip
Lowest Elevation: 6,400 feet
Highest Elevation: 7,050 feet
Managed By: USFS
USGS Map: Lee Thomas Crossing
Group Limit: 10 heartbeats

"The clearest way into the Universe is through a forest wilderness."

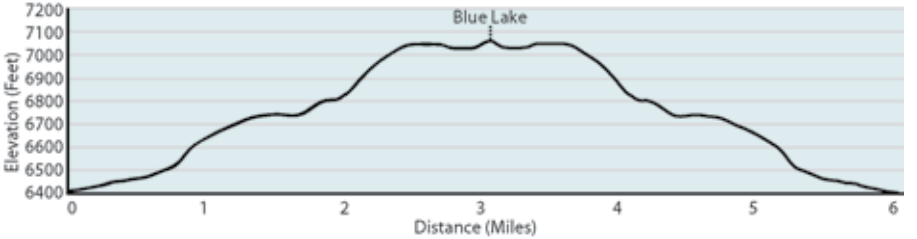
John Muir

Access

From Klamath Falls, travel east on Hwy 140 for 54 miles to Bly. Continue east on 140 for 0.5 miles to Campbell Road. Turn left onto Campbell Road and go for 0.5 miles to Forest Road 34. Turn right and drive 14 miles toward Corral Creek Campground. There will be a Gearhart Wilderness sign, but disregard the sign as it is the trailhead for the Lookout Rock trail. Continue on Forest Road 34 for about 5 miles to Forest Road 3372. Turn left on 3372 and go about 8 miles. Turn left onto Forest Road 015 and follow it for 1 mile.

Climate

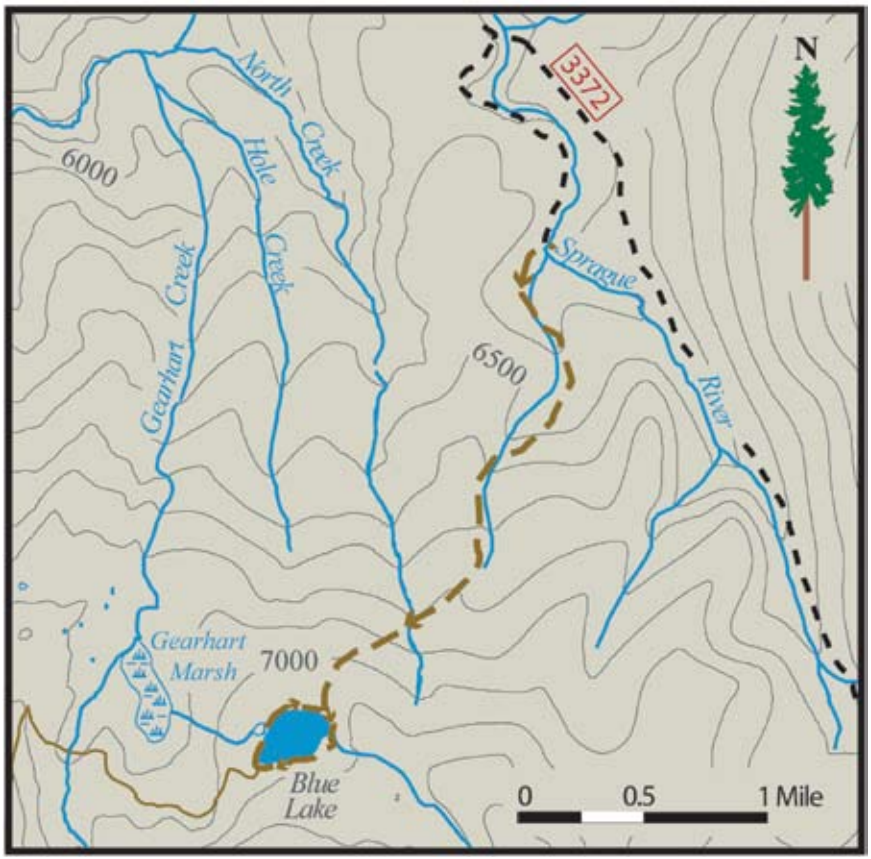
Trails and parking are maintained from June 1 through October 15. Snow may linger until early July, and snowstorms have been known to happen in any month of the year. Summer brings perfect daytime temperatures, but be advised that summer thunderstorms roll in on occasion and nights can be very cold.



History

Blue Lake is the only lake located in the Gearhart Mountain Wilderness Area. The wilderness area was named after John Gearhart. He and another fellow by the name of Munz were two of the first settlers to arrive in the area. Evidence of a non-Native American settlement in the Sprague River valley dates back to 1873, when John Gearhart filed an application for a post office in his home in a town he called Sprague River. In 1882, Klamath County was created out of Lake County and the name of the town was changed to Bly.

The Gearhart Mountain area was established in 1943 as a wild area and designated as a wilderness with The Wilderness Act of 1964. President Lyndon B. Johnson signed The Wilderness Act on September 3, 1964, creating the National Wilderness Preservation System. The original bill established 9.1 million acres of federally protected wilderness in national forests. The law did not increase the amount of land under federal control, nor did it mandate acquisition of additional lands.



Trail and Forest

Gooseberries

As you arrive at the trailhead, notice the meadow on your left. You are looking at the north fork of the Sprague River, which originates about 2 miles upstream. The Sprague River flows down the mountain and through agricultural valleys, finally making its way into the northern part of Upper Klamath Lake. Remember to sign in at the trailhead.

This trail will first wind through large stands of pure lodgepole pine forest. Lodgepole pine forests grow in dense stands, so look out for snags. Also notice that there is little understory, a typical trait of lodgepole pine forests. Be on the search for gooseberries, as they are located all along the trail. The trail is very dusty during the summer time, so get ready for some dust. Also remember to bring plenty of insect repellent because mosquitoes are abundant.

Shortly after the first creek crossing there will be a noticeable change in the forest. As the climb starts, you will start to see white fir mixed in with the lodgepole pine. From this point on, as the climb to Blue Lake continues, you will wind through lodgepole pine forests intermingled with white fir. Enjoy the lodgepole pine forest until you reach Blue Lake for a nice swim.

Fish and Wildlife

The area surrounding the trail provides habitat for many species. The wilderness provides important summer range for the forest's major elk herd. Deer, coyote, elk, bear, and mountain lion roam the area. The trail also offers a great opportunity for watching birds such as woodpeckers, finches, jays, ravens and hawks. Rainbow and brook trout inhabit the lower levels of some of the area streams, and Blue Lake is stocked yearly with rainbow trout.

Blue Lake has excellent fishing

Geology

Gearhart Mountain is considered to be a "volcanic eruptive center" containing many types of rocks, and it has been modified by glaciation. Evidence of glaciation is indicated by the "U" -shaped canyons of many creeks in the wilderness. "U" -shaped canyons in the wilderness started life as "V"-shaped canyons before glaciation occurred. Once glaciers were formed during the ice age, they followed the existing "V"-shaped canyons, eroding and deepening them as the ice moved. The result is a "U" -shaped valley with steep sides and a rounded bottom.

Plants

An intriguing plant that can be observed along the wet sections of the trail is the California corn lily. Be careful not to be fooled by the beauty of this plant; it is highly toxic to both humans and livestock. The corn lily is even mentioned in the diaries of Lewis and Clark, as several members of the expedition were poisoned after inadvertently consuming flour made from the roots of the plant.

California corn lily

Sidebells wintergreen

Another interesting plant to look for along the trail is the sidebells wintergreen. As its name implies, this plant keeps its shiny green leaves throughout the year. More inconspicuous than the corn lily, it is harder to find. However, its one-sided flowers and fruit make it easy to identify on first encounter. It grows by itself as pictured on the left, but also grows in clumps. Look for it along the lake and in shady, open areas along the trail.

Gearhart Trail 2

Gearhart Mountain Wilderness - Mixed Conifer Forest

Difficulty: Moderate
Traffic: Minimal
Length: 11 miles round trip
Lowest Elevation: 6,300 feet
Highest Elevation: 7,950 feet
Managed By: USFS
USGS Map: Gearhart Mountain
Group Limit: 10 heartbeats

"Earth laughs in flowers."

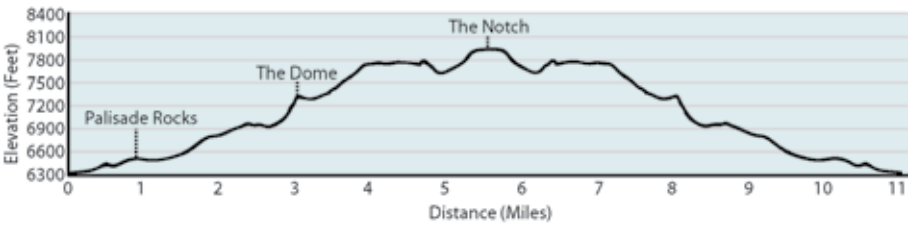
Ralph Waldo Emerson

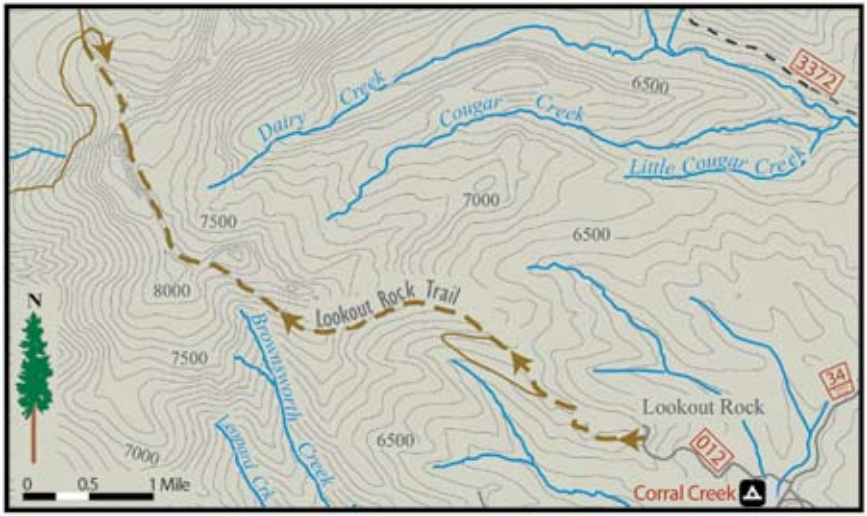
Access

From Klamath Falls, travel east on Hwy 140 for 54 miles to Bly. Continue east on 140 for 0.5 miles to Campbell Road. Turn left onto Campbell Road and go for 0.5 miles to Forest Road 34. Turn right and drive 14 miles toward Corral Creek Campground. Look for a Gearhart Wilderness sign and turn left. Go past Corral Creek Forest Campground and you should see the trailhead sign. Corral Creek Forest Campground is a nice place to camp and is open May 15 through October 31.

Climate

Trails and parking area are maintained from June 1 through October 15, although snow can be found at the higher elevations of the trail until mid to late June. Summer brings perfect daytime temperatures, but be advised that summer thunderstorms roll in on occasion and nights can be very cold (below freezing).





History

An interesting piece of history happened not too far from the trailhead, at Mitchell Monument. On May 5, 1945, the Reverend Archie Mitchell, his pregnant wife Elsye, and 5 children from the Sunday school went on a picnic east of Bly. Reverend Mitchell was parking the car while the others played. His wife and the children called out to him that they had found something. Before he could reach them there was an explosion. Elsye and the five children died instantly, becoming the only civilian casualties of Word War II on the continental United States.

What the children had found was a hydrogen-filled balloon containing incendiary and anti-personal bombs. The bombs were launched by the Japanese, and traveled over 6,200 miles on the jet stream to reach the West Coast of the United States. The Japanese expected to divert attention and resources from the war effort by causing vast western wildfires. The bombs didn't cause damage other than this tragic accident. The Japanese committed the tactical mistake of launching the balloons during the wet season.

Mitchell Monument

Trail and Forest

The trail begins winding through a forest dominated by white fir with occasional ponderosa and lodgepole pine. Shortly, you will arrive at the Palisades, an open area with amazing rock formations that have been carved by nature for millennia. Large ponderosa pines will begin to pose along the trail, while manzanita bushes expose their beautiful red branches.

As you exit the Palisades area, the trail descends into a white fir forest with occasional meadow areas with quaking aspen *(Populous tremuloides*). The quaking aspen is the most widely distributed tree in North America. During the summer, the leaves shake vigorously when the wind picks up, giving them the name "quaking" aspen. Their leaves turn golden, orange and red in the fall, which makes them really stand out from the evergreen conifers.

Waterfall in summer

Quaking aspen in fall

As the trails climbs you will pass by "The Dome", a 300 ft. high bare rock monolith perched on the hillside. The forest begins to open up, and as you gain elevation the forest changes to whitebark/lodgepole pine forest. Look around for old growth, as there are enormous individuals of both pines. The forest continues to open up and you will begin to see sagebrush towards the top. Continue to make your way up the hill towards the "The Notch", a giant cleft in the face of Gearhart Mountain. This spot affords great views and makes a good turnaround spot. If you are backpacking, there are several unimproved campsites you can use.

Wildlife

Elk belong to the deer family. Other members of the deer family are moose, caribou, white-tailed deer and mule deer. Male elk are called bulls, and weigh

between 700 and 900 pounds. In the summer and spring bulls live in bachelor herds. One bull can breed 20 cows easily in the fall, during the breeding season, which is known as "the rut". During the rut, bulls become very aggressive and will wallow in their own urine. Only bulls grow antlers, whose growth (up to 1.5 inches in one

Male elk

Female elk are called cows and average between 500 and 600 ponds. Cows can breed at 15 months of age and will breed up to 15 years, some even up to 20 years. A cow's pregnancy will last between 245-255 days with some as late as 270 days. Cows are extremely protective of their young, and will isolate their calves from the herd for the first few days. In the first year of life a calf will gain over 300 pounds!

Plants

The understory along this trail is mostly sparse, but be on the lookout for wildflowers in the spring. A neat plant you will find towards the end of the trail, at "The Notch", is the curlleaf mountain mahogany (*Cercocarpus ledifolius*). This large, evergreen shrub has glossy green foliage and a reddish-brown bark that is aromatic. The flowers are fairly small and produced in early summer. Curlleaf and "*ledifolius*" refer to the curved leaf margin. Mountain mahogany was employed medicinally by a number of Native American tribes. They used it to treat a variety of complaints that included coughs and colds, earaches, pneumonia, stomachaches, diarrhea and tuberculosis. A poultice was also used to apply on sores, cuts, wounds and burns. Curlleaf mountain mahogany is also good forage for all classes of browsing animals in both summer and winter.

Curlleaf mountain mahogany

Mahogany leaves

Moore Park Nature Trail
3

Moore Park - Ponderosa Pine Forest

Difficulty: Easy

Traffic: Heavy

Length: Almost 2 miles

Lowest Elevation: 4,150 feet

Highest Elevation: 4,340 feet

Managed By: City of Klamath Falls

USGS Map: Klamath Falls

"Going to the woods is going home, for I suppose we came from the woods originally."

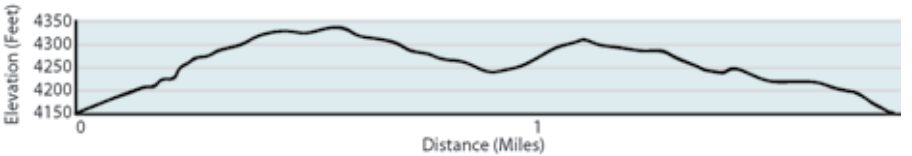
John Muir

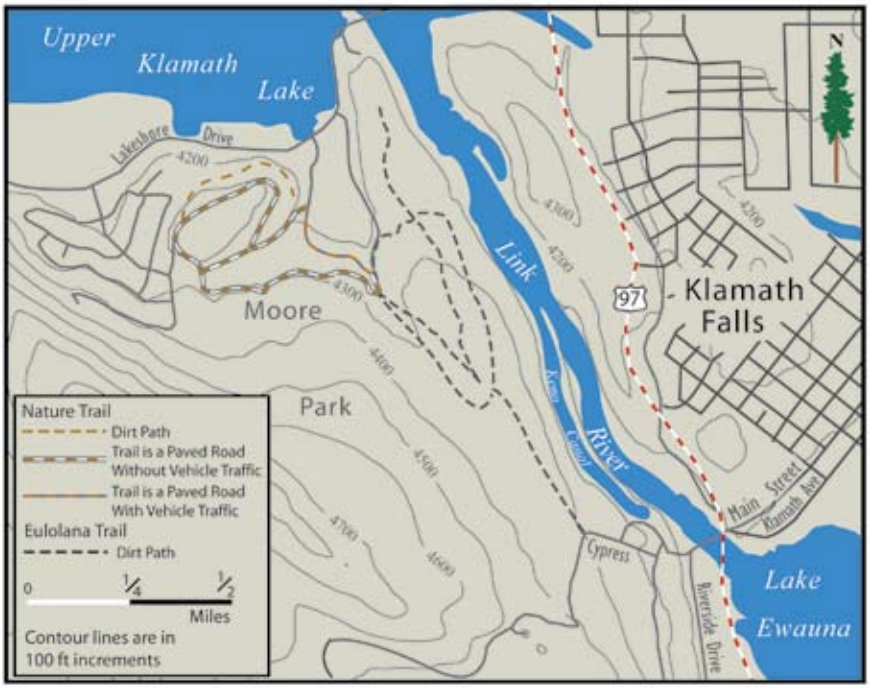
Access

From downtown Klamath Falls, head north on 10th Street until it turns to Oregon Avenue. Follow Oregon Avenue for about 1.5 miles, over the Link River, to Moore Park. The parking lots will be on your left shortly after entering the park. Cross the road to reach the trailhead. Look for interpretive trail signs at the trailhead and along the trail. This trail will connect with the Eulolana trail (page 65). Dog walking has recently been allowed in the park. **Please keep dogs on a leash and use the dogipot receptacles located throughout the park for waste.** Call (541) 883-4102 for park reservations.

Climate

Summers are mostly warm and sunny, although summer thunderstorms are not uncommon. Summer temperatures range between 80 and 100 degrees, but are most typically between 80 and 90. Nighttime temperatures range between 60 and 70 degrees. Winters are cold but surprisingly sunny. The area receives snowfall from November to April, but this trail is still hikable during some of the winter.





History

The original park commissioners of Klamath Falls were appointed in 1911, a time when the town's fairgrounds were located downtown. They had a tough job, and faced similar challenges as today's efforts in establishing public parks. The biggest hurdle they had to overcome was finding appropriate property and funding the property purchases. The dream of having a city park required several years of effort by the commissioners prior to Moore Park being acquired by donation from the Moore family in 1926. The same meeting that accepted the park donation from the Moore Family also established the first property tax for park purposes. Those funds were used to begin park development in 1927, starting with a well and mapping. The rock wall at the park entry was commissioned by Clara Moore to memorialize Rufus Moore in 1933.

Today the park serves thousands of visitors each year. Moore Park hosts many events, picnics, and family outings. It offers opportunities for great boating, bicycling, walking, bird watching and jogging. Park planners beagn working in 2004 with members of the community to add a disc golf course. The Klamath Cruise, 4th of July celebrations, soccer, cross country runs and sledding bring crowds into the park year-round. Those first park commissioners would be happy to see how well-loved and enjoyed the park has become.

