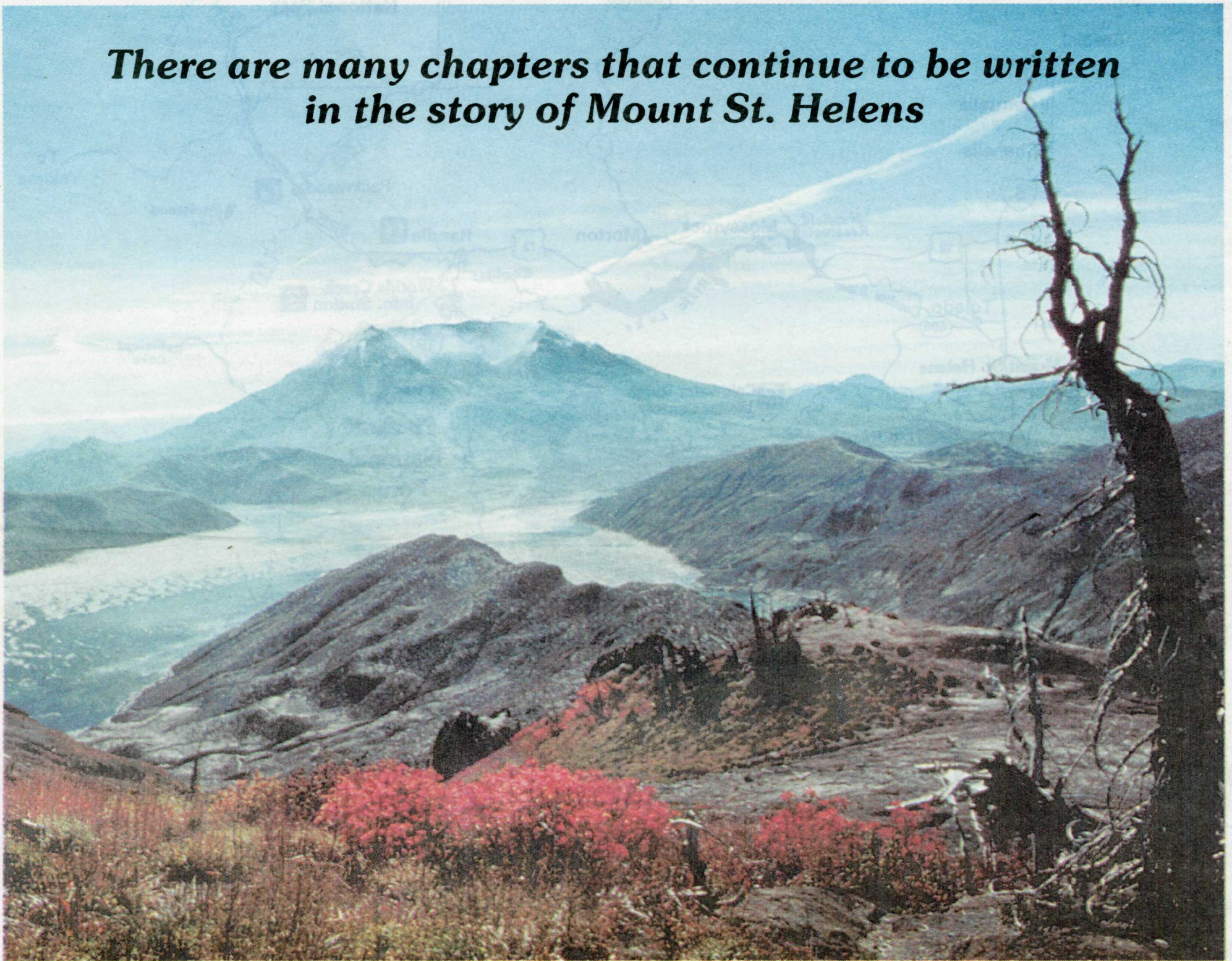


VOLCANO REVIEW

FREE A Visitor's Guide to Mount St. Helens National Volcanic Monument • Summer/Fall 1998

*There are many chapters that continue to be written
in the story of Mount St. Helens*



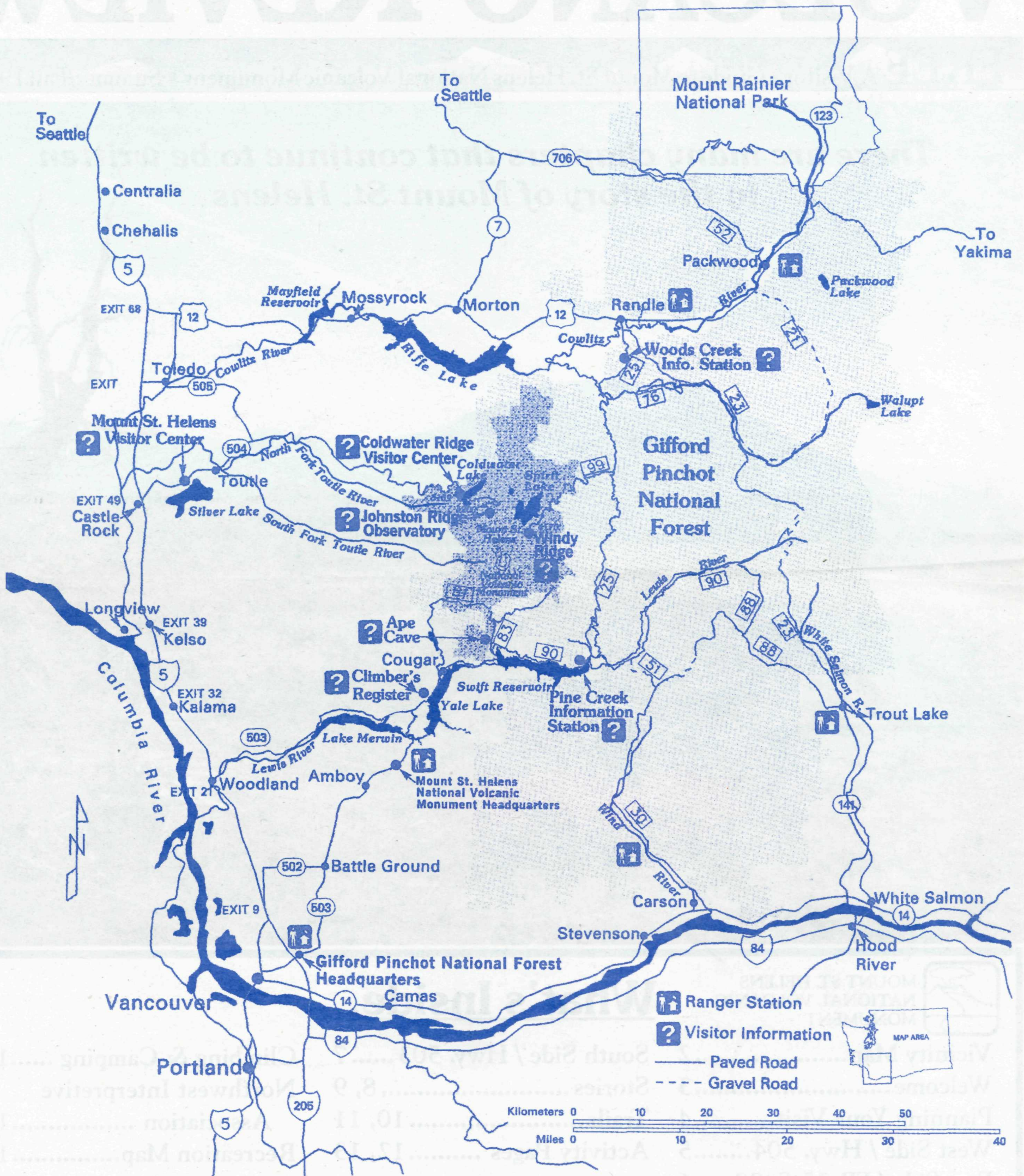
MOUNT ST. HELENS
NATIONAL VOLCANIC
MONUMENT