Trail and Forest

Management (Spring of 2004)

This trail winds through a ponderosa pine forest with open, park-like stands. There are interpretive signs along the trail that will tell you about this forest, so take some time to read them. Also, look for plant identifier signs next to plants that give an array of information on the plant. There are several loops you can make in Moore Park, so we leave it up to you to get out there and explore.

Moore Park is a good example of an urban forest and the implications of managing it. Urban forests are important because they conserve energy by shading buildings and paved surfaces, filter airborne pollutants, provide wildlife habitat, remove atmospheric carbon dioxide, reduce stormwater runoff, enhance recreational opportunities, increase quality of life and can even increase the value of our homes. The park's proximity to homes and the urban environment, though, has some management implications.

One major implication involves fire protection. The area has been under fire supression for quite some time, due mainly to its proximity to homes. The fuel load has been accumulating and has reached unnaturally high levels, to the point where Moore Park officials embarked on a fire management plan in 2004. The plan proposes actions to enhance wildlife habitat, protect the park from devastating fires, and bring the forest to a more natural state. Brush clearing, pruning, and prescribed burning will remove fuels and provide more forage for wildlife.

Wildlife

Mule deer

Mule deer (*Odocoileus Hemionus*) usually feed along this trail, and if you walk quietly you are likely to see a few. Their common name refers to their "mule-like" ears, which they move constantly and independently. They are browsers and eat a great variety of vegetable matter,

including fresh green leaves, twigs, lower branches of trees and various grasses. Deer were an important source of protein and leather for Native Americans and early European settlers.

Mule deer along this trail are pretty tame, but if you startle them, you will quickly find that they do not run as other deer do. They do something called stotting – a bounding leap that raises all four feet off the ground at once. This technique allows them to reach up to 45 miles per hour.

Female deer are commonly observed along the trail, while males are less common. If you are lucky enough to see a male, distinguishing it from a female will not be a problem. Males are larger than females and have antlers, which start growth in spring and are shed around December each year. These antlers are high and branch forward, forking equally and with a spread up to four feet.

Also look for valley quail (*Callipepla californica*) along the trail. In fall, they are quite social and travel in small groups (25 to 40 birds), or coveys. In spring, when mating and nesting season starts, males and females pair up. After pairing, females then lay eggs and incubate them with the male close at hand until the eggs hatch. The primary diet of valley quail are seeds from broadleaved trees.

Valley quail

Plants

Look for Klamath wild plums (*Prunus subcordata*) along the trail in late summer. This is the only wild plum in the Pacific states and is easily identified when in fruit. Fruits, which are usually plentiful, have a bitter taste and can be used in a variety of ways. They are eaten fresh or dried and used in preserves and jellies, as well as in wines and liqueurs. Try to spot mule deer browsing on this bush, as they love to eat the leaves. In spring, the flowers of these trees have a wonderful scent. A green dye can be obtained from the leaves and a dark grey dye can be obtained from the fruit.

Klamath plum

Eulolana Trail
4

Moore Park - Western Juniper Woodland

Difficulty: Easy
Traffic: Heavy
Length: 2 miles
Lowest Elevation: 4,300 feet
Highest Elevation: 4,380 feet
Managed By: City of Klamath Falls
USGS Map: Klamath Falls

"The most remarkable thing I have ever encountered was when the wind blew very strong for several days and almost stopped the Link River. I was with my folks picking up fish from the water holes in the rocks."

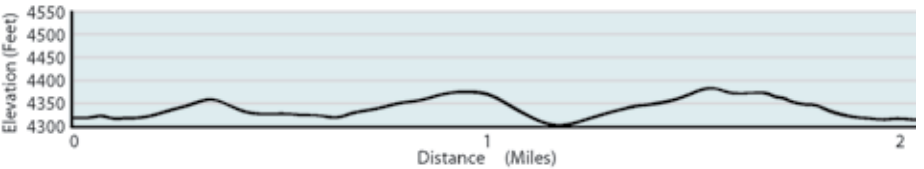
Mrs. Ruby Wilbur

Access

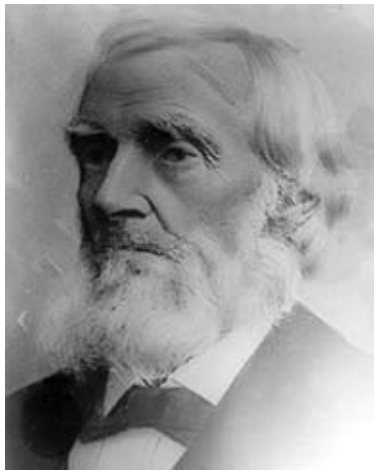
From downtown Klamath Falls, follow Main Street across the Link River. Turn right onto West Main after crossing the river and follow it until it veers right and turns to North Carroll. Follow North Carroll up the hill and turn right on Cypress Avenue at Riverside School. Follow Cypress for about 200 yards and turn right onto the trailhead parking lot. This trail connects with the Nature Trail (featured on page 61), which offers picnic areas and restrooms. Dog walking has recently been allowed in the park. **Please keep dogs on a leash and use the dogipot receptacles located throughout the park for waste.** Call (541) 883-4102 for park reservations.

Climate

Summers are mostly warm and sunny, although summer thunderstorms are not uncommon. Summer temperatures range between 80 and 100 degrees, but are most typically between 80 and 90. Nigh time temperatures range between 60 and 70 degrees. Winters are cold but surprisingly sunny. The area receives snowfall from November to April.



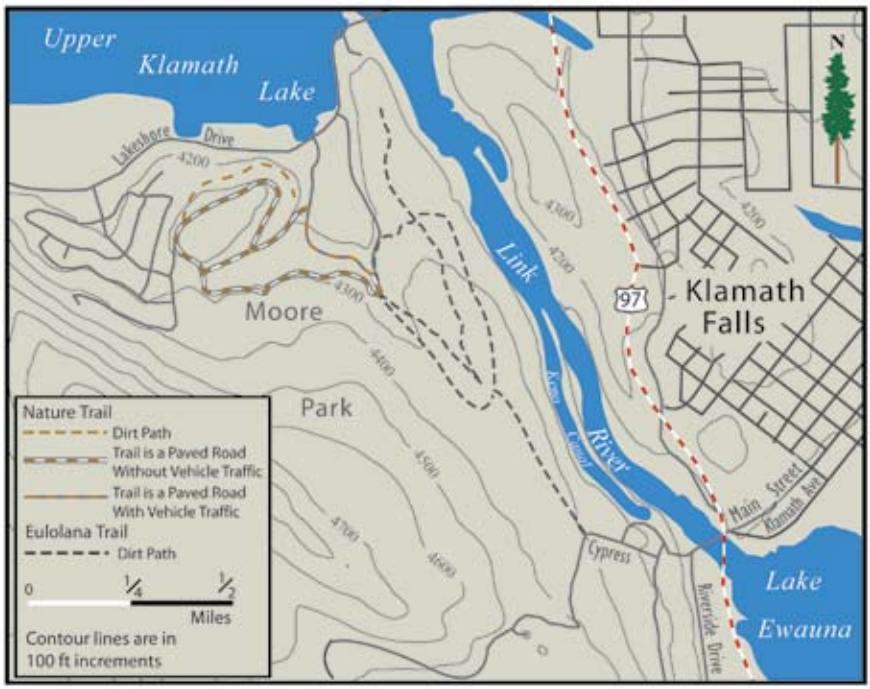
History



George Nurse

This trail begins very close to the original settlement on the Link River that became the village of Linkville, now the City of Klamath Falls. It was founded by George Nurse, of New York, in 1867. Nurse had been doing business with the troops in Fort Klamath for some time, but decided to try his luck establishing a frontier store and a ferry service across the Link River. He began mostly by trading furs with the Native Americans, but as more settlers arrived he expanded his business. At one point, what was known as " Uncle George's Store" was a major distributing point for a vast territory.

The Modoc and Klamath peoples' name for the Link River was Eulolana, which means to "move back and forth." They were referring to a natural phenomenon that occurred when south winds blew hard enough to push water flowing down the river back into Upper Klamath Lake. The river would "dry out," allowing early residents to catch fish from waterholes left in rocks.



Trail and Forest

This trail winds through a western juniper woodland, on a ridge on the west side of the Link River. There are interpretive signs along the trail that will teach you about this forest, so take some time to read them. Also, look for plant identifier signs next to plants that give interesting facts and information. There are several loops you can take along the Eulolana Trail, so we leave it up to you to get out there and explore.

The evidence of fire you see along the trail is from a human-caused fire that happened in the summer of 2003. Since then, many plants have begun to flourish. Fire would probably have happened here naturally every 10-20 years before the arrival of settlers.

Wildlife

Bald eagles (*Haliaeetus leucocephalus*), our national bird, are seen frequently in the park. The bald eagle is the only eagle unique to North America. The bald eagle's scientific name signifies a sea (halo) eagle (aeetos) with a white (leukos) head (cephalus). At one time, the word "bald" meant "white," not hairless. Bald eagles are found over most of North America, from Alaska and Canada to northern Mexico. Male bald eagles generally measure 3 feet from head to tail, weigh 7 to 10 pounds, and have a wingspan of about 6 1/2 feet. Females are larger, some reaching 14 pounds and having a wingspan of up to 8 feet. This striking raptor has large, pale eyes, a powerful yellow beak, and great, black talons. The distinctive white head and tail feathers appear only after the bird is 4 to 5 years old.

2003 KAGO fire

The staple of most bald eagle diets is fish, but they will feed on almost anything they can catch, including ducks, rodents, snakes and carrion. In winter, northern birds migrate to Klamath County and gather in large numbers near open water areas where fish and prey are plentiful.

Bald eagle

Bald eagles are believed to live 30 years or longer in the wild, and even longer in captivity. They mate for life and build huge nests on large trees near rivers, lakes, marshes and wetland areas. Nests are often reused year after year. With additions to the nests made annually, some may reach 10 feet across and weigh as much as 2,000 pounds. Although bald eagles may range over great distances, they usually return to nest within 100 miles of where they were raised.

Bald eagles were abundant when the bird was declared the national bird in 1782. Since that time, the bald eagle has suffered from habitat destruction and degradation, illegal shooting and contamination of its food source, most notably due to the pesticide DDT. By the early 1960s there were fewer than 450 bald eagle nesting pairs in the lower 48 states. In 1940, Congress passed the Bald Eagle Protection Act which made it illegal to kill, harass, possess, or sell bald eagles. In 1967 they were declared an endangered species, but by 1995 their status was downgraded to "threatened" as population numbers increased.

Plants

Look for green rabbitbrush (*Chrysothamnus viscidiflorus*) along the trail. It flourished after the fire. Green rabbitbrush provides an important source of browse for livestock and wildlife, particularly in the late fall and early winter after tastier species have been depleted. Green rabbitbrush regenerates after fire by sprouting and by establishing from seeds that come in from other non-burned sites, and is commonly observed on burned sites in Klamath County. Fire temporarily eliminates big sagebrush and other plants that compete for resources such as water or space. Release from competition stimulates green rabbitbrush to produce large numbers of viable seeds that are dispersed by wind.

Green rabbitbrush

Brown Mountain Trail 5

Rogue River National Forest - Mixed Conifer Forest

Difficulty: Moderate
Traffic: Moderate
Length: 7 miles
Lowest Elevation: 4,860 feet
Managed By: USFS
Highest Elevation: 5,400 feet
USGS Map: Brown Mountain and Lake of the Woods South.

"Those who contemplate the beauty of the earth find reserves of strength that will endure as long as life lasts."

Rachel Carson

Access

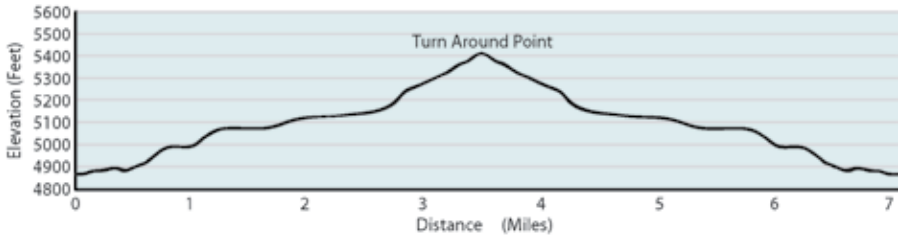
From Klamath Falls, take Highway 140 for toward Medford. Shortly after passing Fish Lake, turn left (south) onto Forest Road 37 towards Big Elk Forest Service Station. Keep on Forest Road 37 for 2 miles (just past the station) and turn left on to Forest Road 3705 (Jackson County). The trailhead parking is on the right hand side 3.2 miles further. The trail begins on the opposite side of the road.

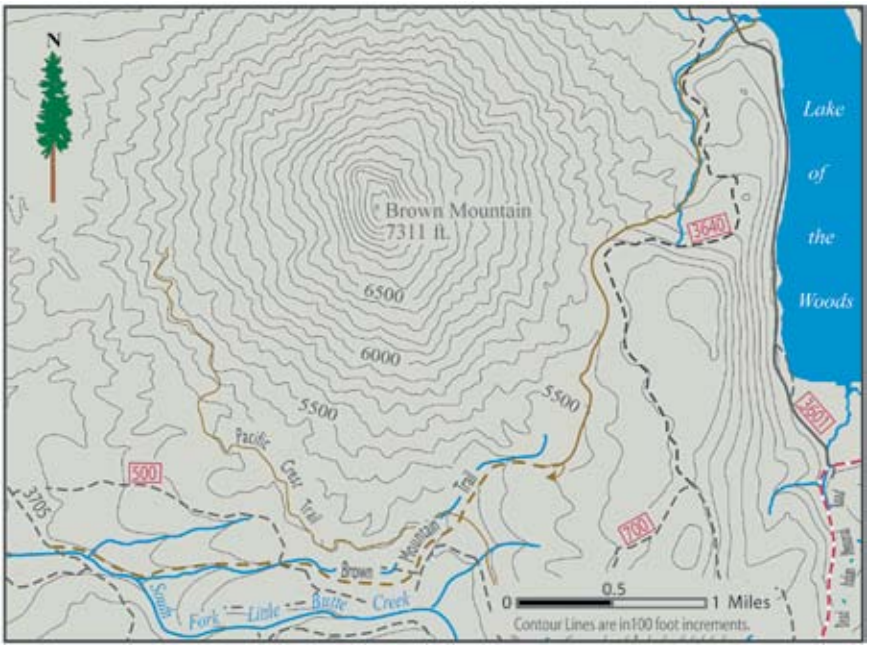
Climate

Summer temperatures can range from freezing at night to upper 80s during the day. Be advised that afternoon thunderstorms come through on occasion. Winter snow arrives in mid-October and lingers until mid-June.

Geology

Brown Mountain is a small shield volcano capped by a cinder cone. A cinder cone is a steep conical hill formed by lava fragments ejected from a





single vent. It erupted over 12,000 years ago and is composed mainly of andesite and basaltic andesite resulting from block lava flows and aa lava flows. Block lavas move slowly and solidify into angular fragments with relatively smooth faces, while aa lavas are more fluid, solidifying into rough surfaces.

Forest and Trail

The entire Brown Mountain Trail is 6.8 miles long, running from Forest Road #3705 on the Rogue River National Forest to the junction with High Lakes Trail #6200 on the Winema National Forest. Because the trail is too long for a round-trip day-hike and would require a shuttle to do it one-way, this guide will describe a shorter, 7 mile out and back trip on the Rogue River National Forest side, beginning from Forest road #3705. The trail skirts along the side of Brown Mountain, offering a few views of the lava flows along the way, some very nice old-growth forest and great fall color provided by the big huckleberry (*Vaccinium membranaceum*), serviceberry (*Amelanchier alnifolia*) and other deciduous plants.

Serviceberry and big huckleberry

The trail begins skirting the south fork of Little Butte Creek through a mixed conifer forest dominated by white fir and Douglas-fir. Pacific yew grows in the understory and big huckleberry is very prevalent. A mile and a half from the trailhead you will encounter a road. Take a right on it for about 300 feet where the trail continues to the left. This area is more open, with some very large specimens of scattered western white pine, as well as alder and willow. The open area soon transforms again into a forest dominated by white fir and Douglas-fir. As the trail continues to ascend, typical montane species such as Shasta red fir and mountain hemlock begin to appear. About three miles from the trailhead, the trail intersects with the Pacific Crest Trail. Continue on the trail for another 0.5 miles until an opening on the left allows a good view of Brown Mountain and its lava flows. This view marks the turn-around point, 3.5 miles from the trailhead.

Wildlife

The Pacific tree frog (*Hyla regilla*) can be seen hunting insects and spiders in moist areas. They can vary a lot in color from green to dark brown but are easily recognized by the dark band that runs from the nostrils, through the eyes, to the shoulder. Their climbing ability is enhanced by sticky toe pads and long toes with minimal webbing. Another interesting creature you may encounter on the trail is the woollybear caterpillar, which is the larval stage of the Isabella tiger moth. It may look furry and cuddly, but like several other woolly caterpillars, it contains hollow spines that release venom when broken, producing a painful sting. To be on the safe side, it is best to avoid touching any hairy caterpillars at all.

Plants

Brown Mountain is one of the few places in Klamath County where you can see Pacific yew (*Taxus brevifolia*), as it is much more common west of the Cascades. It is a small, slow-growing tree that usually grows under the shade of much larger trees such as white fir and Douglas-fir. It is an unusual conifer because its seeds are enclosed by red fleshy cups known as arils. Pacific yew produces quality wood that the Native Americans put to different uses such as making bows, war clubs, canoe paddles, and harpoons. The tree can be thought of as a lifesaver, because the bark is a natural source of taxol. Taxol is an anticancer drug. It was originally isolated from the Pacific yew trees in the early 1960s. The drug was recently approved by the Food & Drug Administration for use against ovarian cancer and has also shown activity against breast, lung, and other cancers. The Pacific yew and taxol is a compelling example of the unknown values in forests.



Pacific yew

Research on finding alternatives to taxol is ongoing. Taxol has been chemically synthesized, which is reducing the pressure on natural stands of Pacific yew, but bark is still being used for taxol product

The big huckleberry is perhaps the most prevalent understory plant along the Brown Mountain trail. It is a deciduous plant, providing interesting colors to the trail in the fall. It produces fruit in the late summer and is an important food source for elk and black bear. The berries were eaten fresh or dried for future use by Native Americans, providing a good source of vitamin C during the winter.

Big huckleberry

Twin Ponds Trail
6

Sky Lakes Wilderness Area - Mixed Conifer Forest

Difficulty: Easy
Traffic: Very Heavy
Length: 10 miles round trip
Lowest Elevation:5,300 feet
Highest Elevation: 6,000 feet
Managed By: USFS
USGS Map: Mount McLoughlin
Group Limit: 8 people and 12 head of livestock

"Trees are the earth's endless effort to speak to the listening heaven."

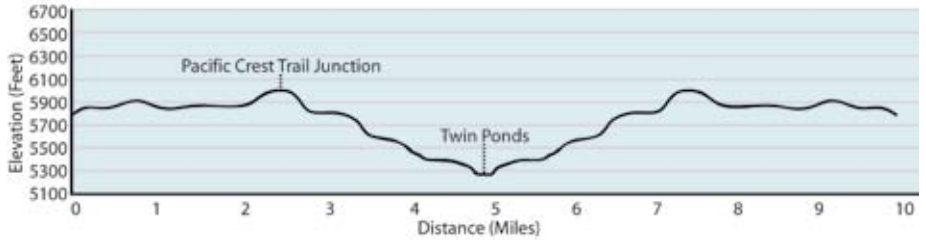
Rabindranath Tagore

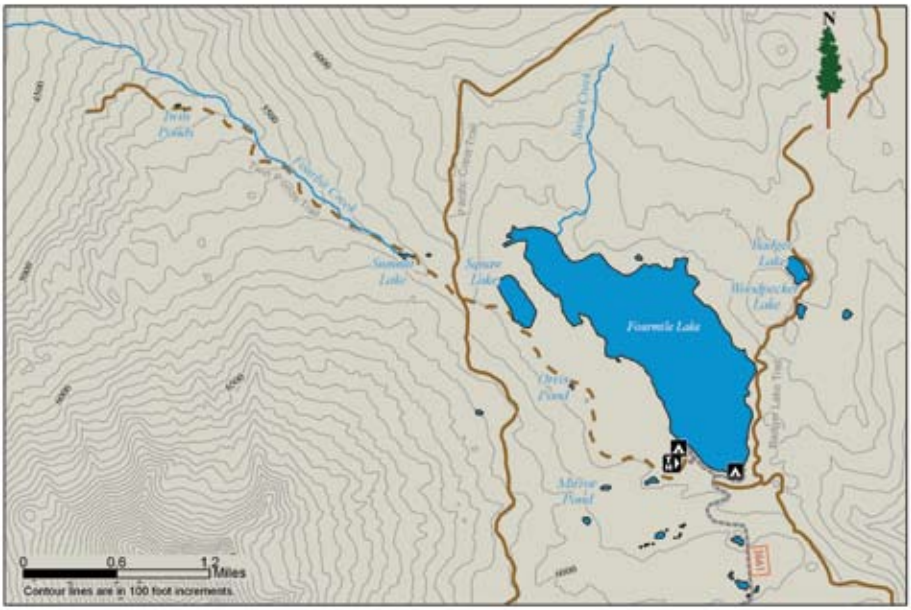
Access

From Klamath Falls, travel northwest on Highway 140 just past the first turnoff to Lake of the Woods. Turn right (north) on to Forest Road 3661 (sign indicates Fourmile Lake Campground) and continue up the road for about 5.5 miles to the Fourmile Lake Campground. Turn left on the campground road and follow the signs to the trailhead. Parking that accommodates stock trailers is available. There is a camping fee, but no fee to park at the trailhead.

Climate

Summer temperatures range from freezing to the upper 80s, but highs are usually 70-80 degrees and lows about 40-50 degrees. Watch out for the occasional thunderstorm, and be sure to carry repellent as mosquitoes are numerous until August. Snow blocks the trails from late October to June.





History

The Twin Ponds Trail follows the route of the old Rancheria Trail, a Native American travel route used widely for trade. The trail was widened in 1864 by soldiers stationed at Fort Klamath, whose mission was to protect emigrants, build new roads and improve old trails connecting major supply points in eastern and western Oregon. The main purpose of this specific road was to carry stock and supplies between Jacksonville and Fort Klamath. But the wagon road had another purpose which the residents of the area quickly discovered. The roads began to be used more and more by people on outings in search of recreation and awe-inspiring views, many of the same reasons that bring hikers to the area today. Be sure you keep your eyes open, as many sections of the old wagon route are visible along the trail.

Geology

This trail travels along the eastern side of Mount McLoughlin. The volcano was originally called Mount Pitt, but was renamed after John McLoughlin, an official of the Hudson's Bay Company. McLoughlin has the title of "Father of Oregon", officially bestowed on him by the Oregon Legislature in 1957 for his dedication to settling the area.

During the last ice age, a gigantic ice cap buried most of the High Cascades. This means the area you are hiking in now was once buried under 250 feet of ice. Glaciers carved the many basins that dot the wilderness, creating hundreds of lakes for us to enjoy after they melted.

Trail and Forest

From the trailhead at 5,700 feet, the trail winds through a relatively gentle rolling terrain with forests dominated by lodgepole pine with some Shasta red fir and mountain hemlock present. The trail travels along the eastern side of Mount McLoughlin, reaching a junction with the Pacific Crest trail 2.5 miles from the trailhead. Continue on the Twin Ponds Trail past Summit Lake; you will be hiking along Fourbit Creek and crossing it several times. If you are hiking this trail in early summer, it might be a pretty muddy hike from this point. About 2 miles from Summit Lake you will reach Twin Ponds. Please be careful, and

American badger

practice minimum impact visitation along lakeshores and wet meadows. Be warned that both Twin Ponds and Summit Lake will usually go bone dry at some point during August. Take the same trail back to return to the trailhead.

A different, much longer (close to 13 miles) hike can be taken that will loop you back to the trailhead. To do so, you need to turn left (north) onto the Pacific Crest Trail instead of continuing on the Twin Ponds Trail. Then follow the signs to return to Fourmile Lake via the Badger Lake Trail.

Wildlife

Odds are you will not be able to see an American badger *(Taxidea taxus)* along the trail, as they are nocturnal animals. However, they have been known to be somewhat active during the day. A badger's front feet are equipped with long claws, ideal for excavation. Some even claim that badgers are so proficient at digging that they are said to be able to dig downward faster than two men armed with shovels. Dens and burrows are a very important part of the badger's life. A badger's main diet consists of small burrowing animals such as ground squirrels, rats, gophers and mice. A badger usually has many different dens and burrows. It uses them for sleeping, hunting, storing food and giving birth. A badger may change dens every day, except when it has babies. Badger dens have one entrance with a pile of dirt next to it. When a badger is threatened, it will often back into a burrow and bare its teeth and claws. It may then plug up the burrow's entrance.

Plants

Look for snowbrush *(Ceanothus velutinus)* in open areas along the trail. It has a pleasant fragrance and can be identified by its shiny leaves and dense clusters of white flowers in early summer.

Snowbrush

Mountain Lakes Loop
7

Mountain Lakes Wilderness - Subalpine and Whitebark/Lodgepole Forests

Difficulty: Very Difficult
Traffic: Moderate
Length: 12.5 mile Loop
Lowest Elevation: 5,700 feet
Highest Elevation: 7,550 feet
Ownership: USFS
USGS Maps: Aspen Lake and Lake of The Woods
Group Limit: 10 heartbeats

"*Come forth into the light of things. Let nature be your teacher.*"

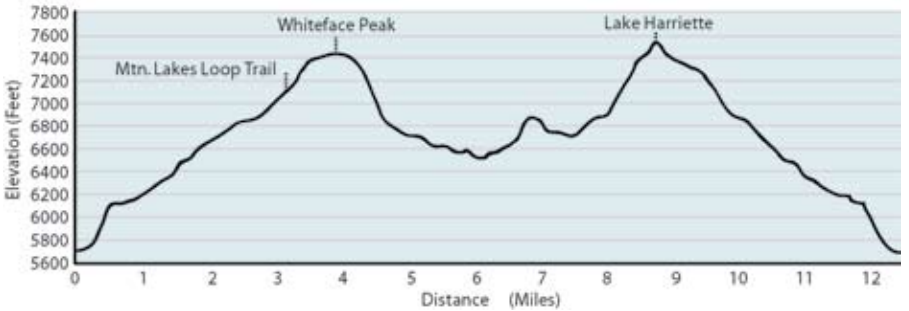
William Wordsworth

Access

From Klamath Falls, travel west on Hwy 66 for 8 miles. Stay right onto Clover Creek Rd at a sharp curve and stay on this road for 15.7 miles. Turn right on Rd 3852 and continue for 3.2 miles until you reach the trailhead. Access the Mountain Lakes Loop trail via this 3.6 mile trail, which can be done by itself as an out and back day trip. The loop is more fit for the overnight hiker.

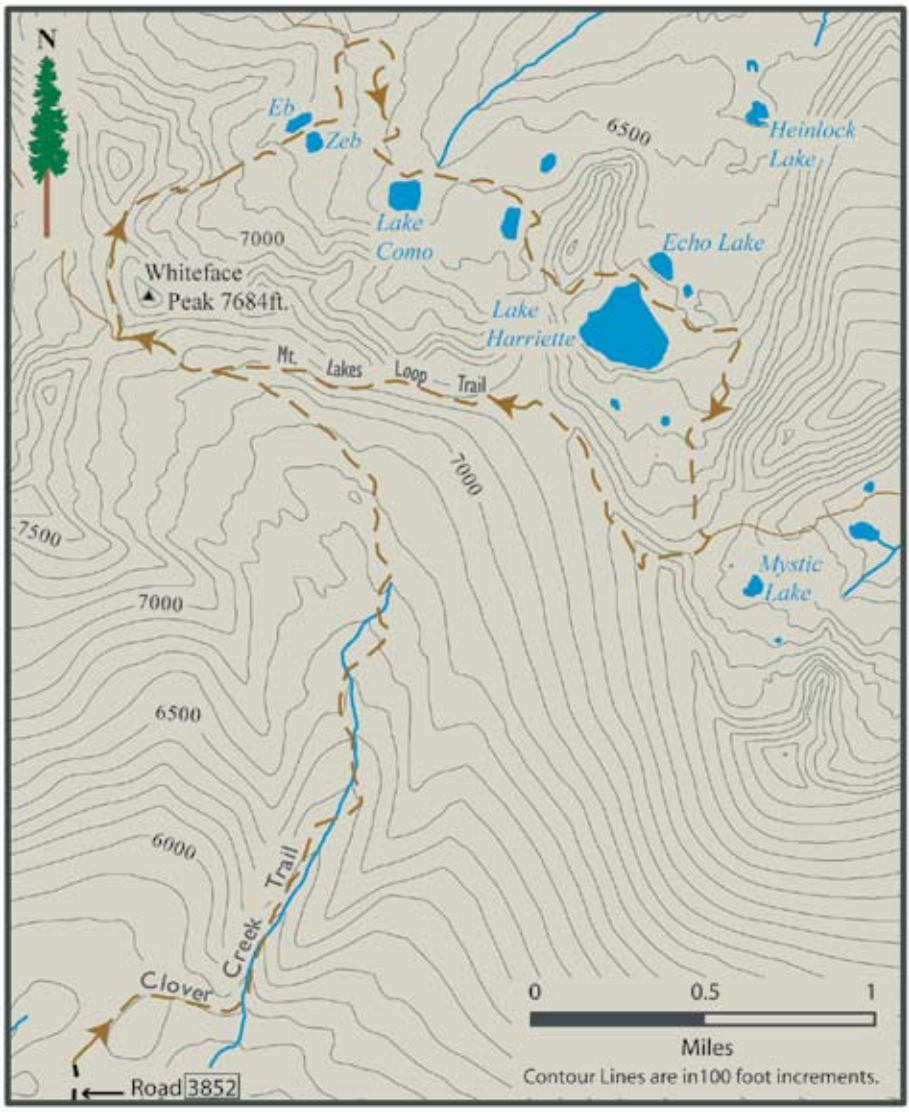
Climate

Summer temperatures range from freezing to the upper 80s, but highs are usually 70-80 degrees and lows about 40-50 degrees. Watch out for the occasional thunderstorm, and be sure to carry repellent as mosquitoes are numerous until August. Snow blocks the trails from late October to late June.



History

You might not realize this, but this palace of nature has a lot of history behind it. Can you believe that it has been protected since the times when the concept of wilderness was still emerging? The area was one of three original Primitive Areas designated in Oregon and Washington in 1930. Ten years later it was expanded and became a Wild Area. The Mountain Lakes Wilderness Area, as it is today, came to exist shortly after the passage of the 1964 Wilderness Act, making it one of the first designated wildernesses in the nation. You are literally walking through a piece of American history.



Trail and Forest

Begin by winding through shady groves of Shasta red fir and western white pine until you reach Clover Creek. Ranchers pay the Forest Service so their cattle can have access to pastures on forest land, so there is a chance you will see cows roaming around. As you climb along meadows and ridges towards Clover Lake, take notice of the amount of dead trees and logs in the creek. Ecologists refer to fallen trees as woody debris. The logs provide many important ecological functions including habitat for fish and wildlife. Continue about one mile to meet up with the Mountain Lakes Loop Trail. At this point, go left. You are committing to a ten mile hike if you decide to continue and do the loop.

The trail begins to climb gently through a pass north of Whiteface Peak. Be sure to take in the the view of Mt. McLoughlin projecting itself in the horizon. Next, hike down a rocky face to Lakes Eb and Zeb, then down to Lake Como and finally up and down a pass to Lake Harriette (a good place to camp). The route then ascends to some mesmerizing views of lakes and peaks. Notice the whitebark pine trees growing on the highest part of the ridge. Finally switchback down a rock scree to the Clover Creek Trail to finish the loop.

Woody debris in creek

Geology

Several million years ago, a series of volcanic eruptions built a massive composite volcano that stood towering over the southern Cascades. The volcano erupted and collapsed, forming a caldera (a broad crater-like basin) similar to Crater Lake. Ice and snow built up in the caldera and formed a series of glaciers that breached the caldera rim. As rivers of ice spread down the flanks of the mountain, they reshaped it. Today, eight prominent peaks are all that remain of the original rim. Repeated glaciation continued to shape the land, gouging out beds for the many small lakes, each with its own personality and unique setting.

Wild ginger on Clover Creek Trail

Fish and Wildlife

Brook and rainbow trout are stocked in both Harriette and Como Lakes every other year. Clover Lake is also a popular fishing spot. The area's close proximity to Upper Klamath Lake makes it a formidable spot to view bald eagles, osprey and herons. It is thought that one million ducks and geese migrate through the Klamath Lake area in October and November.

Plants

As you hike up the Clover Creek Trail, look along the trail for the green, kidney-shaped leaves of wild ginger (*Asarum wagneri*). This plant is very fragile and it needs your help to survive along this heavily used route. Admire the beauty of wild ginger, but please be careful not to trample it or its surroundings.

The leg of the trail along the creek provides a great opportunity to view luscious ferns, and it springs to life with wildflowers during early summer. Once you reach the lakes, take care not to trample the plants around the lakes. Watch out for signs marking restoration sites, which are areas around the lakes that have been heavily impacted and are in the process of being restored.

Interesting Fact

The Mountain Lakes Wilderness is the only square wilderness in the whole United States Wilderness Preservation System.

Varney Creek
8

Mountain Lakes Wilderness - Mixed Conifer and Subalpine Forests

Difficulty: Moderate
Traffic: Heavy
Length: 8.5 miles round trip
Lowest Elevation: 5,500 feet
Highest Elevation: 6,700 feet
Managed By: USFS
USGS Maps: Pelican Bay
Group Limit: 10 heartbeats

"Climb the mountains and get their good tidings. Nature's peace will flow into you as sunshine flows into trees.The winds will blow their own freshness into you... while cares will drop off like autumn leaves."

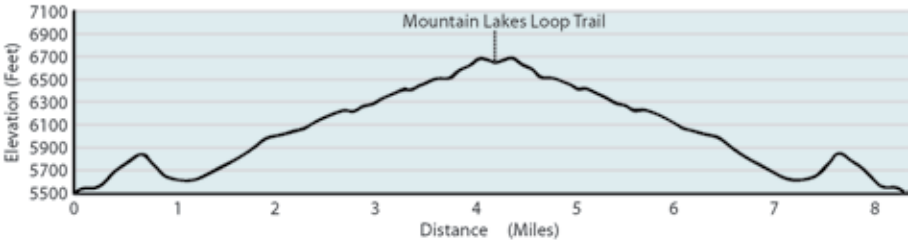
John Muir

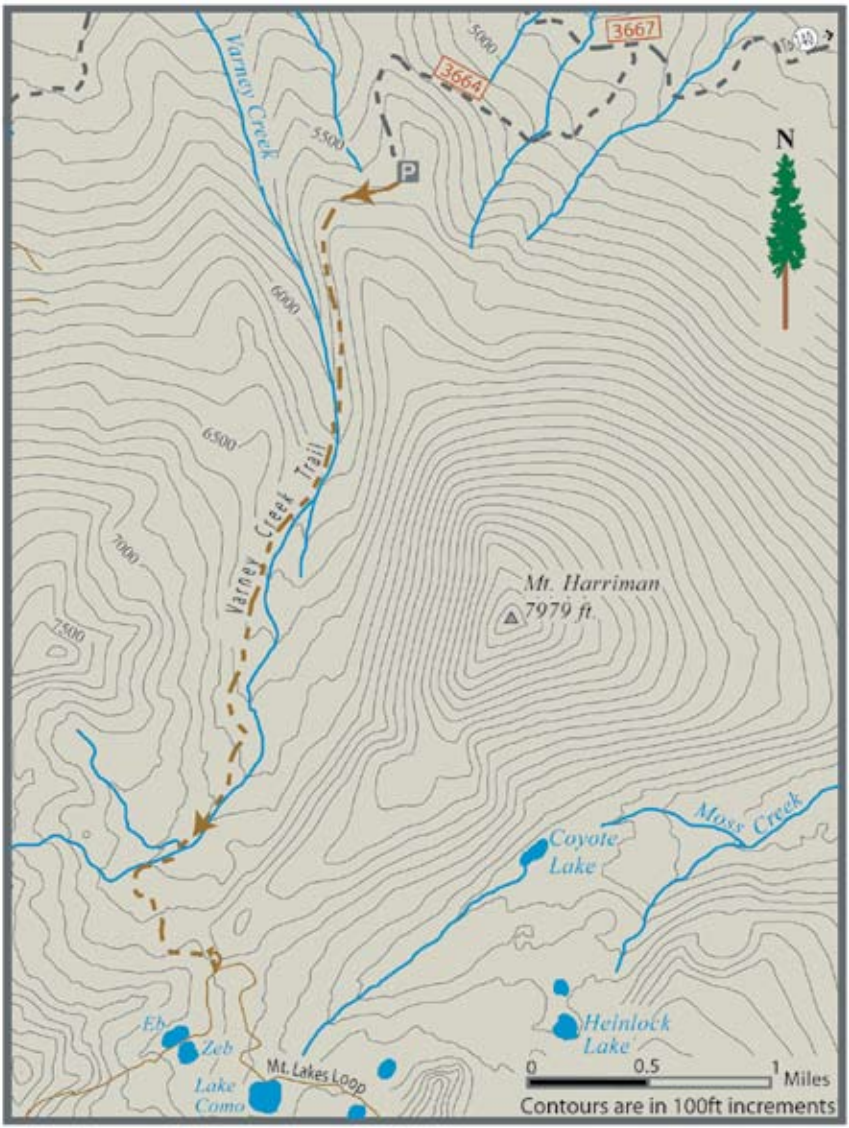
Access

From Klamath Falls, travel 21 miles west on Hwy 140. Look for a large brown sign (just after milepost 48) to the Varney Creek Trailhead and turn left onto Road 3637. Stay on the gravel road for about 2 miles and turn left on Road 3664. Road 3664 ends at the trailhead another 2 miles down the road. A large parking area with ample room for turn-around is provided.

Climate

Summer temperatures range from freezing to the upper 80s, but highs are usually 70-80 degrees and lows about 40-50 degrees. Watch out for the occasional thunderstorm, and be sure to carry repellent as mosquitoes are numerous until August. Snow blocks the trails from late October to June.