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MOUNT ST. HELENS AND VICINITY MAP



MOUNT ST. HELENS WELCOMES YOU!

Welcome To The Mount St. Helens National Volcanic Monument

The dramatic eruption of Mount St. Helens on May 18, 1980, created a new understanding of volcanos. This volcano links us more closely to nature and the world of geology and biology.

The 110,000-acre Mount St. Helens National Volcanic Monument has been designated as a protected haven for research, recreation and education. As scientists study the eruption, its effect upon the plants, animals and ecosystems are better understood.

We recognize the powerful allure of this inspirational landscape. Visiting Mount St. Helens is like visiting no other place on Earth. These volcanic features are irreplaceable. Join us in our commitment to protect this special place and enjoy your visit!

Gloria P. Brown

Gloria Brown
Monument Manager



Monument Pass Information

The Monument Pass is a per person charge and is good for unlimited use at all the sites listed below for up to three days.

Costs are:	Age:
Free	15 & under
\$8 Adult Pass	16-61
\$4 Senior Pass	62 & older
\$16 Adult Annual Pass	16-61, Valid 1/1-12/31
\$8 Senior Annual Pass	62 & older, Valid 1/1-12/31

(Golden Eagle, Golden Age and Golden Access Passports are honored.)

A Monument Pass is required at the following developed recreation sites:

Mount St. Helens Visitor Center Complex
Coldwater Ridge Visitor Center Complex
Coldwater Lake Recreation Area
Loowit Viewpoint
Johnston Ridge Observatory Complex
Ape Cave Interpretive Site
Lava Canyon Interpretive Site
Lahar Viewpoint

Road 99 Viewpoints including:

Windy Ridge Interpretive Site, Smith Creek Viewpoint and Picnic Area, Donney Brook Viewpoint, Cedar Creek Viewpoint, Harmony Falls Viewpoint and Trailhead, Meta Lake Interpretive Site, Miner's Car Interpretive Site, Road 99 Entry and Viewpoint (Blast Edge), Bear Meadows Viewpoint and Picnic Area.

Monument Passes may be purchased at Monument visitor centers and information stations through the Northwest Interpretive Association. Passes are also available from the Cascade Peaks Restaurant and Gift Shop on Forest Road 99.

Driving Times In Hours:	Ape Cave	Cougar	Lava Canyon	Pine Creek Info. Station	Windy Ridge	Woods Creek Info. Station	Randle	Mount St. Helens V.C.	Coldwater Ridge V.C.	Johnston Ridge V.C.
Ape Cave	-	0:15	0:15	0:30	1:45	1:30	1:45	1:30	2:30	2:45
Cougar	0:15	-	0:30	0:30	1:45	1:30	1:45	1:15	2:15	2:30
Lava Canyon	0:15	0:30	-	0:45	2:00	1:45	2:15	1:45	2:45	3:00
Pine Creek	0:30	0:30	0:45	-	1:15	1:00	1:15	1:45	2:45	3:00
Climber's Bivouac	0:15	0:30	0:30	0:45	2:00	1:45	2:00	1:45	2:45	3:00
Windy Ridge	1:45	1:45	2:00	1:15	-	1:00	1:15	2:45	3:45	4:00
Woods Creek	1:30	1:30	1:45	1:00	1:00	-	0:15	1:45	2:45	3:00
Randle	1:45	1:45	2:15	1:15	1:15	0:15	-	1:30	2:30	2:45
Mount St. Helens V.C.	1:30	1:15	1:45	1:45	2:45	1:45	1:30	-	1:00	1:15
Coldwater Ridge V.C.	2:30	2:15	2:45	2:45	3:45	2:45	2:30	1:00	-	0:15
Johnston Ridge V.C.	2:45	2:30	3:00	3:00	4:00	3:00	2:45	1:15	0:15	-
Portland	1:30	1:15	1:45	1:45	3:00	2:45	2:30	1:15	2:15	2:30
Seattle	3:30	3:15	3:45	3:45	3:45	2:45	2:30	2:00	3:00	3:15
Carson	1:30	1:30	1:45	1:00	2:15	2:00	2:15	2:45	3:45	4:00
Woodland	1:00	0:45	1:15	1:15	2:30	2:15	2:30	0:45	1:45	2:00
Mt. Rainier N.P.	2:45	2:45	3:00	2:15	2:15	1:15	1:00	2:30	3:30	3:45

Recreation Fee Demonstration Program

Since March 1997, recreation use fees have been in effect at Mount St. Helens for visitors using certain developed recreation sites or climbing the volcano. The fees are part of a 3-year pilot program established by Congress in 1996 to test new admission and use fees at sites around the country. Mount St. Helens was selected as one of these test sites. Use fees support Monument recreation and interpretive programs. For more information, contact Reed Gardner, Public Service Program Manager, at (360) 247-3943.

How Are Fees Used



Under the Recreation Fee Demonstration Program, the Monument is allowed to keep 80% of the fees collected to fund basic operations, maintenance, and visitor services. In 1997, fee revenues provided the following services:

- Extended seasons and hours of operation at Monument visitor centers, information stations, and interpretive sites.
- Daily cleaning and maintenance of developed viewpoints, picnic areas, trailheads, and other recreation facilities.
- Trail maintenance completed on over 80 miles of trail.
- Regular climbing patrols of main climbing routes.

PLANNING YOUR VISIT

Where To Start

A good place to begin your visit is at one of the Monument's visitor centers or information stations. Interpretive staff are available to answer your questions and help you plan your visit. Ask about the daily schedule of interpretive walks, talks and theater presentations that share the geologic, biologic, and cultural history of the area. The Mount St. Helens Visitor Center, Coldwater Ridge Visitor Center, and Johnston Ridge Observatory are open daily year-round, except for Thanksgiving, Christmas, and New Year's Day. Information stations, as well as the Windy Ridge Viewpoint, are open daily mid-May through early fall.