Trail and Forest

The Varney Creek trail will take you up the Varney Creek drainage to the junction with the Mountain Lakes Loop Trail. It provides an excellent opportunity for relaxing and viewing large conifers. The trail starts out through a mixed conifer forest consisting mostly of white fir and ponderosa pine with the occasional sugar pine. The understory is characterized by low-growing shrubs, mostly creeping snowberry. As the trail begins to gain elevation, lodgepole pine becomes a part of this mix of conifers.

After the first log crossing a noticeable change in forest type happens. As the trail gains elevation, there is a transition from a mixed conifer forest to a subalpine forest. A pretty good indicator that you are entering a subalpine forest is the presence of mountain hemlock and Shasta red fir. Also notice that intermingled with the subalpine forest are small, sporadic stands of pure lodgepole pine. On the way up the hill the trail will pass by several small meadows that provide great wildflower viewing, so be on the lookout. The trail ends at the Mountain Lakes Loop trail.

Geology

The Mountain Lakes Wilderness, like the entire Cascade Range, has a history of fire and ice. Volcanic activity and subsequent glaciation has shaped the landscape we live in today. Glaciated valleys radiate from the wilderness, including the Varney Creek drainage seen in the picture below. Glacial activity scoured many of the valleys in the area, including the one you are hiking on.

Wildlife

One bird you are likely to see is Steller's ja*y (Cyanocitta stelleri).* Steller's jay is named for the famed naturalist, Georg Wilhelm Steller, who explored the Bering Sea with Vitus Bering in 1741. Steller became the first white man known to step on land that would eventually become Alaska. En route home, Bering's ship wrecked and most of the crew died. Steller was among the few who survived, eventually escaping on a ship built from the wreckage of their original craft. The devoted naturalist that he was, Steller was able to salvage a few seeds from his field specimens to take home.

Varney Creek drainage

Steller's jay

Golden- mantled ground squirrel

Steller's jay is quite distinctive and easy to identify because of its unique looking crest, large size and blue color. The jay is in the same bird family as the crow, and is a bold and aggressive opportunistic feeder. Opportunistic feeders will eat whenever food is available, and they usually have pretty good chances of survival.

Another animal you are sure to see on this trail, and most trails in Klamath County, is the golden-mantled ground squirrel (*Spermophilus lateralis*). This chipmunk-like squirrel puts on a layer of fat in the fall to help it get through the winter (notice the chubby squirrel in the picure above). It has cheek pouches that it uses to carry food. It takes food to its den and stores it to eat in the spring when it wakes up after hibernating for seven months. The mainstays of this squirrel's varied diet are seeds, nuts and fruits. They supplement their diet with green vegetation and insects, as well as by large quantities of subterranean fungi that they locate by smell and dig out.

Plants

Look for coyote mint (*Monardella odoratissima*) along moist areas. This plant is in the mint family, which has the distinctive characteristic of having a square stem and alternate leaves. You cannot brush this plant without perfuming the air with an exhilarating minty scent. The fresh or dried aromatic leaves and flower heads can be steeped in cold water to make a refreshing mint-like tea.

Coyote mint

Heavenly Twin Lakes
9

Sky Lakes Wilderness Area - Mixed Conifer and Subalpine Forests

Difficulty: Easy
Traffic: Very Heavy
Length: 6.5 miles
Lowest Elevation: 5,860 feet
Highest Elevation: 6,100 feet
Managed By: USFS
USGS Map: Pelican Butte
Group Limit: 8 people and 12 head of livestock

" Now I see the secret of making the best person, it is to grow in the open air and to eat and sleep with the earth."

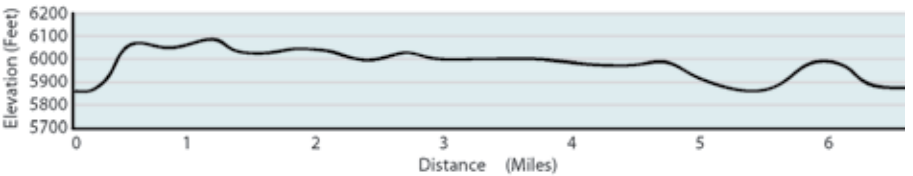
Walt Whitman

Access

From Klamath Falls, travel northwest on Hwy 140 for 22 miles to approximately Milepost 41 and turn right on Forest Road 3651. The road is well marked, follow it for 10.2 miles to the Cold Springs trailhead. The Sky Lakes Basin loop trail we recommend has an awe-inspiring concentration of lakes, the highest in the Sky Lakes Wilderness Area. The loop trail is only a fraction of the trail network in the Sky Lakes Wilderness Area, which covers over 200 square miles. The experienced hiker, armed with a topographic map, can find scenic ridges a short distance from the loop that is suggested.

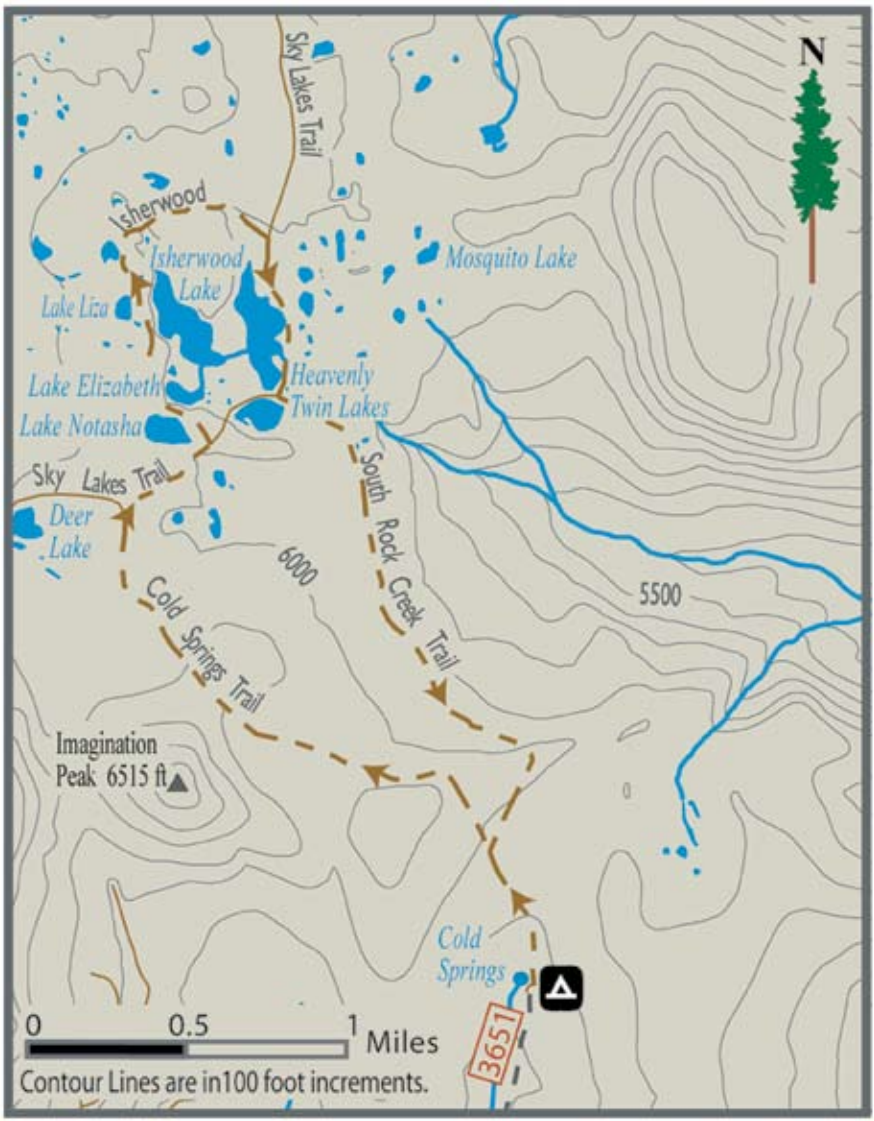
Climate

Summer temperatures can range from freezing at night to upper 80s during the day, and be advised that afternoon thunderstorms come through on occasion. Winter snow arrives in mid-October and lingers until mid-June.



History

The area, a broad plateau-like ridge dotted with glacier-carved lakes, was designated a wilderness area on July 26, 1984. Logging has never occurred inside the wilderness, allowing for views of magnificently large hemlocks and Shasta red firs. Sky Lakes Wilderness is 113,590 acres and straddles southern Oregon's Cascade Range from Crater Lake National Park in the north, to Highway 140 in the south. It is approximately six miles wide and twenty-seven miles long, with elevations ranging from 3,800 feet in the canyon of the middle fork of the Rogue River, to 9,495 feet at the top of Mount McLoughlin.



Trail and Forest

From the trailhead, travel a quarter mile to a fork in the trail. Turn left onto Cold Springs Trail. The trail climbs a gentle slope through lodgepole pine and mountain hemlock stands, leveling out through a mix of Shasta red fir and hemlock forest. Lodgepole pines and white pines are found intermingled, but the fir and hemlock clearly dominate the landscape. The real adventure begins when you arrive at Heavenly Twin Lakes, a great place to explore what these pristine lakes have to offer. As you follow the loop, notice that some of the plants around the lakes appear different than what you are used to seeing in the forest. The area that separates water and land is called a riparian area, and scientists refer to these specially adapted plants as riparian vegetation. Return on the South Rock Creek Trail.

BEWARE

Mosquitoes abound in this area from mid-June to late August. They survive and reproduce especially well in this area because of the availability of water. Always carry repellent, and we recommend headnets and zippered tents for the backpackers.

Geology

The glacial history is clearly evidenced by the numerous lakes that dot the area, a basin that was carved by massive glaciers that disappeared about 12,000 years ago. As you might expect, this process is called glaciation. The picture below shows lakes that are the remnants of glaciers that at one time stood majestically over this landscape. Venture on rocky areas along lakes and you might be able to see scratch marks on the rocks. They were created by large rocks that were carried in the glaciers that carved the lake basins.

Fish and Wildlife

A helicopter picks up a load of fish

The Oregon Department of Fish & Wildlife (ODF&W) stocks several fish species in lakes throughout the wilderness every other year. Since there are no roads that access these lakes, fishery biologists have to get creative. Brave helicopter pilots maneuver specialized carriers loaded with fish and drop them in the lakes. Brook trout can be found in Elizabeth, Isherwood and Big and Little Heavenly Twin Lakes. Rainbow trout are stocked in Big Heavenly Twin Lake and Isherwood Lake.

Plants

If you hit this trail during late August you will be able to experience the beauty of red huckleberry (*Vaccinium parvifolium*) fruit. The fruits are tart, but definitely palatable. Visit during the middle of September and you will notice how the leaves of this plant turn scarlet, attractively painting the trail side. Another treat for the botanical eye is bunchberry dogwood (*Cornus candensis*). Look for large white flowers with four petals in moist areas, and make sure you experience a nose full of the fragrant flower.

Things to Consider

This trail is one of the most popular destinations in the Sky Lakes Wilderness, and heavy use has resulted in the need for restoration sites designed to preserve shorelines. The Forest Service is rehabilitating these sites by planting young trees and shrubs, which are very susceptible to human impacts. Please pick up a camp map at the trailhead and camp at recommended campsites to minimize impacts. We ask you to avoid areas designated as restoration sites to allow these struggling plants to grow strong. If you need access to water, search for rocky spots on the lake shore to avoid trampling plants and compacting the soil.

Be on the lookout for signs like this one

Cherry Creek 10

Sky Lakes Wilderness - Mixed Conifer and Subalpine Forests

Difficulty: Difficult

Traffic: Moderate

Length: 10.5 miles round trip

Lowest Elevation: 4,600 feet

Highest Elevation: 5,900 feet

Managed By: USFS

USGS Maps: Pelican Butte

Group Limit: 10 heartbeats

"The richness I achieve comes from Nature, the source of my inspiration.."

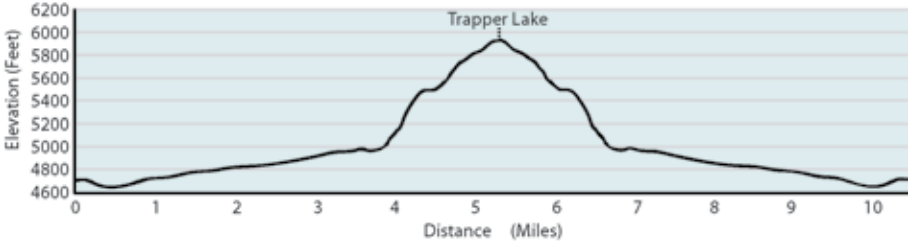
Claude Monet

Access

From Klamath Falls, travel west on Hwy 140 for 25 miles to Rocky Point junction and turn north onto Westside Road (County Road 531). Travel approximately 11 miles and turn left onto Forest Road 3450. Travel 1.6 miles to the trailhead at the end of the road. **There are two unbridged stream crossings along the way that may not be passable due to high water in early spring** (May-June). The crossings should be easy to cross in late summer when stream flows have fallen, but you might have to get your feet a bit wet.

Climate

Summer temperatures range from freezing to the upper 80s, but highs are usually 70-80 degrees and lows about 40-50 degrees. Watch out for the occasional thunderstorm, and be sure to carry repellent as mosquitoes are numerous until August. Snow blocks the trails from late October to June.



History

The mountain forests surrounding Cherry Creek provided native people with bountiful resources and also with awe-inspiring sites to perform religious ceremonies. Abundant sources of fresh water (streams, lakes and springs), large fish populations and diverse wildlife and plant populations provided very well for the Natives. In terms of religion, the magnificent views and high peaks throughout the area were likely places for ceremonies. Klamath youths would sometimes come to make a "vision quest" (a religious experience during which one fasted in solitude and sought a spiritual vision while dreaming) on high peaks along the Cascade crest. Also, pools of water are believed by the Klamath people to be the residences of spirits. They swam in these waters for the sake of gaining power.

The early white settlers also made use of this area. The ecosystem in Sky Lakes provided them with plenty of hunting, winter trapping of beaver and marten, gathering of huckleberries and grassy meadows for grazing sheep and cattle during the summer. Trails and fire lookouts were built in the area beginning in the early 1900's, giving future generations a vast and inspiring trail network to enjoy.

Trail and Forest

The trail provides for views of sensational old-growth and some stellar examples of Engelmann spruce, a tree you won't see much in Klamath County. The trail parallels Cherry Creek for the first 3.5 miles, slowly gaining elevation through a mixed conifer forest with large ponderosa pine, lodgepole pine, Douglas-fir

This bridge was built by some determined trail workers

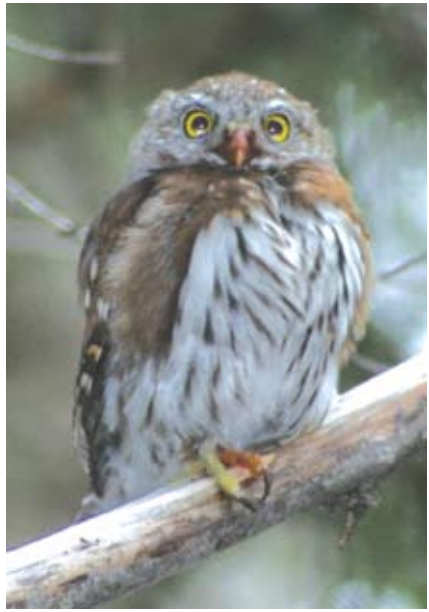
and grand fir. Look for shady pockets of Engelmann spruce, most notably near the two creek crossings. Engelmann spruce is shade tolerant, meaning it will grow in the shade. For this reason, you will encounter pockets with both young trees and very old trees growing together. An excellent way to identify Engelmann spruce is by the unpleasant odor given off by the needles when they are crushed. Keep an eye out for the bridge pictured above, it goes through a nice stand of Engelmann spruce.

Shortly after the second creek crossing, the trail begins to switchback up a forested hill with large Engelmann spruce, Shasta red fir and Douglas-fir. This switchback presents a perfect opportunity to observe the tops of trees below you. There is probably a good chance you will see a variety of birds. Also, try to spot cones on the tops of trees to help you identify them.

The trail ends at Trapper Lake where it joins the Sky Lakes Trail. You can make Trapper Lake your final destination, taking in the beautiful vistas of Luther Mountain behind the lake. If you still have some hiking left in you, a 1.5 mile loop will take you to a few more beautiful lakes.

Fish and Wildlife

The high mountain lakes range in size, but all are relatively shallow and have excellent water quality and clarity. Fish stocking in Sky Lakes began as early as 1947, and continues to this day. Trapper Lake is stocked with rainbow trout and brook trout. Methods for successful fishing include small spinners, bait and flies.



Northern pygmy owl

The old-growth forests along this trail are a favorite of the northern pygmy-owl. Your chances of seeing one are good, especially since these owls are diurnal, meaning they are active mostly during the day. Keep an eye out for them at dusk or dawn, as they are more active during these times. As cute as this little owl is, it is more vicious than it looks. They attack prey or run off predators that are up to several times their own size. Their diet includes jays, swallows, chickadees, moles and even chipmunks.

Plants

The flower pictured below is an American columbine, or *Aquilegia formosa.* It takes its name from the Latin word for beautiful - formosa. The color and unusual shape of the blossom are part of nature's clever design. Each flower consists of five spurs that hold nectar, a sugary substance produced in flowers to attract insects. The vibrant red color of the flower attracts hummingbirds, which are the only creatures that can easily sip the nectar from the flowers and, in so doing, pollinate them. There are some insects, though, that have figured out how to get around this. Some bees, wasps, and other insects cheat the system by nibbling through the nectar end of the spur.

American columbine

Nannie Creek
11

Sky Lakes Wilderness - Mixed Conifer Forest

Difficulty: Moderate
Traffic: Light
Length: 8 miles round trip
Lowest Elevation: 6,000 feet
Highest Elevation: 6,700 feet
Managed By: USFS
USGS Map: Pelican Butte
Group Limit: No more than 8 people and 12 animals

"Study nature, love nature, stay close to nature. It will never fail you."

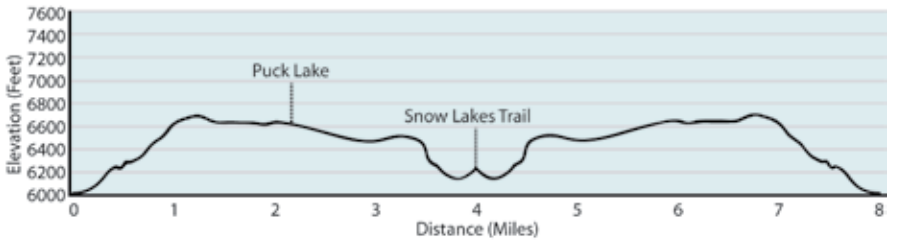
Frank Lloyd Wright

Access

From Klamath Falls, travel west on Hwy 140 to its junction with Westside Road (County Road 531). The junction (.5 miles past milepost 45) is about 28 miles from downtown Klamath Falls, near Rocky Point. Travel approximately 12 miles on Westside Road and turn left (west) onto Forest Road 3484, at a well-marked turnoff to Nannie Creek. Take Forest Road 3484 about 4.5 miles to a parking and turnaround spot at the end of the road. The trailhead is at the end of the road.

Climate

Summer temperatures range from freezing to the upper 80s, but highs are usually 70-80 degrees and lows about 40-50 degrees. Watch out for the occasional thunderstorm, and be sure to carry repellent as mosquitoes are numerous until August. Snow blocks the trails from late October to June.

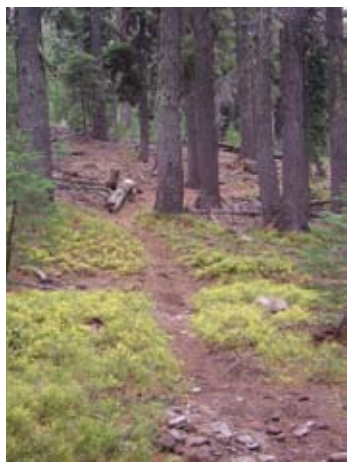


History

Nannie Creek is located in the Sky Lakes Wilderness area, which was designated by Congress in 1984. The area contains evidence of use by previous visitors, including stone tools and camp sites of Native Americans. You may also find remains of 20th century cabins and shelters built by early white settlers. These cultural resources are protected by law for public enjoyment and education; please do not remove, disturb or destroy these gifts from the past.

Trail and Forest

From the trailhead, the trail climbs a steep slope forested with Shasta red fir, mountain hemlock and lodgepole pine in lesser numbers. The occasional western white pine will also show up, so be on the lookout. After the climb, the trail levels off and passes near the southern shore of Puck Lakes (about 2.2 miles from the trailhead). A stop at Puck Lakes is well worth it, either to enjoy its clear water or the excellent fishing that can be done from the shore.



Continue past Puck Lakes for about 1 mile, until the trail reaches an amazing rock scree slope that affords great views of the Sky Lakes Basin and Luther Mountain. The trail traverses

the rock scree, so be sure you watch your step as the flat rocks can be real ankle-benders. Listen for the interesting sounds the flat rocks make against each other as you walk on top of them, and make sure you look at the plants that inhabit the rock scree.


Can you identify these trees?

The trail begins to descend toward the Snow Lakes Trail through a mixed conifer forest dominated by Shasta red fir. The mixed conifer forest along Nannie Creek can be good practice for learning to identify different species of conifers. Can you identify the trees in the picture by examining their bark? See if you can use the identification keys in this guide to help you distinguish the four conifers mentioned in this chapter. When you reach the Snow Lakes Trail, you can turn around or go explore what the Snow Lakes have to offer (turn left at junction and travel a half mile). Remember it is four miles back to the trailhead from this point.

Wildlife

Black carpenter ants (*Camponotus pennsylvanicus*) can be found all along the trail, especially near areas with downed wood. Be careful where you sit; carpenter ants cannot sting but they can inflict a painful bite with their powerful jaws. These ants are known as carpenter ants because they house their colonies in galleries that they excavate in wood. Carpenter ants do not eat the wood they remove when building nests, but deposit it outside entrances to the colony in small piles. Look for piles of sawdust near fallen logs, a good sign you are near a colony.


Black carpenter ants

Each carpenter ant colony is founded by a single fertilized queen. She establishes a nesting site in a cavity in wood, then rears her first brood of workers by feeding them salivary secretions. The workers, which are reared first, assume the task of gathering food with which to feed the

younger larvae. As the food supply becomes more constant, the colony population grows very rapidly. A colony does not reach maturity and become capable of producing young queens and males until it contains 2,000 or more workers. It may take a colony three to six years or more to reach this stage.

Plants

The rock scree offers a great opportunity to view plants that are adapted to this unique environment. The fern pictured on the left is a lace lipfern (*Cheilanthes gracillima).* It is interesting that this plant will dry out and curl up during the hot part of the summer, then rehydrate in the fall when the rains begin to fall again.

Pictured on the right below is Sierra stonecrop (*Sedum obtusatum*). Hummingbirds, bees, butterflies and other insects collect nectar from the flowers of this plant. Also, some forms of wildlife browse the plant for moisture. Stonecrop is a succulent, which is a word that describes plants that store water in their enlarged fleshy leaves, stems, or roots. Although all plants store water, succulent plants are especially adapted and use their hollow bodies to store water for long periods. In the case of stonecrop, water is stored in the leaves, allowing them to survive in arid environments like this rock scree.

Stonecrop also has another feature many succulents share. A waxy coating on their stems and leaves helps many succulents retain moisture by reducing evaporation. Having a large internal volume for storage but minimum surface area is also important to prevent water loss.

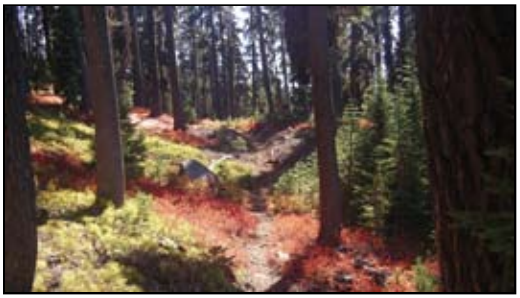
There are succulents in many families of plants throughout the world. For some families, though, most members are succulents. Can you think of such a family? If you thought of the cactus family, you were correct.

Lace lipfern

Sierra stonecrop

Sevenmile Creek
12

Sky Lakes Wilderness - Mixed Conifer Forest



Difficulty: Moderate
Traffic: Heavy
Length: 10.5 miles round trip
Lowest Elevation: 5,400 feet
Highest Elevation: 6,250 feet
Managed By: USFS
USGS Map: Devils Peak
Group Limit: No more than 8 people and 12 animals

"Everything in nature contains all the power of nature. Everything is made of one hidden stuff."

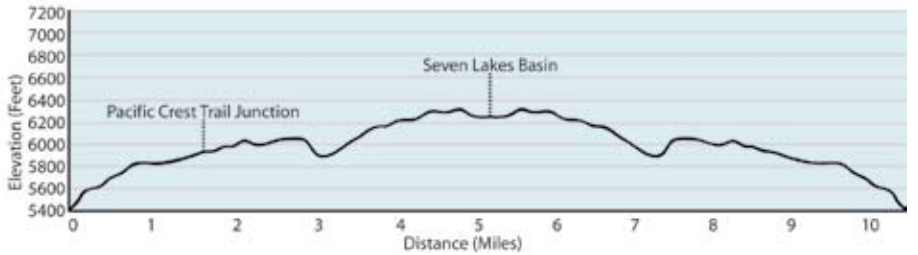
Ralph Waldo Emerson

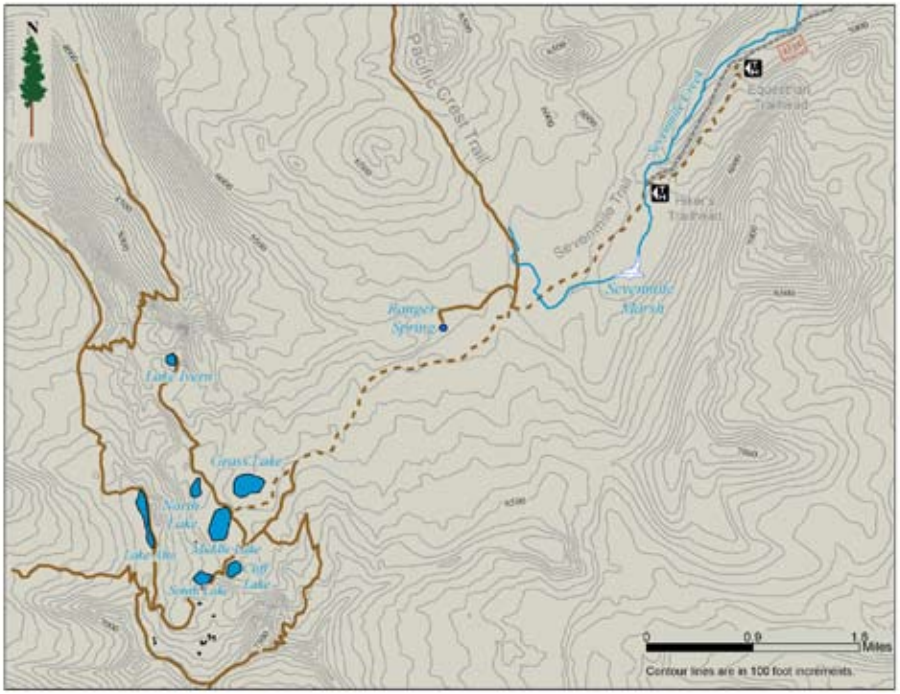
Access

From Klamath Falls, travel west on Hwy 140 to its junction with Westside Road (County Road 531). The junction (.5 miles past milepost 45) is about 28 miles from downtown Klamath Falls, near Rocky Point. Travel approximately 17 miles to Forest Road 3300 and go straight (north) for about 2.5 miles, where the road becomes Forest Road 3334. Travel about 5.5 miles up the road to its end, where you will find the trailhead for hikers. There is a separate trailhead for horse riders about 1.5 miles below the hikers trailhead.

Climate

Summer temperatures range from freezing to the upper 80s, but highs are usually 70-80 degrees and lows about 40-50 degrees. Watch out for the occasional thunderstorm, and be sure to carry repellent as mosquitoes are numerous until August. Snow blocks the trails from late October to June.





History

The trailheads are located not too far from Fort Klamath, a historic military outpost about a mile southeast of the current town of Fort Klamath. The outpost, established in 1863, was an important Army post during conflicts with the Klamath, Modoc, and Northern Paiute tribes. The area was chosen from three other locations because it had abundant water, ample grass to feed horses and mules, and an extensive pine forest to provide fuel and building materials. In all, the Fort consisted of more than 50 buildings, including a sawmill.

A Post Office was opened in 1879, and by the mid-1880s, the settlers no longer needed protection, and the decision was made in 1889 to close the Fort. On August 9, 1889, Company I, 14th Infantry lowered the garrison flag for the last time and marched off to Washington State.

A small detachment remained behind as the Interior Department had not yet assigned a caretaker. That final winter was the hardest experienced by both the troops and the settlers.

By February, over 20 feet of snow had fallen and the small detachment worked nonstop to save the buildings from collapsing under the crushing weight of the heavy winter snow. A number of buildings were destroyed despite the praiseworthy efforts of the men. Finally, on June 23, 1890 the men left Fort Klamath to the care of a custodian and proceeded to Vancouver Barracks to join their comrades. Fort Klamath was officially abandoned. If you have time, the drive to Fort Klamath is worthwhile to visit the museum in the guardhouse, which is the only structure left of the old Fort.

Trail and Forest

From the trailhead for hikers, the trail crosses Sevenmile Creek and climbs the gentle slopes along the northwestern edge of Sevenmile Marsh. The trail winds in and out of dry lodgepole forests and flowered meadows. Please practice minimum impact visitation, as the microenvironments along the meadows and streams are very fragile and sensitive to disturbance. Heavy horse use has left the trail dusty, so be ready for some dust.

After about 2 miles, turn left on the Pacific Crest Trail (toward Devils Peak) and notice the forest becomes dominated by Shasta red fir and mountain hemlock. At this point you may choose to take a right, travel 1/8 mile, then turn left onto an unmarked trail and hike to Ranger Spring, where the middle fork of the Rogue River gushes out of the ground. Otherwise, follow the Pacific Crest Trail southwest for about 3 miles to a fork in the trail. Take a right onto the Seven Lakes Trail to do a nice loop through the Seven Lakes Basin. Continue on the trail past Grass Lake and Middle Lake to the junction near Cliff Lake. Turn right for about 100 yards to find a spur to Cliff Lake, a visit well worth your while for its stunning vistas of Devils Peak. For those hikers who want to skip Cliff Lake, turn left at the junction to complete the loop and begin to head back to the trailhead.

Northern goshawk

Wildlife

Northern goshawks (*Accipiter gentilis*) live and hunt under the tree canopy in forests just like the one in which you are hiking. This area provides them with an excellent environment in which to nest and rear their young. Although hard to find, be careful if you ever have a chance encounter with a goshawk nest. Goshawks are very aggressive and known for "dive-bombing" people who get too close to their nest. Northern goshawks are tough birds with few enemies. The only time they are vulnerable is during nesting, when other large hawks, owls, or tree climbing bears may kill the young goshawks. The northern goshawk mainly hunts small to medium size mammals and birds including grouse, ground squirrels, tree squirrels, jays, songbirds and rabbits. Goshawks often hunt at forest edges from a hidden perch or patrol flights. Northern goshawks build a large nest of sticks and twigs. Within their territory, a breeding pair may build multiple nests throughout their lifetime. Although the goshawks will maintain up to ten nests, they only defend one each year. The remaining nests are often 'borrowed' by owls, squirrels and hawks.

Plants

One of the most prevalent understory plants along the trail is grouse huckleberry (*Vaccinium scoparium*). This tiny plant produces fruits that can be eaten either raw or cooked. The fruits are juicy and very tasty, but unfortunately they are tiny and it takes an effort to pick enough for a meal. The fruits are used in pies, jellies, jams, breads, and muffins. Some people use the dried fruits to flavor other foods and the dried leaves to make a tea. The branches were also known to make good brooms in the early days.

Grouse huckleberry plant

Grouse huckleberry fruit

Stuart Falls
13

Crater Lake National Park - Mixed Conifer Forest

Difficulty: Moderate
Traffic: Heavy
Length: 11 miles round trip
Lowest Elevation: 5,600 feet
Highest Elevation: 6,250 feet
Managed By: USFS
USGS Map: Union Peak
Group Limit: No more than 8 people and 12 animals

"Those who dwell, as scientists or laymen, among the beauties and mysteries of the earth are never alone or weary of life."

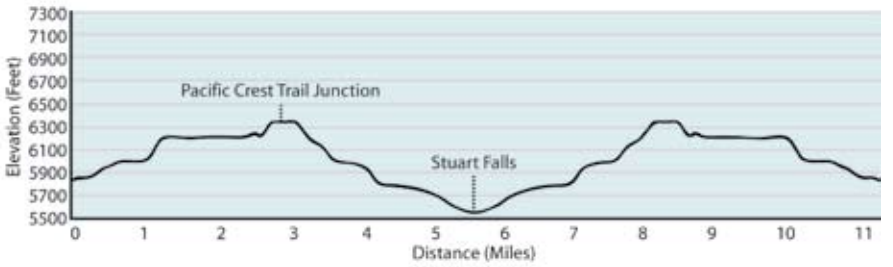
Rachel Carson

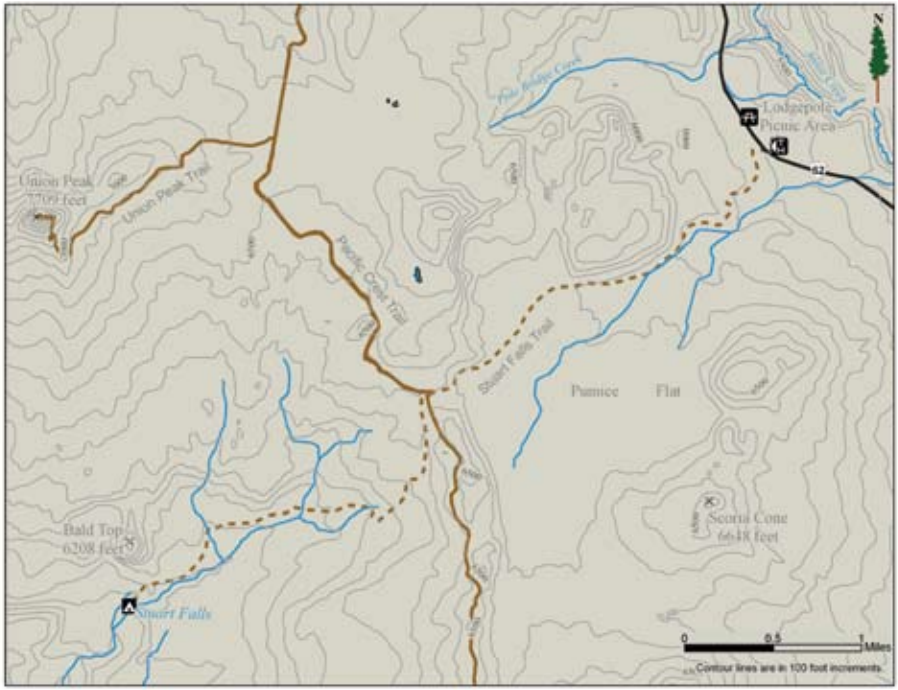
Access

From Klamath Falls, travel north on Highway 97 for about 20 miles. Get on Route 62 for about 30 miles towards Crater Lake National Park. About 2.5 miles before you reach the entrance to Crater Lake (13 miles from Fort Klamath), look for the lodgepole picnic area on the right side of the highway. This is the spot where you will be parking. To reach the trailhead you will have to cross the highway and head down the road (about 300 feet) and look for the trailhead to Pumice Flats. Please be careful when crossing the road.

Climate

Summer temperatures range from freezing to the upper 80s, but highs are usually 70-80 degrees and lows about 40-50 degrees. Watch out for the occasional thunderstorm, and be sure to carry repellent as mosquitoes are numerous until August. Snow blocks the trails from late October to June.





History

Although Stuart Falls is located in the Sky Lakes Wilderness Area managed by the U.S. Forest Service, most of this trail winds through Crater Lake National Park. Today, the park is managed by the National Park Service for the enjoyment of all. The Klamath tribe kept the location of Crater Lake secret, keeping it undiscovered by white explorers until 1853. That year, on June 12, three gold prospectors, John Wesley Hillman, Henry Klippel, and Isaac Skeeters, came upon a long, sloping mountain. Upon reaching its highest point, a huge, awe-inspiring lake was visible. "This is the bluest lake we've ever seen," they reported, and named it Deep Blue Lake. But gold was more on the minds of settlers at the time and the discovery was soon forgotten.

Geology

The trail to Stuart Falls crosses a unique area, geologically speaking. Before its junction with the Pacific Crest Trail, the trail crosses over the northern part of Pumice Flat. The pumice that makes up the flat is a very light, porous rock that formed during the volcanic eruption of Mount Mazama more than 6,000 years ago. During the explosive eruption, volcanic gases that were dissolved in the liquid portion of magma expande rapidly to create a foam. In the case of pumice, the foam quickly solidifies around the bubbles, giving it the look

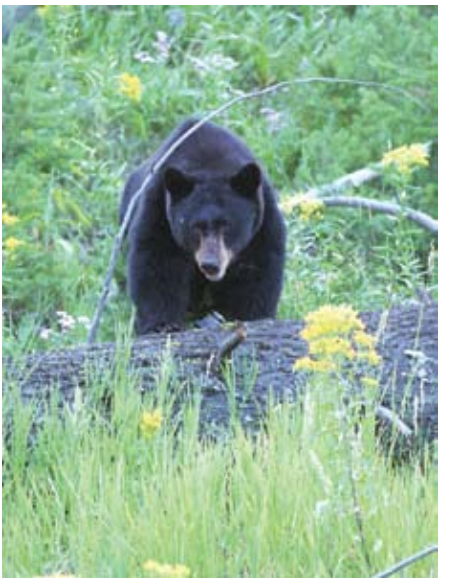
of hardened foam. Because pumice has all those holes and gas pockets it is very light and can actually float in water!