Seasons

Most viewpoints on the Monument's north, east, and south sides can be reached from Memorial Day until snow closes the roads, usually in late October. Trails are generally open from June through October, although some lower elevation trails can be hiked all year.

Winter can be a beautiful time to visit Mount St. Helens. The Monument visitor centers are open daily, except winter holidays, and the Sno-Parks at Marble Mountain, Cougar, and Wakepish provide winter access for cross-country skiers and snowmobilers. Washington and Oregon Sno-Park permits are required to park your vehicle at a Sno-Park.

Services & Accommodations

During the summer months, food service is available at the Coldwater Ridge Visitor Center on State Highway 504 and at Cascade Peaks Viewpoint on Forest Road 99. There are no overnight accommodations within the National Volcanic Monument. However, lodging, meals, gifts, supplies and services are available in many communities around the mountain. For more information, contact local Chambers of Commerce, tourist information centers and individual businesses (see list).

You can call or write the following sources for additional information:

Chambers of Commerce/Tourist Information

West Side

Castle Rock	(360) 274-6603
Longview	(360) 423-8400
Kelso	(360) 577-8058
Toledo	(360) 864-2077

South Side

Woodland	(360) 225-9552
Cougar	(360) 238-5210
Stevenson	(509) 427-8911

North & East Side

Mossyrock	(360) 983-3274
Morton	(360) 496-6086
Randle	(800) 551-3290

Other Frequently Requested Numbers

Jack's Restaurant (Climbing Register)	(360) 231-4276
Mount St. Helens Cinedome Theater	(360) 274-8000
Hoffstadt Bluffs Visitor Center	(360) 274-7750
Weyerhaeuser Forest Learning Center	(360) 414-3429
Mount Rainier National Park	(360) 569-2211
Forest Service Campground Reservations (OR & WA)	(800) 452-5687
Washington State Parks (Reservations)	(800) 233-0321

Law Enforcement Agencies/Road Conditions

Emergency 911	
(West Side) Cowlitz County Sheriff	(360) 577-3092
(East Side) Lewis County Sheriff	(360) 740-1105
(South Side) Skamania County Sheriff	(509) 427-9493
Washington State Patrol	(360) 577-2050
Highway Pass Report	(888) 766-4636
Washington Dept. of Transportation	(360) 577-2231

Forest Service Offices	Phone #	24-Hour Recording	*TTY#	Fax#	Address
Mount St. Helens National Volcanic Monument	(360) 247-3900	(360) 247-3903	(360) 247-3902	(360) 247-3901	42218 NE Yale Bridge Road/Amboy, WA 98601
Mount St. Helens Climbing Information Line	(360) 247-3961				
Mount St. Helens Visitor Center	(360) 274-2100	(360) 274-2103	(360) 274-2102	(360) 274-2101	3029 Spirit Lake Highway/Castle Rock, WA 98611
Coldwater Ridge Visitor Center	(360) 274-2131			(360) 274-2129	3029 Spirit Lake Highway/Castle Rock, WA 98611
Johnston Ridge Observatory	(360) 274-2140			(360) 274-2151	3029 Spirit Lake Highway/Castle Rock, WA 98611
Gifford Pinchot National Forest	(360) 891-5000	(360) 891-5009	(360) 891-5003	(360) 891-5045	10600 NE 51st Circle/Vancouver, WA 98682
Cowlitz Valley District	(360) 497-1100		(360) 497-1101	(360) 497-1102	P.O. Box 670/Randle, WA 98377
Mt. Adams Ranger District	(509) 395-3400		(509) 395-3422	(509) 395-3424	2455 Highway 141/Trout Lake, WA 98650
Columbia River Gorge National Scenic Area	(541) 386-2333		(541) 386-8758	(541) 386-1916	902 Wasco Ave., Suite 200/Hood River, OR 97031

*TTY - Teletypewriter for the Hearing Impaired

WEST SIDE / STATE HIGHWAY 504

Mount St. Helens Visitor Center



FEE AREA

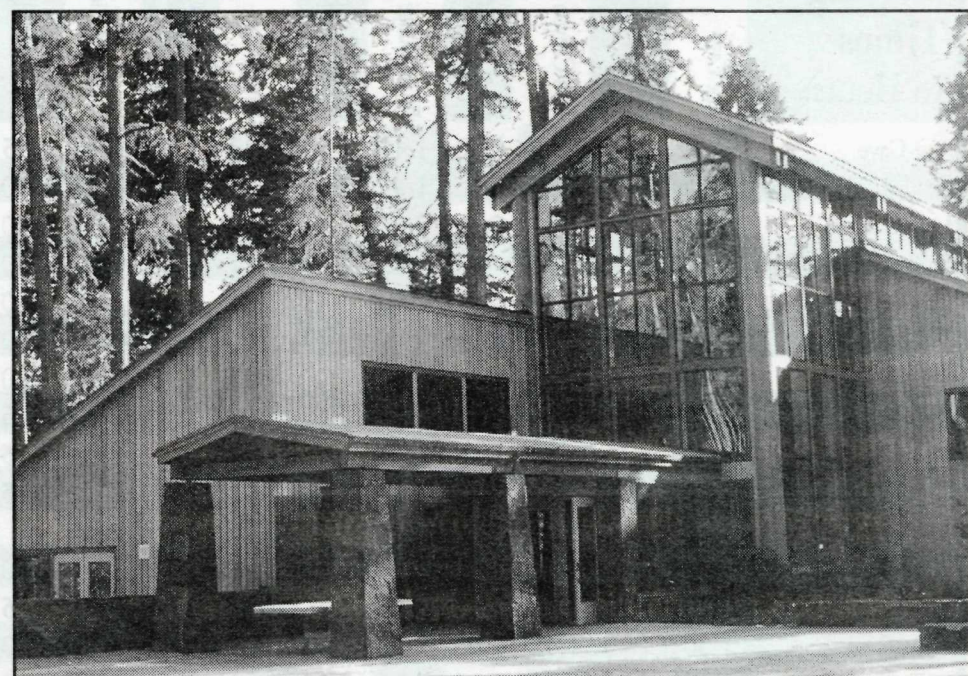
Located 5 miles east of Castle Rock on the shores of Silver Lake, the center's exhibits and theater programs educate the visitor on the tale of events that lead to the 1980 eruption. A nature trail and views of Mount St. Helens and the Silver Lake wetlands provide the curious visitor year-round opportunities to observe waterfowl, wildlife and native vegetation.

Services include award-winning theater presentations, walk-through interpretive exhibits, a staffed information desk and a Northwest Interpretive Association book sales area.

Interpretive Talks

Times posted at Center

Meet with a forest interpreter and learn about the geological history of Mount St. Helens and the events that took place on May 18. Discover how to identify key features of Mount St. Helens along State Highway 504.

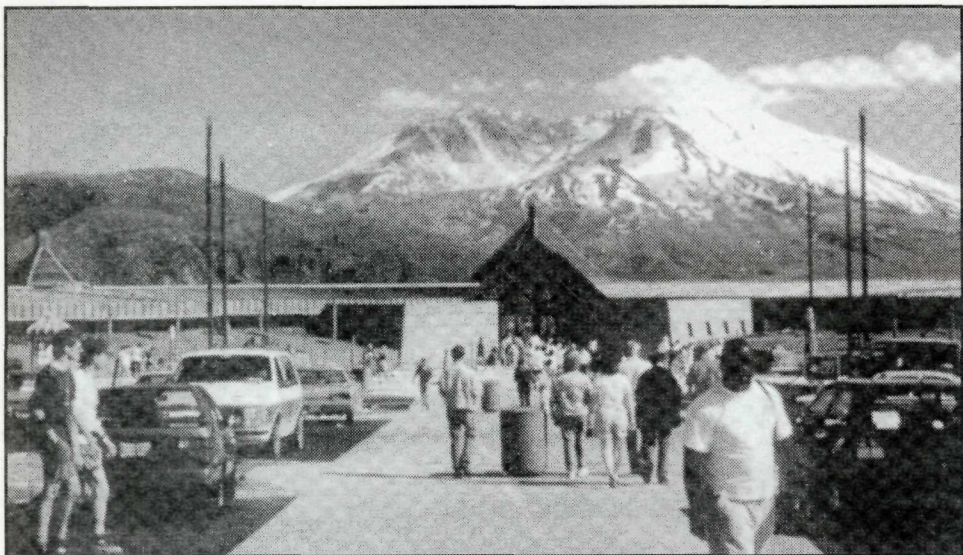


Mount St. Helens Visitor Center

Open Daily

April 27 to Sept. 27 - 9am-6pm • Sept 28 to April 26 - 9am-5pm

WEST SIDE / STATE HIGHWAY 504



Coldwater Ridge Visitor Center

Open Daily

April 27 to Sept 27 - 9am-6pm • Sept 28 to April 26 9am-5pm

Coldwater Ridge Visitor Center



Located within the National Volcanic Monument and 43 miles east of Castle Rock, the center invites visitors to discover the fascinating ways that plants and animals have re-colonized the blast zone. Visitors to Coldwater Ridge enjoy panoramic views of the volcano, newly formed lakes, and the debris-filled Toutle River Valley. Learn the stories of the many ways life emerged from the ash following the 1980 eruption and continues to unfold today.

Services include a video-wall theater program, interpretive exhibits, a staffed information desk, a gift shop, a restaurant with a selection of sandwiches, soups, salads, and drinks, and a Northwest Interpretive Association book sales area.

Coldwater Ridge Pavilion/Deck Talks

Daily

Times posted at Center

Discover some of the mysteries and secrets of Mount St. Helens as a forest interpreter describes the incredible changes this landscape has endured. Talks will be held inside the center's pavilion or on the deck located at the rear of the visitor center. Allow 30 minutes.

Winds Of Change Interpretive Walk

Daily

Times posted at Center

Join a forest interpreter to discover how the stone wind of the 1980 eruption slammed into Coldwater Ridge and how with the gentle winds of time, plants and animals have returned. This is a .25 mile loop trail located 50 yards west of the visitor center and offering sweeping views of the Toutle River Valley and Mount St. Helens. Allow 45 minutes.

Mount St. Helens is a unique landscape. In order to protect it we ask you to please stay on the trail.

セイント・ヘレン山は雄大な景観をもつ火山としてたたえられています。

自然保護のためにしてされた道以外には絶対に入らないでください。

Mount St. Helens ist eine einzigartige Landschaft. Um diese Landschaft zu beschuetzen, bitten wir Sie Bleiben Sie auf den Fusswegen.

El Mount St. Helens es un paisaje unico. Para protegerlo, les pedimos a ustedes Favor de queden en los senderos.

Le Mont St. Helens, site volcanique classe, este une region unique. Pour la protection des ressources naturelles, priere de rester sur les sentiers balises.

Discover Coldwater Lake!



Coldwater Lake Recreation Area is located within the heart of the blast zone 2 miles east of Coldwater Ridge Visitor Center. Take a walk on the .25 mile Birth of a Lake Interpretive Trail and discover how this newly formed lake was created during the May 18th eruption. Visitors can enjoy a close-up view of the lake with Mount St. Helens in the distance. Birds are heard all around while fish surface in the waters nearby.

Services include picnic tables, restrooms, fish cleaning station, boat launch and a discovery area. While enjoying the Coldwater Lake Recreation Area, please remember this is a DAY USE AREA only. CAMPING IS NOT PERMITTED. For fishing regulations, check the information board located on site or call one of the visitor centers.

Johnston Ridge Observatory



Located at the end of State Highway 504 and 53 miles east of Castle Rock, the Johnston Ridge Observatory brings visitors within 5 miles of Mount St. Helens. This vantage point north of the volcano offers spectacular views of the still-steaming lava dome, crater, pumice plain and the landslide deposit. The center's state-of-the-art interpretive displays teach visitors about the sequence of geologic events that changed the landscape and opened a new chapter to the story of Mount St. Helens. Discover the art and science of monitoring an active volcano and predicting eruptions. Read eye witness accounts from eruption survivors.

Services include a wide-screen theater presentation, interpretive exhibits, a staffed information desk and a Northwest Interpretive Association books sales area.

Interpretive Talks

Times posted at Center

Forest interpreters offer a variety of formal talks and guided walks.



Johnston Ridge Observatory

Open Daily

April 27 to Sept 28 - 9am-6pm • Sept 28 to April 26 10am-4pm

EAST SIDE / FOREST ROADS 25 AND 99

Woods Creek Information Station

Open Daily
May 15 to September 30 - 9 am-4pm

Woods Creek Information Station is 6 miles south of Randle on Forest Road 25. The few minutes it takes to pull into this station will help you plan an event-filled visit to Mount St. Helens. Stay in your car for drive-through service, or come inside and browse through the Northwest Interpretive Association sales outlet. If you're looking for a place to picnic or stretch your legs, head across the road to the Woods Creek Watchable Wildlife Site.