Trail and Forest

Stuart Falls is really outside the Park's boundaries, but the trailhead and most of the trail is within the boundary. The trail begins on the Pumice Flat trailhead winding through a forest of mountain hemlock and lodgepole pine with no brushy understory. Look for the occasional western white pine and Shasta red fir, as this is a good place to view different species of trees because the area is very open. The trail will cross the northern portion of Pumice Flat, which is a unique area dominated by lodgepole pine. This is because pumice soils do not hold water and lodgepole is a species that has adapted to this unique environment. Past Pumice Flat you will reach the Pacific Crest Trail, where you will follow signs to Stuart Falls (do not get on the PCT). At this point mountain hemlock, Shasta red fir and subalpine fir become more prevalent in the landscape. Another 2.5 miles descending down the trail and you will reach beautiful Stuart Falls. Return on the same trail to reach the trailhead.

Wildlife

Although you probably will not run into one, black bears (*Ursus americanus*) roam the area. Black bears are generally shy and reclusive animals. They avoid human contact and are not normally aggressive towards people. This area provides them with various berries, fruits, and insects during the summertime. In fall and early winter, they begin to build up fat reserves for the winter.



Black bear

Black bears are not classified as true hibernators, but their body temperature is lowered and heart rate slowed during winter denning. Denning enables bears to overcome unfavorable weather conditions and lack of food during winter. Denning bears do not eat, drink, urinate or defecate. However, they will usually wake up if disturbed during their winter dormancy. Bears commonly den under fallen trees or in brush piles, but varied sites are used, including rocky ledges. Most dens are lined with leaves, grass, lichens, ferns or rotted wood. Grasses, green leaves, and other plants are eaten by black bears in the spring after they emerge from their winter dens.

Plants

One of the most prevalent understory plants along the trail is pinemat manzanita *(Arctostaphylos nevadensis)*. The word manzanita is the Spanish diminutive of manzana (apple). A literal translation would be little apple, and it is called this because its small fruits resemble little apples. Pinemat refers to the growth habit of the plant and its association with pine trees.

The plant is also sometimes nicknamed "mountain driftwood". There is a reason for this. The dead wood of the plant decays slowly and can last for many years, on and off of the plant. It bleaches under sunlight to light grey or white tones and smooth surfaces, often times looking like animal bones. It is often found in unusual shapes, which, added to its gray appearance makes it resemble driftwood.




Pinemat manzanita

Collier Memorial State Park - Ponderosa Pine Forest

Difficulty: Easy
Traffic: Moderate
Length: 1.5 miles out and back
Lowest Elevation: 4,200 feet
Highest Elevation: 4,200 feet
Managed By: State of Oregon
USGS Map: Fort Klamath

"*Our lives…need the relief of where the pine flourishes and the jay still screams.*"

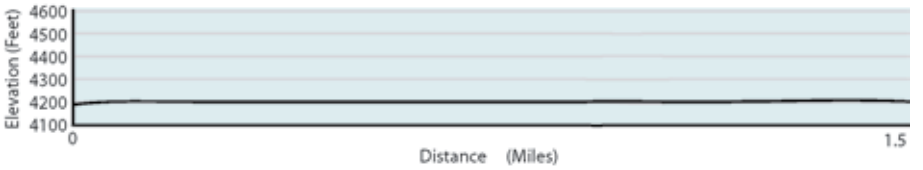
Henry David Thoreau

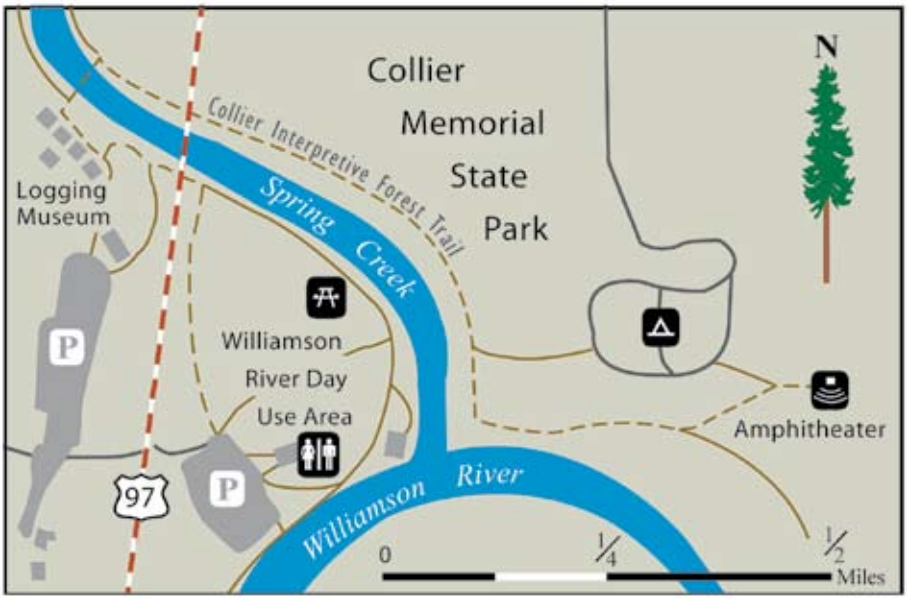
Access

From Klamath Falls, travel north on Highway 97 for about 30 miles to the Collier Memorial State Park. There will be signs for the park and logging museum about four miles north of the town of Chiloquin. Park on the east side of the highway to enjoy the forest trail or on the west side for the logging museum. The trail is accessible from both parking lots.

Climate

The park is open year-round for self-guided tours. However, the campground is closed November through mid-April due to snow. Summers are mostly warm and sunny, although the occasional thunderstorm might roll in. Summer temperatures range between 70 and 100 degrees, but are most typically between 80 and 90. Nighttime temperatures range between 40 and 65 degrees.





History

In 1945, Andrew and Alfred "Cap" Collier of Klamath Falls donated 146 acres of this park as a memorial to their parents, Charles Morse Collier and Janet McCornack Collier. It was their way of giving something back, an opportunity to teach the community about logging history. It also gave them the chance to teach people about the forest and how to care for, nurture, manage and then harvest it in an environmentally friendly manner. At the beginning of the trail, be sure you read about the brave explorers that came to the Williamson River area in 1855.

Logging Museum

Don't miss out on the impressive machinery at the logging museum, which is one of the best museums to see this type of equipment up close. The Collier State Park Logging Museum is recognized as having one of the largest collections of this type of equipment in the country. The logging museum began in 1947 when the Collier brothers donated a collection of antique logging equipment, some of which is quite rare. They wanted to show how logging equipment had evolved from the use of oxen and felling axes to modern diesel tractors and trucks. Also spotlighted is the vital role the railroad played in the timber industry. The outdoor exhibits are open year-round, daylight to dusk. The gift shop and information center are open during the summer.

Klamath large scale sucker

Fallen logs create fish habitat

Cap Collier died in 1988, and left behind a legacy of hard work and persistent effort. He worked very passionately to assemble a complete collection of logging equipment in hopes of making the museum one of the finest logging museums in existence. When he died, his ashes were spread over the park that he loved so much.

Trail and Forest

The trail starts off in an open, park-like stand of ponderosa pine and lodgepole pine. From the east parking lot, follow the trail north and under the highway, making sure you try to spot the redband trout in the transparent waters of Spring Creek. Cross the creek on the footbridge and turn right. After passing under the highway again, continue until you arrive at a humongous ponderosa pine. Named for its ponderous size, it is the most common species in this forest. Forest trees provide food and habitat for both land and water species. If you have a good eye, you should be able to look upstream and spot the dead ponderosa pine in the water. How could the fish benefit from a dead tree in the stream?

The trail splits here, so be sure to stay on the right. The trail will follow Spring Creek to its confluence with the Williamson River. At this point the scenery changes a bit and you will be walking along a riparian area. Here is a nice chance to take a good look at the differences in the plants and trees of the riparian area compared to those of the upland ponderosa pine forest. The trail will continue for a short length to the camping area and to an amphitheater. Follow the same trail you have been on to return to the parking area.

Fish and Wildlife

Crystal-clear Spring Creek flows into the Williamson River inside the park boundary, so visitors to the park are able to fish both streams. The Williamson River is well known for its quality trout fishery and never fails to make a fisherman happy. Klamath largescale suckers (*Catostomus snyderi*) live in the

Williamson River, but they don't make it as far north as Collier Park. They spend their summers in the lower Williamson near Upper Klamath Lake, heading upstream to spawn between February and May. They seem to prefer conditions in the Sprague River, so the majority head up the Sprague and never make it near the park. You will find, though, redband trout (*Oncorhynchus mykiss*) that can get incredibly large. These trout live in Upper Klamath Lake most of the time and head upstream to spawn in the fall. The last of the redband trout to leave the lake do so in late February.

It is not uncommon to see bald eagles high atop the trees in the park. Also, be on the lookout for beaver who call the park their home. Look around the riparian area for some of the chips left by the beavers after chewing on a tree. You should also be able to see beaver trails that have been caused by flattening grass as the beavers move between the tree and their den. Native Americans called the beaver the "sacred center" of the land because this species creates rich habitats for other mammals, fish, frogs, birds and ducks. Beavers dam streams in shallow valleys, creating wetlands that are essential for the survival of many threatened and endangered species in the area.

Plants

One of the most visible shrubs along the trail is big sagebrush (*Artemisia tridentata*). Its silvery-gray and pungent aroma make it one of the most distinctive plants in Klamath County. Native Americans from the surrounding area used sagebrush for just about everything woven that required plant materials. Some tribes continue to collect sagebrush for medicinal and ceremonial purposes, boiling it into a tea for coughs, colds, stomachaches, fever and pain during childbirth.

One of sagebrush's adaptations to living in the desert is that it grows larger leaves in the spring to make more food when moisture is more readily available. Then, as the soil dries out, the large leaves are replaced by small leaves to reduce water loss through evaporation. Smaller leaves have less surface area to lose moisture and are a common characteristic of desert plants.

Big sagebrush

Union Peak
15

Crater Lake National Park - Whitebark-Lodgepole Pine Forest

Difficulty: Difficult
Traffic: Light
Length: 10 miles round trip
Lowest Elevation: 6,200 feet
Highest Elevation: 7,709 feet
Managed By: National Park Service
USGS Map: Union Peak

"I then and there had the impression that in some way, I didn't know how, the lake ought to become a National Park."

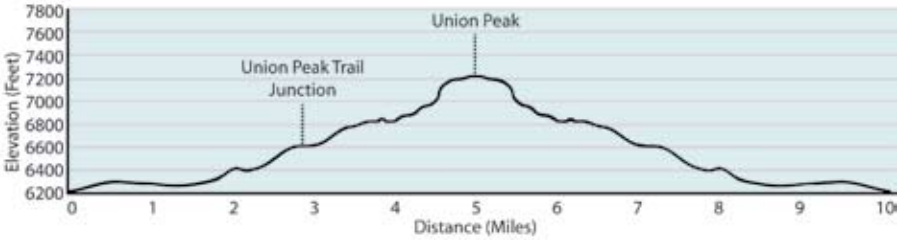
William Gladstone Steel

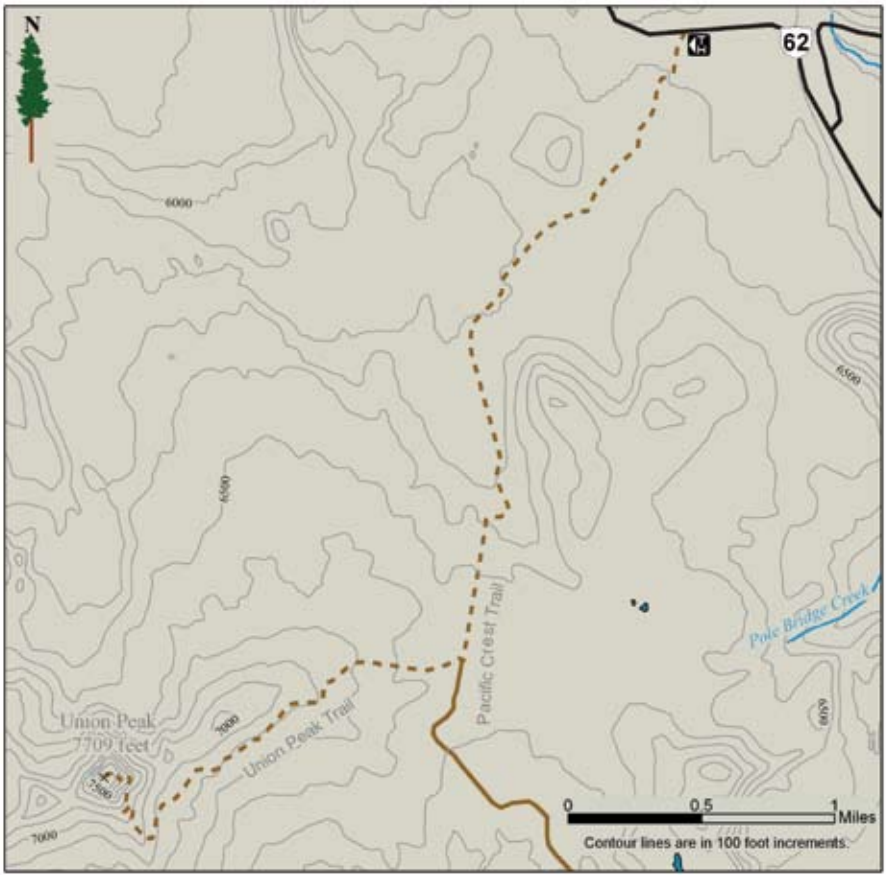
Access

From Klamath Falls, travel north on Hwy 97 for about 20 miles. Get on Route 62 for about 30 miles towards Crater Lake National Park. Travel about one mile past the turnoff to the south entrance station. The trailhead is located on the south (left) side of the highway.

Climate

The best time to visit is in late summer and early fall, as snowfields may remain into July. Summers are dry, with an average daytime high temperature in the 70s. Temperatures cool off rapidly in the evening, with a typical low around 40 degrees, while some nights dip below freezing. Summer thunderstorms occur from June through mid-September, bringing dramatic displays of lightning and high winds. October usually presents cool but sunny days and brings the start of winter snowfall by mid-month.





History

Near this trail is Crater Lake, the deepest lake in the United States. It was Captain Clarence Dutton, who commanded a U.S. Geological Survey party, that made the unique discovery. The party, in an amazing feat, carried the Cleetwood (a half-ton survey boat) up the steep slopes of the mountain and then lowered it to Crater Lake. Once out on the lake, the crew dropped a piece of pipe tied to a spool of piano wire in order to record the depth of the lake. They repeated the procedure at 168 different points throughout the lake in hopes of finding the deepest point. The crew found the deepest point at 1,996 feet, very close to the official depth of 1,932 feet that was recorded using sonar technology.

Geology

Union Peak is a volcano that is probably less than one million years in age. In the late stages of its eruption, a plug of hard lava filled its throat. When glaciers eroded away the looser ash and broken lavas from its summit, the hard plug resisted erosion and became the prominent peak you see today.

Trail and Forest

This trail is accessible from several trailheads, but we recommend the trailhead mentioned in this book as you will avoid a fee at the entrance to Crater Lake. You will begin hiking on the Pacific Crest Trail. The trail is relatively flat the first couple miles, winding through a lodgepole pine forest with very little understory. Shrubs are lacking in the area, but be on the lookout for interesting wildflowers. A small distance into the hike you will begin to encounter mountain hemlock and the occasional Shasta red fir. Three miles into the hike you will arrive at the Union Peak Trail. Follow the signs to Union Peak, veering right onto the trail.

Be careful on the last leg of the trail

The trail continues to meander through the forest until you arrive at a saddle with a view of the peak and a magnificent view of the Park to the north. Once you get within view of Union Peak, whitebark pine will begin to appear in the landscape. Be prepared, you are only half a mile from the top but you will have to climb about 700 feet. The trail begins to ascend through a boulder field and begins to climb steeply on switchbacks. Be careful of falling rocks when climbing up the switchbacks; do not take shortcuts. At the top, enjoy the views of Mount McLoughlin, Upper Klamath Lake with its wetlands, and the lush Wood River Valley.

Wildlife

The American pika *(Ochotona princeps)* is a small, industrious mammal that lives in high elevation areas. Pikas typically inhabit the slopes and rock piles near timberlines, so be on the lookout as you climb the last section of the trail.

American pika

Pikas do not hibernate, so they rely on collected hay for warm bedding and food during the winter. Pikas spend the summer months busily gathering fresh grasses and leaves and laying them in stacks to dry. Once the grasses dry out, the pikas take the dry hay back to their burrows for storage. The dried plants are then stored for use as a food source during the long high-altitude winters.

Pikas are very alert and have excellent hearing and vision, which help protect them from predators like coyotes and hawks that roam the area. They also emit a sharp, high-pitched whistle to alert other nearby pikas when predators are detected. Pikas usually live for about four to seven years.

Plants

Reaching the top of Union Peak is well worth your while, if not for the views, to check out the bush that calls the top of the peak home. It is a golden chinquapin shrub (*Chrysolepis chrysophylla*). This shrub can grow as a tree but most commonly grows as a shrub in Klamath County. At the top of Union Peak it exhibits a low shrubby growth form. When their growth is not restricted, chinquapins provide very strong wood. During settlement times, chinquapin was used locally to make agricultural tools and other items requiring a strong hardwood. The nuts are eaten by numerous small mammals, including the golden-mantled ground squirrels you see around the Park.

Giant chinquapin produces a distinctive, spine-covered bur which encloses from one to three sweet-tasting nuts (also called porcupine eggs). Historically, giant chinquapin nuts were roasted and eaten by indigenous people in the area. The nuts are similar in taste and appearance to filberts or hazelnuts.

Golden chinquapin

Mount Scott
16

Crater Lake National Park - Whitebark/Lodgepole Pine Forest

Difficulty: Moderate
Traffic: Moderate
Length: 5 miles round trip
Lowest Elevation: 7,650 feet
Highest Elevation: 8,929 feet
Managed By: National Park Service
USGS Maps: Crater Lake East

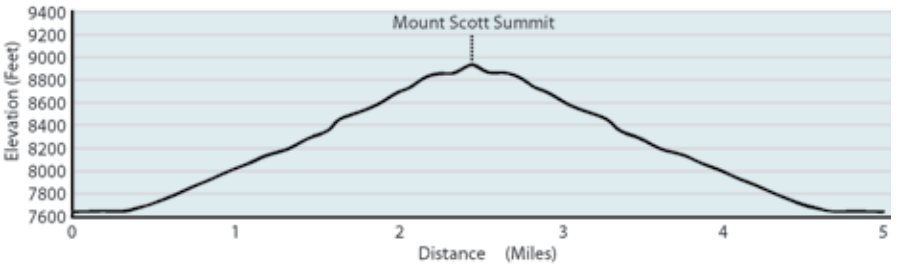
"*The greatest wonder is that we can see these trees and not wonder more.*"
Ralph Waldo Emerson

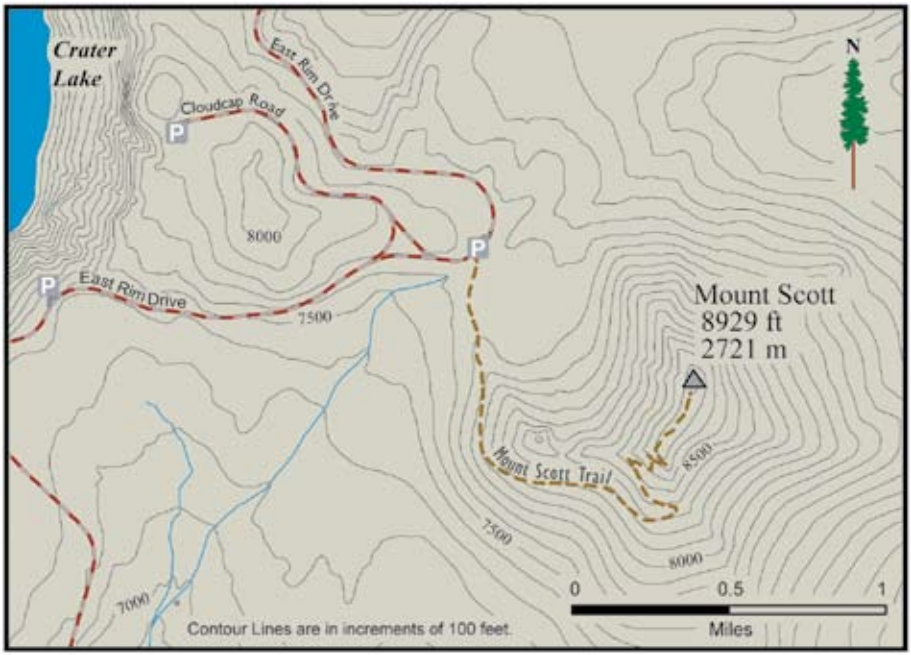
Access

From Klamath Falls, travel north on Route 97 for about 20 miles. Get on Route 62 for about 30 miles to the Crater Lake National Park entrance. Enter the park and follow the signs to Rim Drive. Turn right on Rim Drive and follow it for about 11 miles until you see a sign for the trailhead and a parking lot. Note that Rim Drive is only open for a short summer period from July to mid-October due to snow.