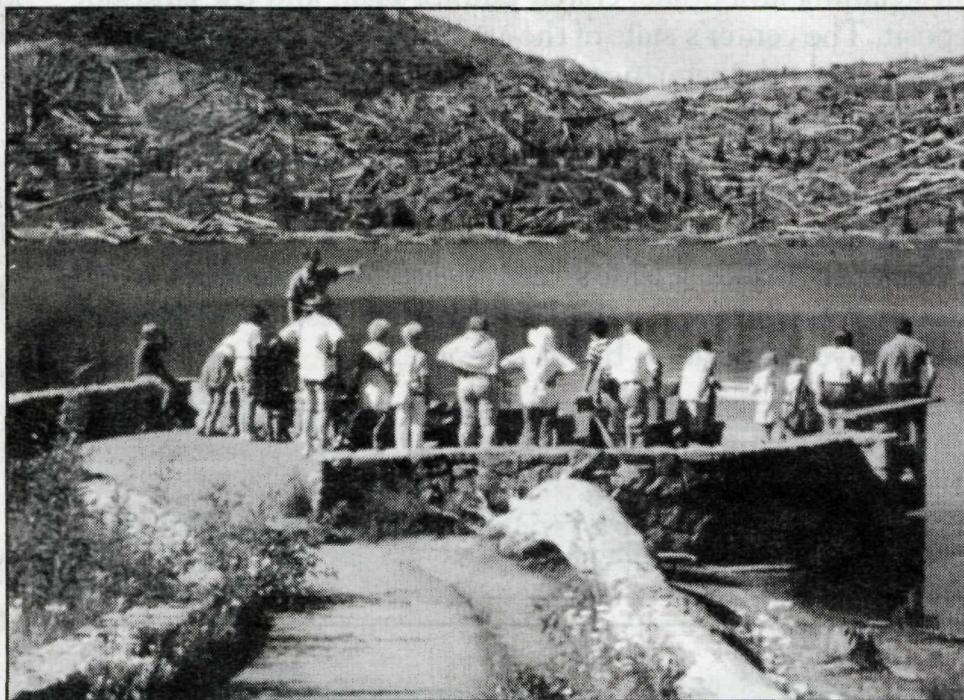
★ Purchase your Monument Pass here.

Cowlitz Valley Ranger Station

Open Daily
May 23 to September 30 - 8 am-4:30 pm • Closed 12:00-12:30pm on weekends

The Ranger Station is located 1 mile east of Randle on Highway 12. Stop here for information on trails and facilities in the Cowlitz Valley District and the Mount St. Helens National Volcanic Monument. Books and videos are available here through the Northwest Interpretive Association.

★ Purchase your Monument Pass here.



Meta Lake Interpretive Trail



Meta Lake Walks

Daily June 20 to September 30 - 12:45 pm & 3:00 pm

FEE AREA Stroll or roll to this emerald lake teeming with life and hear stories about survivors and newly established life. Meet at Miner's Car, junction of Forest Roads 26/99; allow 45 minutes. There is a water pump here.



Harmony Falls Viewpoint Talk

Daily June 24 to September 7 - 1:00 pm

FEE AREA Discover the story of the eruption, its effect on Spirit Lake, and the remarkable return of life.

Cascade Peaks

Daily June 24 to Sept. 7

Forest interpreters on site at various times during the day to answer questions and share stories.

★ Purchase your Monument Pass here.



Blast Edge



Blast Edge Talk

Daily June 24 to September 7

FEE AREA Look for forest Interpreters at this site at various times during the day.

Stop and marvel at the standing dead trees that mark the edge of the blast zone, 2 miles west of Bear Meadows viewpoint on Forest Road 99.

Join a forest interpreter for an introduction to the May 18 eruption, and new approaches to managing ecosystems in your National Forest.

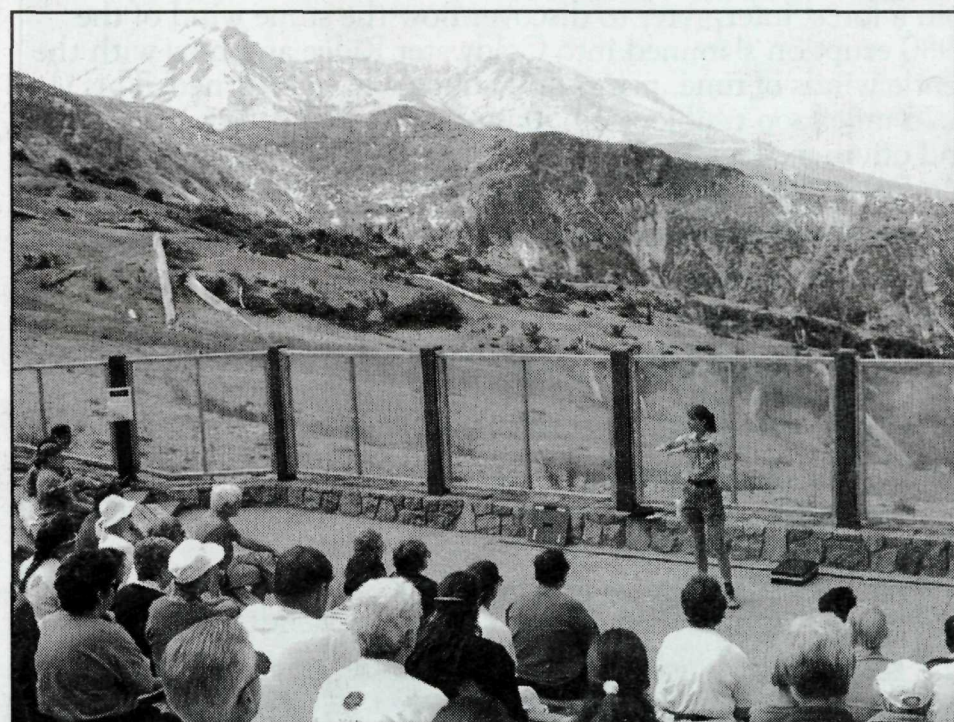


Windy Ridge Talks

Weekends May 16 to June 19

Daily June 20 to September 30 - 11:30 am to 4:30 pm

FEE AREA Learn about the eruption that challenged the imagination of volcano watchers. Join a forest interpreter and relive the incredible power unleashed on May 18, 1980. Talks once an hour on the half hour at the Windy Ridge outdoor amphitheater, Forest Road 99; allow 30 minutes. Look for the Northwest Interpretive Association mobile sales outlet at this site.



Windy Ridge Amphitheater

SOUTH SIDE / STATE HIGHWAY 503 / FOREST RDS. 90 & 83



Apes' Headquarters

Open Daily

May 16 to September 30 - 9:30 am to 5:30 pm

FEE AREA Explore the furthest reaches of a lava tube formed from an eruption of Mount St. Helens 1,900 years ago. Lantern rentals, book sales and travel directions are available. Lanterns can be rented for \$2.00 up until 4 p.m. and must be returned by 5:00 p.m. Apes' Headquarters is located by Ape Cave on Forest Road 8303, 3 miles north of the junction of Forest Roads 83/90.

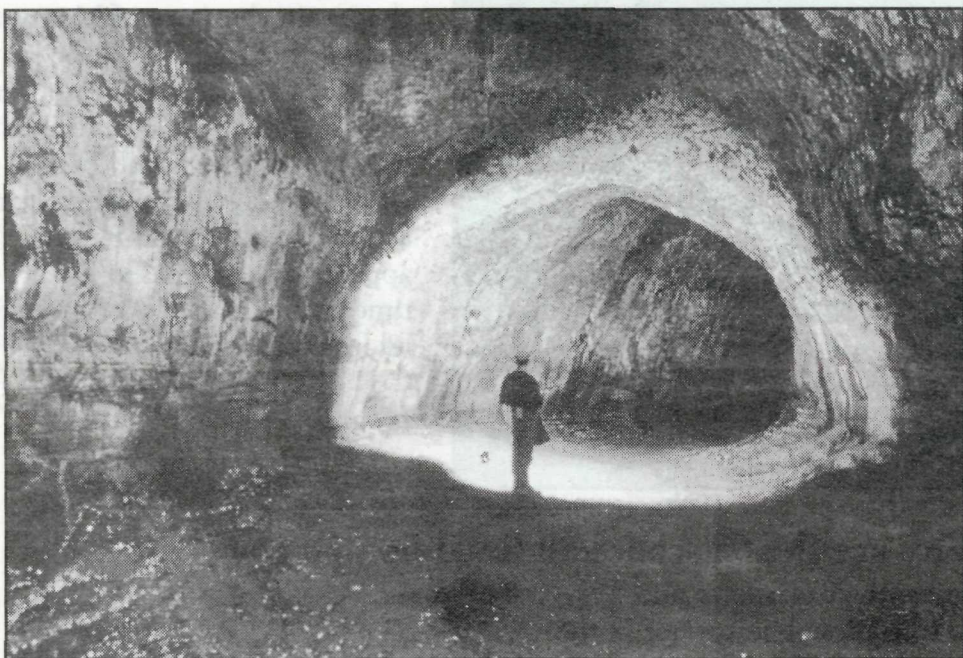
★ Purchase your monument pass here.

Ape Cave Lantern Walk

Weekends - May 16 to June 19

Daily June 20 to September 30 - 10:30 am to 3:30 pm

Join a forest interpreter who will shed some light on the life and features of the cool, dark world of this 1,900-year-old lava tube. Wear warm clothes and sturdy shoes. Lanterns will be provided. Meet at Apes' Headquarters, 3 miles north of the junction of Forest Roads 83/90; allow 45 minutes. Guided walk limited to 50 visitors.



Ape Cave

Pine Creek Information Station

Open Daily May 16 to September 30 - 9:00 am to 6:00 pm

If you are approaching Mount St. Helens from the south, be sure to stop at the Pine Creek Information Station located 17 miles east of Cougar on Forest Road 90. Staff will help you with travel directions, picnic spots, camping, trails and ideas on how to make the most out of your visit. A short movie will get you ready for adventure into the Monument. A Northwest Interpretive Association book sales area is also available.

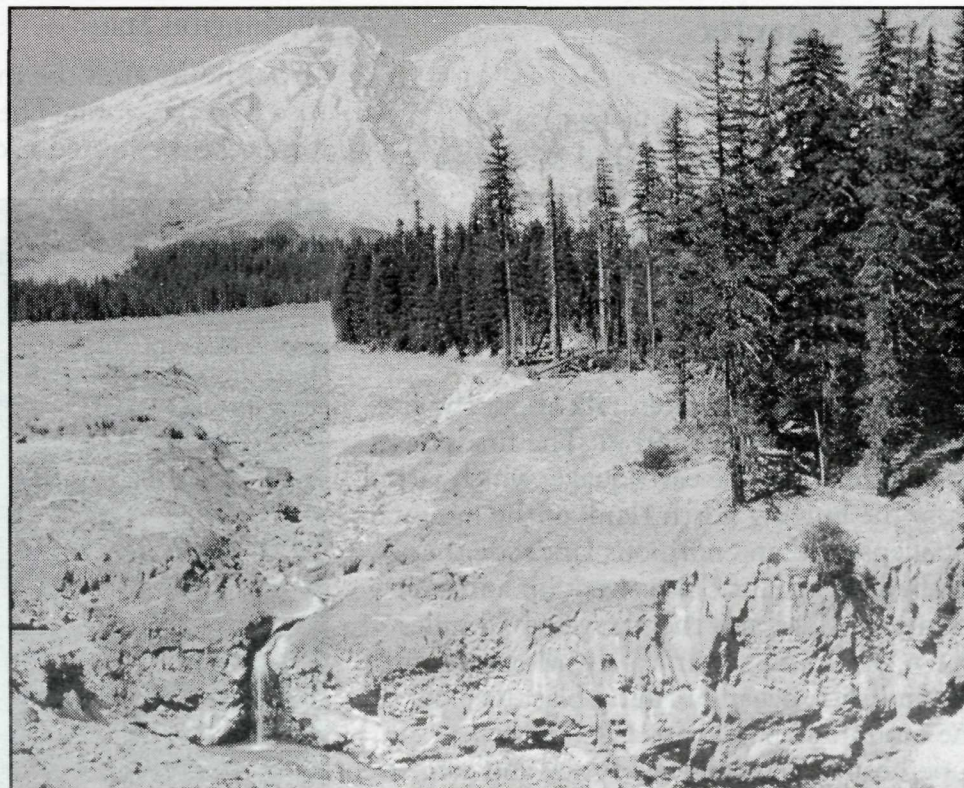
★ Purchase your monument pass here.

Mount St. Helens National Volcanic Monument Headquarters

Monday through Friday Year-round
8:00 am to 5:00 pm

The headquarters for the National Volcanic Monument is located three miles north of Amboy on State Highway 503. Information on traveling, road conditions and permits is available here. Permits are required for the following activities: picking mushrooms, cutting Christmas trees and firewood, or gathering forest products and minerals. For more information call (360) 247-3900.

★ Purchase your monument pass here.



The Lahar



Lahar Viewpoint

June 24 to September 7

FEE AREA • Look for forest interpreters at this site - program times posted on the information board.

Come learn how the south side of Mount St. Helens was affected by the May 18, 1980, eruption. Hear stories about the resiliency of life in this mudflow-scoured landscape, 10.5 miles east of the junction of Forest Roads 83/90.

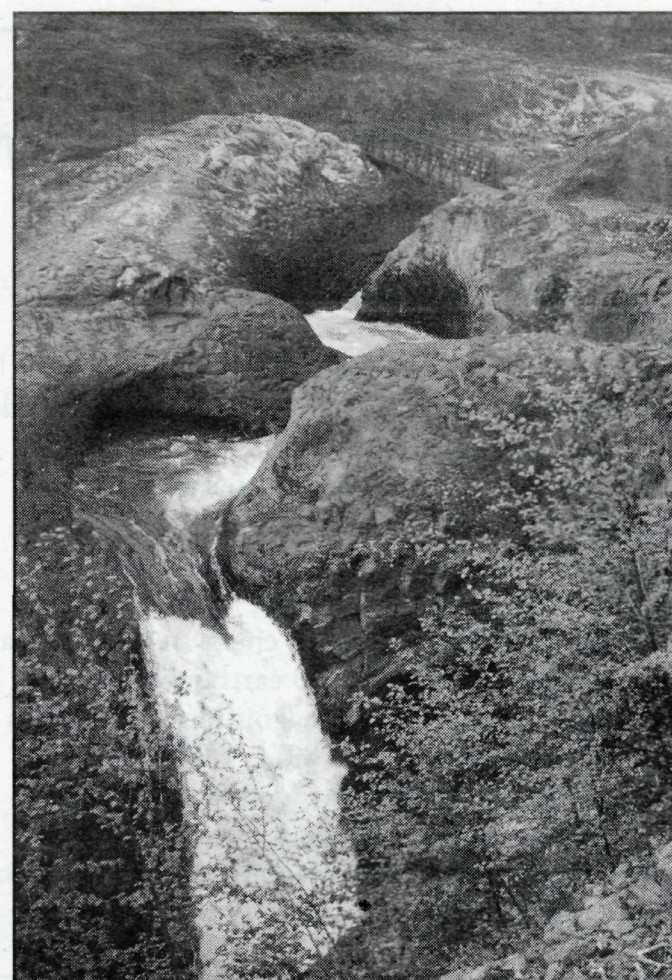


Lava Canyon

June 24 to September 7

FEE AREA • Look for forest interpreters at this site at various times of the day.