Climate

The best time to visit is in late summer and early fall, as snowfields may remain into August. Summers are dry, with an average daytime high temperature in the 70s. Temperatures cool off rapidly in the evening, with a typical low around 40, while some nights it dips below freezing. Summer thunderstorms occur from June through mid-September, bringing dramatic displays of lightning and high winds. October usually presents cool but sunny days and brings the start of winter snowfall by mid-month.



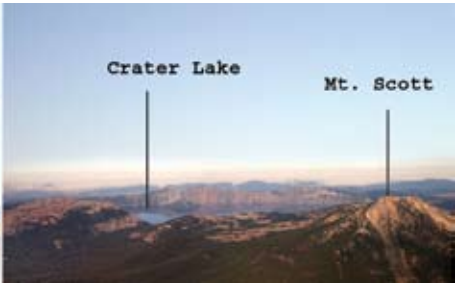


History

The mountain is named to honor Levi Scott, a pioneer in the 1840's who helped blaze a safer route into the Oregon Territory (Applegate Trail) by avoiding the rapids of the Columbia River.

Geology

Mount Scott is one of the first of several volcanic cones that erupted to form Mount Mazama. At nearly 9,000 feet, Mount Scott is the 10th tallest peak in Oregon and the tallest in Crater Lake National Park. However, nearly 7,000 years ago, Mount Scott was humbled by Mount Mazama, which stood approximately 12,000 feet tall before it had its eruption and collapse to form Crater Lake. Mount Scott was far enough from the eruption to be spared, but it was pummelled by rivers of hot pumice and scoria from the peak of Mount Mazama. See the picture on the next page for a re-creation of what Mount Mazama may have looked like before its climactic eruption, and what the area looks like today. Several areas of the trail are covered by light pumice rock, providing evidence of this violent volcanic past. The steep-walled basin on the side of Mount Scott facing the trail is not the result of Mount Mazama's eruption, it is a large cirque carved by glaciers thousands of years ago.



Trail and Forest

The trail stays level for about half a mile as it crosses a glacially carved depression known as a cirque. There is little understory, with mountain hemlock, lodgepole pine, whitebark pine, and the occasional Shasta red fir. As the trail leaves the cirque it skirts the mountain onto the gentler southern slope and begins to ascend into a denser forest dominated by droopy-tipped mountain hemlock. Lodgepole pines grow interspersed with whitebark pines, and both can be easily confused. An easy way to distinguish them is to look at the number of needles they have in each bundle. Lodgepole pines have two needles per bundle, while whitebark pines have five.

As the trail ascends into a series of switchbacks, the forest becomes sparser, and the trees become stunted due to the severe weather conditions they must endure. As you reach the top of the ridge, whitebark pine becomes the dominant conifer. From the ridge you can view Crater Lake and Wizard Island, as well as several surrounding mountains including Mt. Thielsen, Mt. McLoughlin, Mt. Shasta, Three Sisters, and Pelican Butte. The tower you see is maintained for emergency use and is the highest elevation fire lookout in Oregon.

Plants

The understory vegetation on the trail is sparse, with a few scattered plants such as rock penstemon (*Penstemon rupicola*), pictured to the right. Rock penstemon blooms in the summer.


Rock penstemon


Panoramic view of Crater Lake from Mount Scott ridge (continued on next page)

Mount Scott is a great spot to view whitebark pines, several very large trees can be found along the trail. Whitebark pines in the park are threatened by an introduced fungus that causes white pine blister rust. The trees in the Mount Scott area have not been affected by this fatal disease, most likely due to the absence of an alternate host. In the case of blister rust, gooseberries would have to be present for the fungus to complete its life cycle and be able to reproduce.

Large whitebark pine

Wildlife

The cones of whitebark pine do not naturally drop to the ground. They remain on the tree and are picked apart by a bird with which they share an intimate association: the Clark's nutcracker (*Nucifraga columbiana*). These birds break apart the cones in the fall to collect the large, protein- and fat-rich seeds held within. The seeds are then carried by the birds to several caches where they are stored for winter and spring. Since not all seeds get eaten, several end up germinating in these caches. For this reason it is not uncommon to find several trees growing in a crowded clump.

Clark's nutcracker

Whitebark pine clump

Panoramic view of summit with lookout from Mount Scott ridge

Sphagnum Bog
17

Crater Lake National Park - Mixed Conifer Forest

Difficulty: Easy
Traffic: Light
Length: 4.5 miles Round-trip .
Lowest Elevation: 5,368 feet
Highest Elevation: 5,722 feet
Managed By: National Park Service
USGS Maps: Hamaker Butte and Pumice Desert West

"Kill nothing but time, take nothing but pictures, leave nothing but footprints"

—

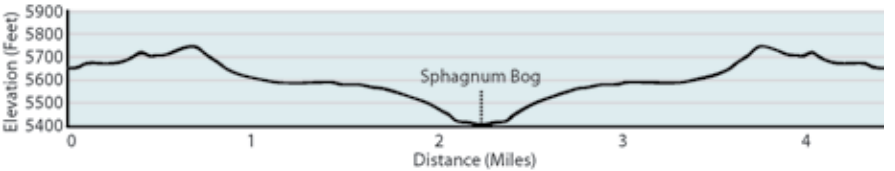
Anonymous

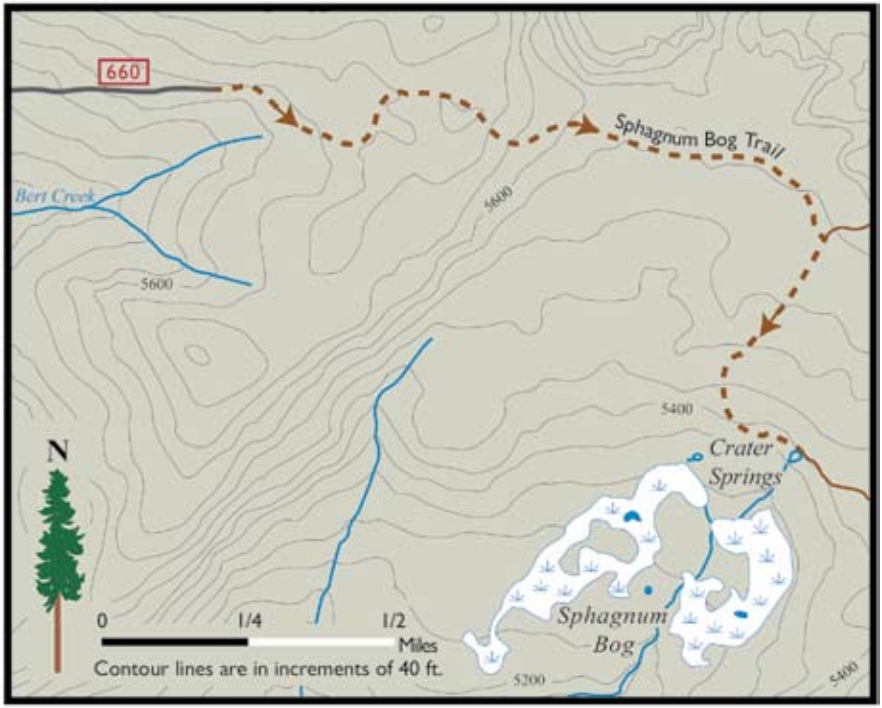
Access

Sphagnum Bog is located in Crater Lake National Park but the easiest access is from the Rogue River National Forest. From Klamath Falls, travel north on Highway 97 for about 20 miles. Head north on Highway 62, then head north on Highway 230, and turn east at the sign for National Creek Falls. Head east on Forest Road 6536, then continue on Road 660 until it ends at a small parking area. There are two trails by the parking lot. Take the wider one with the gate east of the parking lot. Camping is not allowed within 0.5 miles of Sphagnum Bog. Horses are allowed until the first spring on the trail but not down to the bog. Bicycles and pets are not allowed on any park trails.

Climate

The best time to visit the bog is between July and mid-September, when the temperature is usually warm with little rainfall. However, the weather may





change quickly so it is a good idea to carry a jacket. Getting to the bog requires crossing Crater Creek, so rubber boots or other wettable footwear is recommended. Because of the abundance of water the bog harbors many insects, so be sure to bring insect repellent.

Trail and Forest

The forest down to the bog is comprised mainly of mountain hemlock, Shasta red fir, lodgepole pine, and western white pine. The Crater Lake National Park Boundary is a quarter mile from the beginning of the trail and the trail intersects with Bald Crater Loop Trail a mile and a half from the trailhead. Follow the sign south to Sphagnum Bog, which is 1.7 miles away. The trail will bring you to two large springs on each side of the trail. These are the headwaters of Crater Creek. Once you get to the bottom of the hill and the terrain evens out, cross the creek to reach the bog. The bog is a broad, open field covered with seeps and puddles and a vegetation of brown mosses, low shrubs, grasses and sedges, and other plants adapted to live in this unique moist environment. Sphagnum moss forms a deep carpet of vegetation over some wet areas of the bog. Please do not walk on these areas. Be very careful not to trample this delicate ecosystem. Areas with fragile vegetation can still be enjoyed if you

are careful and avoid trampling by staying on the forested or shrubby areas surrounding the bog.

History

William Gladstone Steel devoted his life and fortune to the establishment and management of Crater Lake National Park. It was given national park status on May 22, 1902 by President Theodore Roosevelt.

Fish and Wildlife

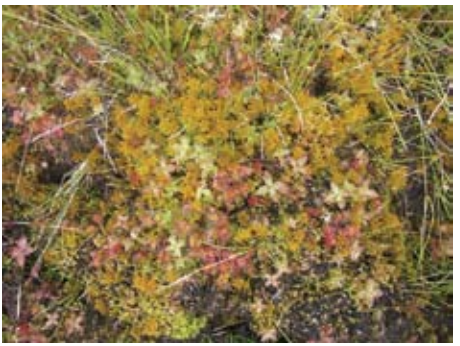
Elk live in Crater Lake National Park during the summer and often come down to the bog to wallow in its deep soft mud. It is easy to spot footprints, droppings and the mud holes left by wallowing elk.

Geology

Sphagnum Bog was created over pumice deposited by the eruptions of Mount Mazama that formed Crater Lake. Bogs generally form in areas where moisture accumulates such as small basins or areas with poor drainage.

Plants

Sphagnum Bog is classified as a montane mire, which is a wetland that has at least some vegetation that is normally peat forming. Peat is an accumulation of partially decayed vegetable matter, usually sphagnum moss. Sphagnum moss acidifies its surroundings as it grows continously from the tip and the bottom part dies back. Because the environment is waterlogged and acidic, decomposition is very slow and the dead peat accumulates over the years. In the case of Sphagnum Bog, the peat is an average of six feet deep. The slow rate of decomposition in the bog also means that few nutrients become available for plants to use. Plants found growing in Sphagnum Bog are adapted to




Cushions of sphagnum moss and associated vegetation

this wet environment of high acidity and low nutrient availability. A few of the plants at Sphagnum Bog have a unique way of coping with the lack of nutrients: they devour insects and other small animals to supplement their diets.

Growing above tufts of bright green sphagnum moss one can find two species of sundews: the round-leaved sundew (*Drosera rotundifolia*) and the long leaved sundew (*Drosera anglica*). The leaves of sundews contain numerous sticky reddish hairs that attract, trap and digest any insects or small creatures that may land on them. When an insect lands on a leaf, the hairs and leaves slowly bend in towards the animal, reducing its chances of escape. After the insect dies, the hairs of the sundew release a digestive juice that liquefies the insect's soft parts so the nutrients can be absorbed by the plant.

Another very different insectivorous plant occurring in the bog is the mountain bladderwort (*Utricularia intermedia*). It grows mainly in the water and produces showy, yellow, pea-like flowers. It is called a bladderwort because it creates specialized bladders on its stem that trap small crustaceans and aquatic insects. The bladders have a double-sealed, airtight door on one end. When the door is closed, the bladder expels water through its walls, creating a partial vacuum inside. Near the door is a trigger that immediately opens the door when an unsuspecting prey touches it. Since the inside of the bladder is a vacuum, as soon as the door opens water rushes in along with the victim.

Round-leaved sundew

Long-leaved sundew

Mountain bladderwort

Bladderwort traps

Boundary Springs
18

Crater Lake National Park - Mixed Conifer Forest

Difficulty: Easy
Traffic: Light
Length: 5 miles round trip
Lowest Elevation: 5,050 feet
Highest Elevation: 5,250 feet
Managed By: National Park Service
USGS Maps: Pumice Desert West

"*The day I see a leaf is a marvel of a day.*"

—

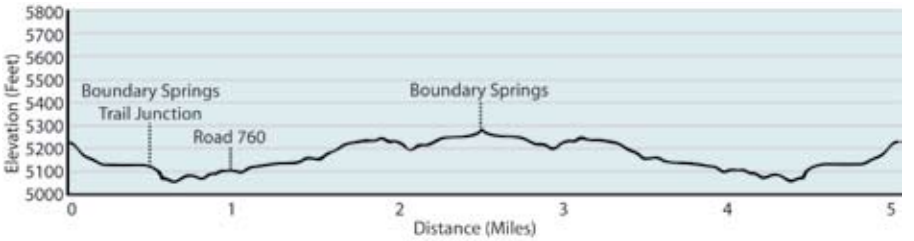
Kenneth Patton

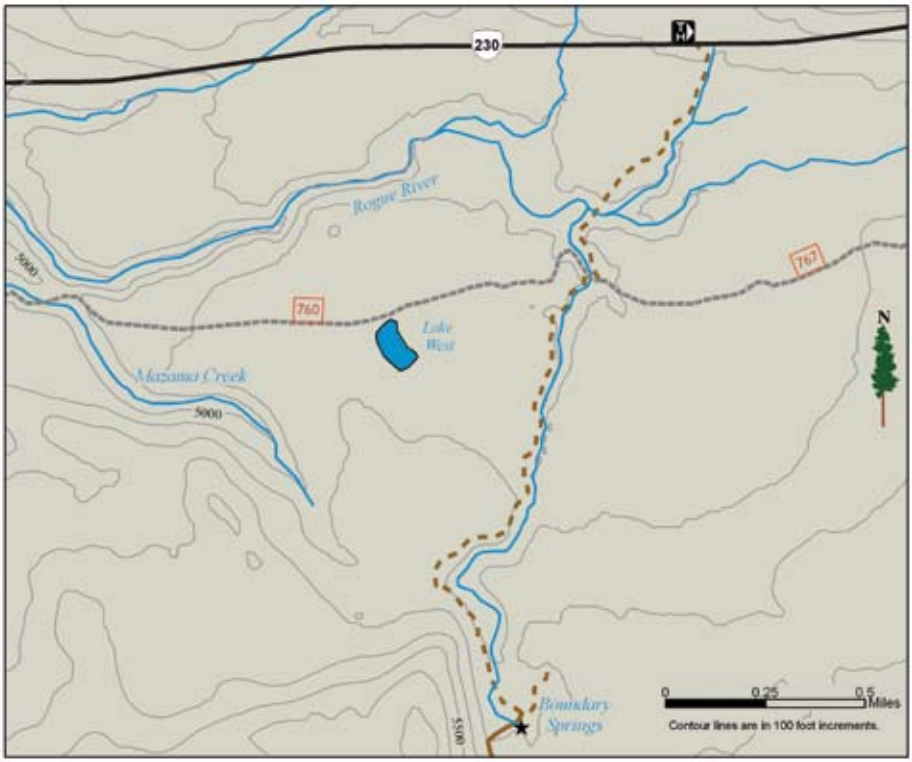
Access

From Klamath Falls, travel north on Route 97 for about 63 miles to Highway 138. Stay on 138 for about 18 miles until you reach Highway 230. Turn left on Hwy 230 for about 5.5 miles until you see the Crater Rim Viewpoint on your right (south side of highway). The trail begins at the viewpoint. Make sure you look at the interpretive sign focusing on Mt. Mazama. The trailhead and most of the trail are located outside Crater Lake National Park, but the springs are in the Park. The rules posted above are Park rules.

Climate

Snow may block parts of the trail well into June, so a good time to hike the trail is early July. Summers are dry, with an average daytime high temperature in the 70s. Temperatures cool off rapidly in the evening, with a typical low around 40, while some nights it dips below freezing. Summer thunderstorms occur from June through mid-September, bringing dramatic displays of lightning and high winds. October usually presents cool but sunny days and brings the start of winter snowfall by mid-month.



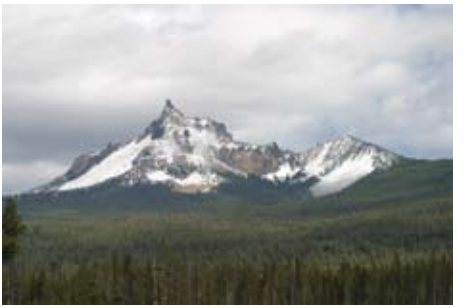


History

Visitors to Crater Lake National Park today owe many thanks to William Gladstone Steel, a man who devoted his life and fortune to the establishment and management of Crater Lake National Park. Beginning in 1870, Steel started working tirelessly to bring recognition to the Park. He participated in scientific studies and surveys of the lake, and named many of the lake's landmarks (Wizard Island, Llao Rock, and Skell Head) . Steel's dream and hard work finally paid off on May 22nd, 1902, when President Theodore Roosevelt signed the bill giving Crater Lake the status of a National Park status. Even after this historic achievement, Steel continued to work hard and was an influential force in the opening of Crater Lake Lodge in 1915 and Rim Drive in 1918.

Crater Lake National Park is now more than 100 years old. The celebration of one of our nation's oldest parks (5th oldest) is a testament to the courage and determination of William G. Steel and the countless others who have been involved in the preservation of this national treasure. In looking to the future appreciation and preservation of this Park, knowledge of its history and origins are imperative in keeping with the tradition of Crater Lake's unique past.