Discover more about Mount St. Helens' eruptive past. Walk a barrier-free trail and explore a mudflow-scoured canyon with views of a waterfall plunging over an ancient lava flow. Opportunities exist for more challenging hiking experiences with rewarding views. Lava Canyon Recreation Area is 11 miles east of the junction of Forest Roads 83/90; allow 40 minutes.



Bridge at Lava Canyon

THERE ARE MANY CHAPTERS THAT CONTINUE TO

A New Chapter

By Michelle O'Donnell

At 8:32am on May 18th, 1980, a 5.1 magnitude earthquake rocked Mount St. Helens and initiated an eruption that dramatically altered the landscape. This eruption simultaneously ended a chapter in the story of Mount St. Helens and began a new one.

Forest Interpreters often talk about the five main phases of the eruption. The first phase was triggered by the earthquake, which jarred loose the bulging north flank of the mountain. It collapsed in an enormous landslide that crashed into Spirit Lake, swept up and over Johnston Ridge and then traveled 15 miles down the Toutle River Valley. Moments after the landslide began, a lateral blast tore out of the mountain. The blast, filled with superheated gas, pulverized rock and ash, swept across the landscape, snapping off trees and leveling the forest within a 230 square mile area in a matter of minutes. Following the lateral blast, a vertical ash column formed and rose 17 miles into the sky. When the ash column reached the upper atmosphere, it was swept up by the prevailing winds and carried east. Day turned into night for some eastern Washington towns like Ritzville, where over three inches (7cm) of ash fell. Eventually, the ash spread into Idaho, Montana and even circled the globe. Traces of ash from the May 18th eruption were recorded two weeks later back in

Washington State.

Four hours after the initial blast, gas-rich magma rose into the crater. The magma hardened, forming superheated rocks and boulders called

pumice. Pumice, mixed with ash, was then ejected out of the newly formed crater. This event, called a pyroclastic flow, is a common feature of Cascade volcanic eruptions.

Meanwhile, snow and ice in the landslide deposit began to melt. The water mixed with ash, rocks and debris to create several large mud flows. The largest occurred to the west of the volcano in the North Fork of the Toutle River. The thick, steaming mud flow crushed buildings and bridges and traveled all the way to the Columbia River.

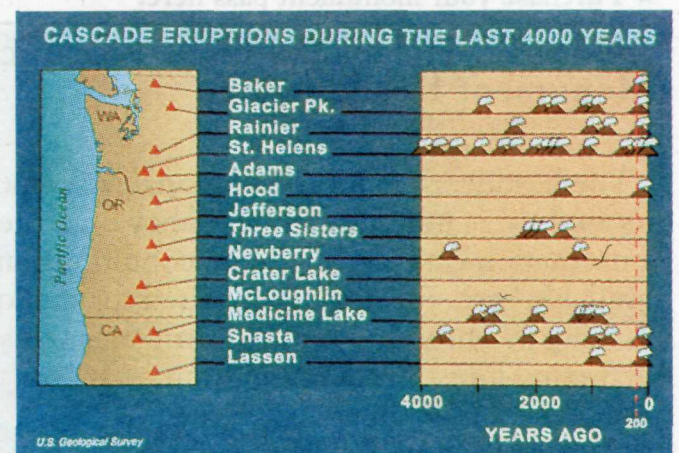
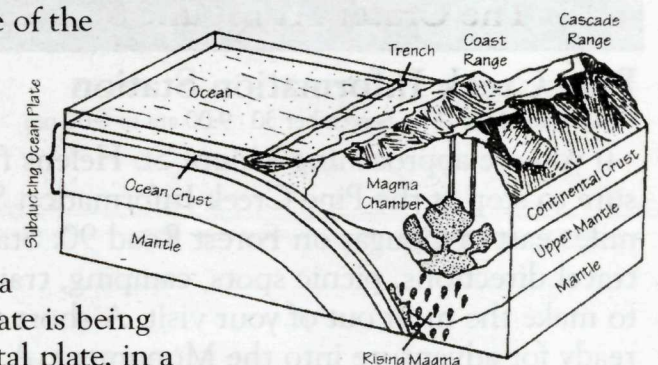
By the morning of May 19th, 1980, the area around Mount St. Helens seemed like a vast, lifeless moonscape. The lush and pristine beauty of the area was gone. The chapter in the story of Mount St. Helens that told of secluded vacations and summer camp had ended. But, a new chapter had begun, one that is still being written today. Although volcanic activity at Mount St. Helens appears to have ceased for the time being, many other geologic and biologic processes are at work. Come witness this work in progress.



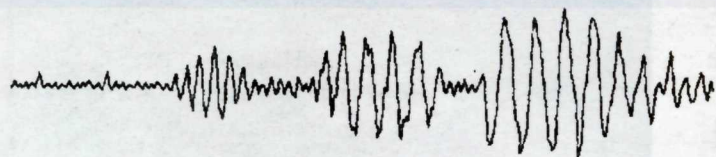
May 18, 1980 eruption

Why are the Cascades all lined up in a row?

The Cascades owe their existence and location to plate tectonics. The surface of the earth is made up of many large pieces of crust, called plates, that are sliding around on the surface of the earth. Two such plates have collided off the coast of the Pacific Northwest: the North American plate, a continental plate, and the Juan de Fuca plate, an oceanic plate. The oceanic plate is being pushed down and under the continental plate, in a subduction zone. When the plate gets about 70 miles deep, the temperature and pressure are so intense that the plate actually melts. This molten rock, called magma, pushes its way to the surface through cracks in the crust and collects into magma chambers near the surface. These chambers then feed the eruptions that form the Cascades. Because the edge of the Juan de Fuca plate is melting as it is being subducted, the resulting mountains form a nice straight line above it.