Geology

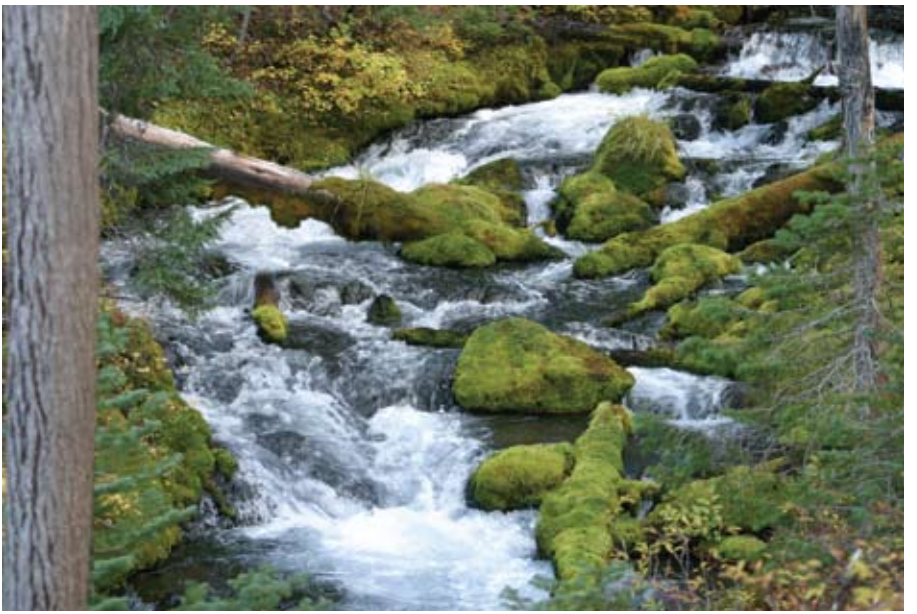


Mount Thielsen

Make sure you read the interpretive signs at the trailhead; it is a great opportunity to learn about the geology of the area. Mount Thielsen, also known as "the lightning rod of the Cascades", is located nearby. It is hit by lightning so often that some of its summit rocks have melted into a rare mineraloid called lechatelierite or fulgurite.

Trail and Forest

Start hiking on the Upper Rogue Trail 1034 from the trailhead at the Viewpoint. You will walk along a very open stand of lodgepole pine for about a half mile to the junction with the trail to Boundary Springs. Turn left. The trail will climb into and out of a ravine and eventually reach Road 760. Once you reach the road, turn right, cross the creek and look for the continuation of the trail on the left side of the road. From this point, the springs are about 1.5 miles away through a forest of Shasta red fir and mountain hemlock with some lodgepole pine. You will eventually reach a marshy area with snowberry, bog blueberry and huckleberry, all of which create a festival of color during the fall.



Rogue river

At the marsh, look for a sign that reads "Boundary Springs". There are three springs to see, and you can reach them through faint trails that cross the marshy area. Please be careful and stay on the trails in this ecologically sensitive area.

The springs are the headwaters of the Rogue River, and they are truly impressive. The water you see coming out of the ground here is just beginning its long journey to the Pacific Ocean. Legend has it that the springs are actually a hole in the bottom of Crater Lake. This is not true. The water in the springs comes from runoff and ground water on Crater Lake's outer slopes. To return to the trailhead, follow the same trail back.

Wildlife

Odds are you will see a gray jay (*Perisoreus canadensis*) during the hike, especially if you have food around you. They are bold about approaching people and will steal food from any campsite left unguarded. This has earned the gray jay the nickname of "camp robber". One interesting fact about these birds is that they will cache food throughout their territory in preparation for winter. They store the food by balling it up using their sticky saliva to "glue" the items and then hiding their items amongst pine needles, crevices in tree bark, and other storage locations.

Gray Jay

Plants

Look for a very small plant along the first stretch of the trail. If you are lucky it will be flowering while you visit the trail (usually flowers in August). Dwarf Lupine *(Lupinus lepidus)*, was a prominent survivor and among the first colonizers following the 1980 eruption of Mount St. Helens.

Dwarf lupine

Open Forest Trail
19

Winema National Forest - Ponderosa Pine Forest

Difficulty: Easy

Traffic: Low

Length: 0.5 mile loop

Lowest Elevation: 4,890 feet

Highest Elevation: 4,890 feet

Ownership: USFS

USGS Maps: Welch Butte

"In the yellow pine region.... the forest floor is often as clean as if it had been cleared, and one may ride or drive (in a covered wagon) without hindrance."

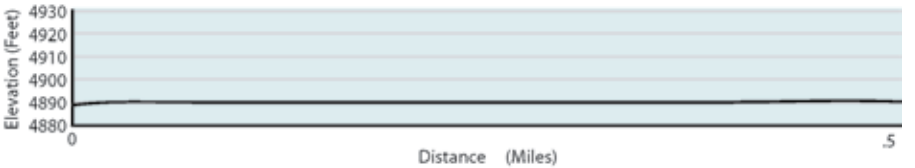
Survey Report 1800s.

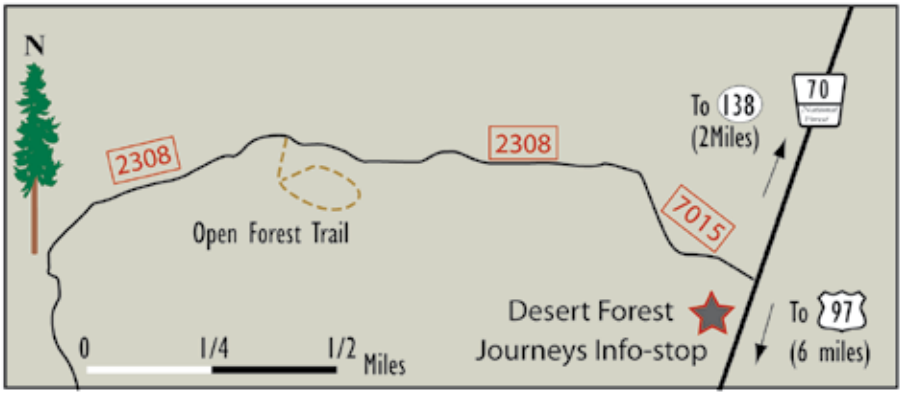
Access

From Klamath Falls, travel north on Hwy 97 for about 60 miles to the Diamond Lake Junction. Turn left onto Highway 138 and stay on it for a little over six miles until you reach Forest Service road 70. Turn left onto Road 70 (there will be a sign pointing to Desert Forest Journeys) and follow it for a little bit over 2 miles until you reach an information stop. Take time to read the interpretive signs and learn a little more about the trail and your surroundings. You can also pick up a map showing other trails around the area and even a "Ponderosa Postcards Drive". The trail we recommend is the Open Forest Trail.

Climate

The trails are open year-round for self-guided tours, but snow may be on the trails from October to June. Summers are mostly warm and sunny, although the occasional thunderstorm might roll in. Summer temperatures range between 70 and 100 degrees, but are most typically between 80 and 90. Nighttime temperatures range between 40 and 65 degrees.





History

Railroad logging operations occurred in this area during the first part of the 20th century, as evidenced by the array of artifacts scattered throughout the forest (please do not disturb them), most notably near the Ties Through Time Trail. The open, park-like stands with huge trees provided for easy maneuverability and made railroad logging the ideal solution for satisfying the country's demand for timber. Railroads could be built for minimal cost, so they were constructed to both deliver timber to the mill and connect the mill to the outside railroad world. This was particularly important in this area because it was secluded from the large population centers that needed the timber. Also, the common practice of floating logs would not work here because there is no nearby navigable waterway.

Trail and Forest

Desert Forest Journey's Open Forest Trail is a short and easy hike through an old-growth ponderosa pine forest. The trail offers a unique opportunity to learn about desert forest ecosystems and fire ecology. The desert ecosystem along the trail is very harsh, and the plants and critters that inhabit it have gradually adapted to the environment. The low precipitation that falls here, coupled with the fact that all moisture virtually drains through the porous pumice soils, are what make this place a desert forest. Desert plants have adapted to the dryness by having smaller leaves, growing compactly and close to the ground, and having a non-porous covering on their leaves such as wax. Also, hair on the leaves of plants helps to reduce the evaporation of moisture from the surface of leaves by reflecting sunlight and inhibiting air movement.

There is very apparent evidence of past forest fires along the trail, most notably on the bark of the giant ponderosa pines. Some of the fires that charred the trees were caused by lightning strikes, but some were intentionally set by the Forest Service. Fire crews burn certain parts of the forest as part of a prescribed burning program, the purpose being to reintroduce low intensity ground fires that have burned naturally for centuries. Before humans began suppressing fire, lightning fires would actually help the forest by thinning it. With fire suppression, an abundance of ladder fuels will now carry low intensity fire to the crowns of trees and turn it into a high intensity fire, killing many trees. So fire managers plan perscribed burns, being careful to consider the safety of the public and fire staff, weather, and the probability of meeting the objectives of the burn.

Geology

The pumice soils that cover the area, some up to 50 feet deep, are derived from the volcanic eruptions of prehistoric Mount Mazama and other smaller volcanic cones in the surrounding area. Can you imagine all this pumice erupting from Mount Mazama? The eruption occurred about 7,000 years ago.

Wildlife

This trail is frequented by antelope, elk, deer, rabbits, coyotes, badger, and porcupines. Prong-horned antelope (*Antilocapra americana*) are easily one of the fastest animals in Klamath County. They have been clocked at speeds up to 70 miles per hour, and they can easily cruise at 30 miles per hour for extended periods of time. This trait is very important in the open areas you see along the trail, as antelope need the speed to elude predators.

Male antelope, or bucks, have horns about a foot long, with prongs that curve at the tips. Mature females, or does, have horns as well. However, their horns are much smaller and average about two inches long. The fork in antelope horns is characteristic of antlers, not horns. This is what makes antelope

Long taproots of the ponderosas make them adapted to the droughty pumice soils.

unique. It's the only animal to have branched horns, which is how it gets the name prong-horned antelope. A horn consists of two parts. An interior of bone (an extension of the skull) is covered by an exterior sheath grown by specialized hair follicles, as are your fingernails. In fact, your fingernails and the exterior sheath of horns are made of very similar materials. Another unique aspect of antelope is that they shed their horn sheaths each year, and are the only horned animal to do so. Antlers, on the other hand, grow on members of the deer family and are an extension of the animal's skull. They shed and regrow each year.

Prong-horned antelope

Plants

The dominant understory plant is bitterbrush (*Purshia tridentata*), a plant that is used in restoration of depleted rangeland and burned areas. The leaves and twigs of bitterbrush are important browse for livestock and big game animals. A new crop of leaves develops in the spring and another in the fall. Those that develop in the fall are persistent throughout winter even though the plant is dormant in the winter. Wherever it occurs, bitterbrush is generally one of the key species on big game ranges. Antelope feed on it primarily in winter, but also use it substantially in late summer and fall.

Bitterbrush

Maidu Lake Trail
20

Mount Thielsen Wilderness Area - Mixed Conifer and Subalpine Forests

Difficulty: Moderate
Traffic: Moderate
Length: Round-trip 7.5 miles to Maidu Lake or 8.4 miles including Maidu Lake loop.
Lowest Elevation: 5,600 feet
Highest Elevation: 6,200 feet
Ownership: USFS
USGS Map: Miller Lake

"One touch of nature makes the whole world kin."

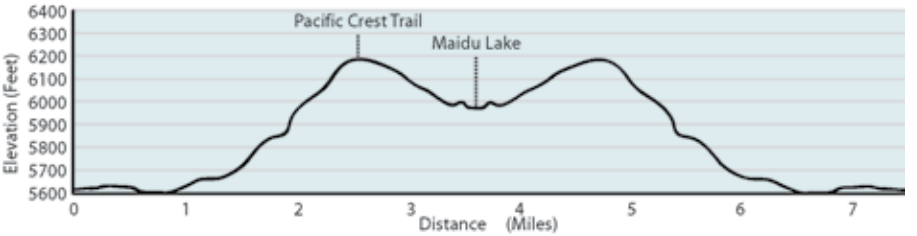
William Shakespeare

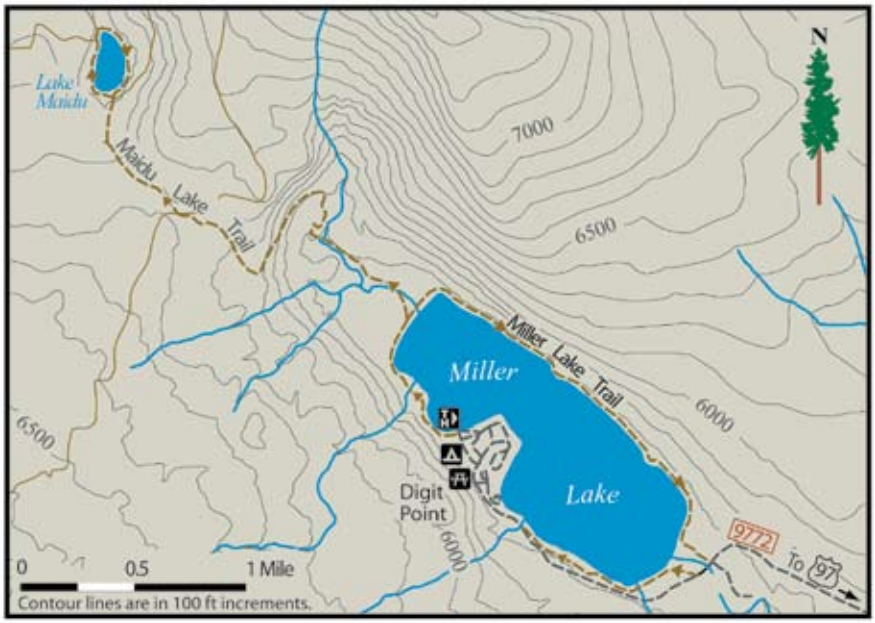
Access

From Klamath Falls, take Highway 97 north for 70 miles, a half mile past the town of Chemult. Turn left at a large brown sign for Miller Lake (Chemult Recreation Area) between mileposts 202 and 203. After the first mile of paved road, keep going straight on the gravel road until Digit Point campground. The campground is 12 miles from highway 97. The dusty gravel road to Miller Lake offers scenic views of some very nice sugar pine stands and the surrounding mountains. Drive through the campground to the north end and park near the trailhead at the lakeside picnic area. This parking lot is day-use only. There is a restroom here and a place to fill up with water. Bicycles are not allowed on the trail, but horses are permitted. Bicycles are permitted around Miller Lake but horses are not.

Climate

Miller Lake is open for fishing year round, but snowfall is heavy in the





Miller Lake lamprey, near actual size.

winter and limits access. The lower part of the trail by the lake is very moist and mosquitoes are especially prevalent in the late spring and early summer, so bring repellent.

History

Miller Lake was poisoned in 1958 because a native parasitic lamprey eel (*Lampetra minima*) was eating introduced hatchery trout. Unfortunately, the Miller Lake lamprey was not known to occur anywhere else and was presumed to have become extinct after the poisoning. The Miller Lake lamprey eel was rediscovered in the 1990's by the U.S Forest Service and Oregon State University staff. It was found in a few different high elevation streams in the Klamath Basin, including Miller Creek which feeds into Miller Lake. It is currently not found in Miller Lake due to a dam that separates the creek and the lake. The Miller Lake lamprey is the smallest known parasitic lamprey and is considered critically endangered.

Trail and Forest

The forest on the Miller-Maidu trail is composed mainly of mountain hemlock and lodgepole pine, in addition to Shasta red fir, Engelmann spruce and western white pine. The first part of the trail skirts the edge of Miller Lake and crosses Tipsoo and Evening creeks. It is an extremely moist area that supports an exhuberant and varied vegetation. About one mile from the trailhead you will reach a trail junction. From here you can go right and take an easy five mile loop around Miller Lake or keep left to go to Maidu Lake. As the trail begins to ascend from Miller Lake toward Maidu Lake, you will encounter a more or less pure stand of lodgepole pine. The trail continues up the mountain and the forest becomes mixed conifer. There are a few spots along the trail that afford a good view of Miller Lake. About 2.7 miles from the trailhead, you will reach the highest point of the trail and the intersection with the Pacific Crest Trail.

Tipsoo Creek

Lodgepole pine stand

Maidu Lake panorama

From here the trail slopes gently downhill for another 2/3 of a mile until you reach the southern edge of Maidu Lake. The loop around the lake adds about a mile to the hike, but is well worth it, as the North Umpqua River begins as a trickle on the northern edge of the lake.

Geology

Miller Lake rests in a U-shaped valley that was carved by glaciers that once covered the crest of the Cascade Range. The first two miles of the trail cross the valley and mountain pass left behind by the glacier.

Fish and Wildlife

Beavers live around Tipsoo and Evening creeks. Miller Lake is a popular fishing destination. It is stocked with kokanee salmon, as well as brook, rainbow and German brown trout. Miller Lake attracts groups of diving birds in migration including grebes, loons and a variety of waterfowl.

Beaver work

Plants

The bottom part of the trail skirts the west side of Miller Lake, and crosses Tipsoo and Evening creeks. The plentiful moisture allows for an interesting array of plants, including the broadleaf lupine (*Lupinus latifolius*) and the bog blueberry (*Vaccinium uliginosum*). The western bog blueberry is a compact, low-growing shrub that occurs in very wet areas such as bogs. In fact, uliginosum translates to "from wet areas." The fruits from this plant are high in vitamin C, a delicious and nutritious treat for black bears that roam the area. It has an extensive range, meaning that it is found throughout a large territory. It occurs in Alaska, Europe and Asia.

Bog blueberry

Credits

Photos
Anderson, Robert. USDA Forest Service, white pine blister rust (page 34). www.forestryimages.org.

Calonje, Christopher. Pages 3, 13 (diagram),20, 28 (top of tree), 57, 74, 77, 79, 80, 85, 88 (restoration sign), 89, 82, 84, 91, 94, 95 (ants), 97, 98, 107 (largescale sucker).

Calonje, Michael. Pages 7,15, 17, 18, 19, 21, 23, 24, 25, 26, 27, 28 (cones), 29, 30, 31, 33, 35, 36, 37, 38, 39, 40, 41 (entire tree), 42, 43, 44, 45, 46, 47, 48, 49, 50, 53, 55, 56, 59, 60, 61, 63, 64, 65, 67 (burnt tree), 68, 69, 70, 71, 72, 73, 74, 76, 81, 83, 84 (jay and mint), 87, 91, 92, 93,79, 95 (trees), 96, 100, 104, 105, 107 (logs), 108, 109, 111 (rocks), 112, 113, 115, 116, 117, 119, 120, 121, 123, 124, 125, 127, 128, 129, 131, 132, front and back covers.

Conens, Matt. Stuart Falls (Page 101).

Malaby, Sarah. USFS, bark picture (page 24), bark picture (page 44).

Markle, Douglas. USFS, picture of lamprey (page 130).

Rogers, Gene. Tanker dropping retardant on KAGO fire (page 68).

Spivey, Terry. Elk picture (page 60), Badger (page 75), Goshawk (page 99), Black bear (page 103), antelope (page 128).

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