Compliments of the Deschutes National Forest



How Earthquakes are Measured

The Richter Scale calculates the physical effects of earthquakes based on the amplitude (the size) of certain seismic waves. The scale starts at zero and goes up. Between any Richter number and the next higher on the scale there is a tenfold increase (1=10x10, 2=10x100, etc.) in shaking felt and a hundredfold increase in energy released. That means a magnitude 6.0 earthquake is ten times greater than a magnitude 5.0. A 5.0 is a "good shake" but a 8.0 is 1,000 times greater and results in "destruction". The Richter scale continues to infinity but it is unlikely that even a magnitude 12 earthquake could happen on earth.

BE WRITTEN IN THE STORY OF MOUNT ST. HELENS

Research Yields New Perspectives

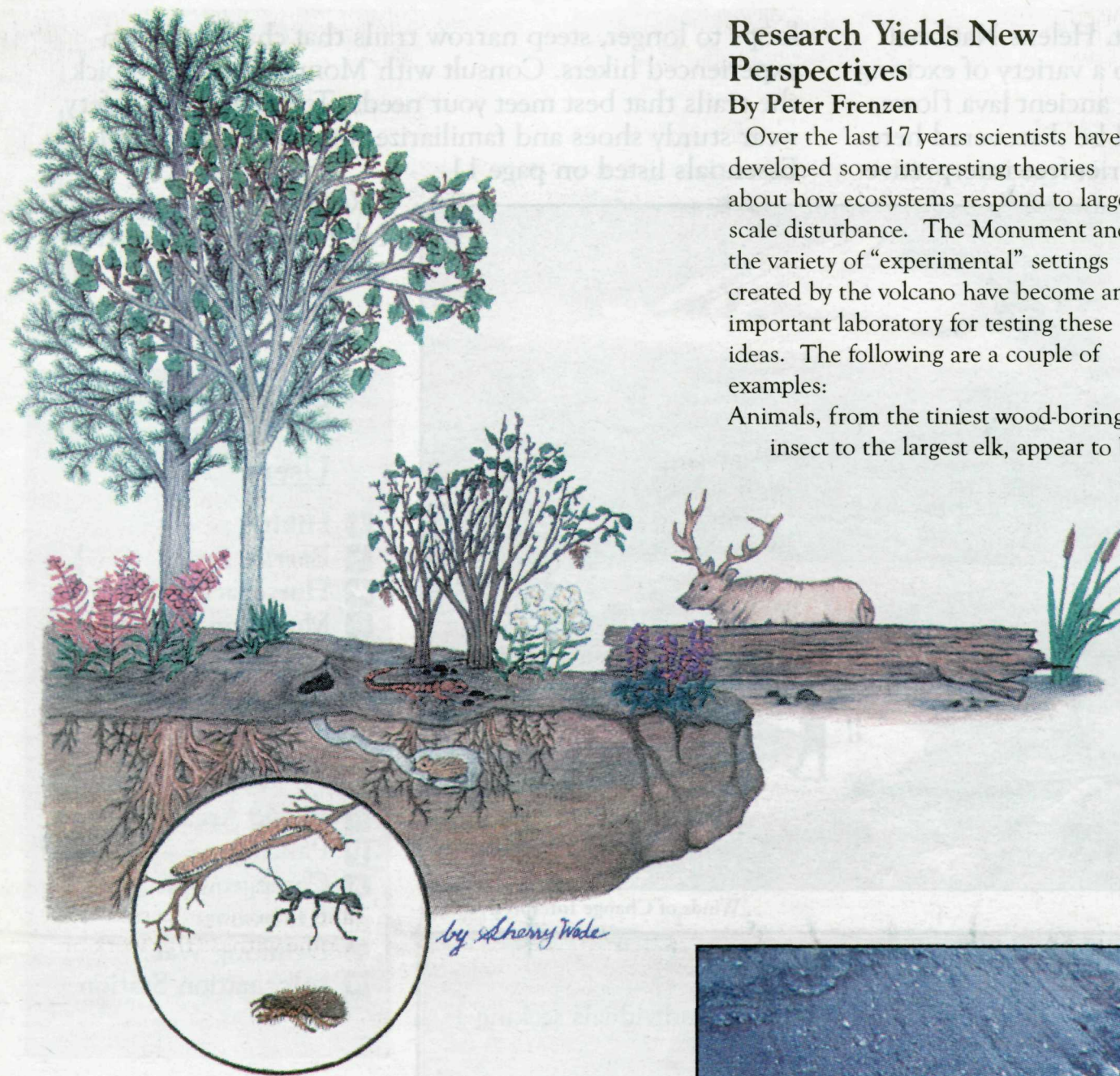
By Peter Frenzen

Over the last 17 years scientists have developed some interesting theories about how ecosystems respond to large-scale disturbance. The Monument and the variety of "experimental" settings created by the volcano have become an important laboratory for testing these ideas. The following are a couple of examples:

Animals, from the tiniest wood-boring insect to the largest elk, appear to be

having a profound influence on the developing vegetation. Animals are selecting and colonizing areas on the basis of habitat characteristics and, in turn, helping to shape habitat structure and composition. A comparatively simple system like Mount St. Helens offers a great opportunity to investigate developing habitat relationships.

Plants representing all major stages of forest development appear to be establishing simultaneously. This contradicts classic ecological theory that describes the orderly establishment and successive replacement of one group of plants by another (for example, mosses followed by grasses by shrubs by trees). Classic theory, based upon studies of abandoned fields and formerly glaciated terrain, does not appear to apply at Mount St. Helens.



The Crater At Mount St. Helens: The Story Continues

By Ed Klimasauskas

There are many chapters still to be written in the story of Mount St. Helens. Some read like a quiet afternoon, while others tell the tale of awaiting disaster. Although the volcano has been relatively quiet since its last eruptive activity in 1991-92, natural forces continue to create changes in the landscape. In the summer months, rocks fall from the steep crater walls and sides of the lava dome, contributing to the mass of rock, snow and ice that fills the crater. Water gradually carves new channels into the pumice plain. Little by little these new drainages cut their way into the mountain toward the crater. Sometimes, however, processes which normally operate so slowly that we barely notice them can occur in the space of few moments.

During September of 1997 heavy rains fell on the volcano.

One particular storm generated enough rainfall so that water-saturated material at the head of two young drainages inside the crater collapsed to form lahars (debris flows made up of volcanic materials). One of these rapidly flowing mixtures of water and rock up to 60 feet thick roared out of the crater and spilled onto the pumice plain below. The lahar was large enough to completely destroy one of the Acoustic Flow Meter (AFM) stations which had been installed to detect just such an event and registered on a second station near the headwaters of the North Fork Toutle River. Smaller lahars were also generated on the western flank of the volcano, damaging trails and roads and spilling sediment into Blue Lake. While the September lahars had only local effects, the possibility of larger events in the future exists.

Future eruptions could generate a much larger lahar by melting and mobilizing the large volume of snow, ice and rockfall debris accumulated on the south crater floor. This amounts to over 50 million cubic meters of material that has accumulated since 1986. A flow of this size could travel much farther downstream, threatening lives and property. But because of the vigilant monitoring effort continued today at Mount St. Helens, it is likely that there would be adequate warning of any explosive activity that could trigger such an event.



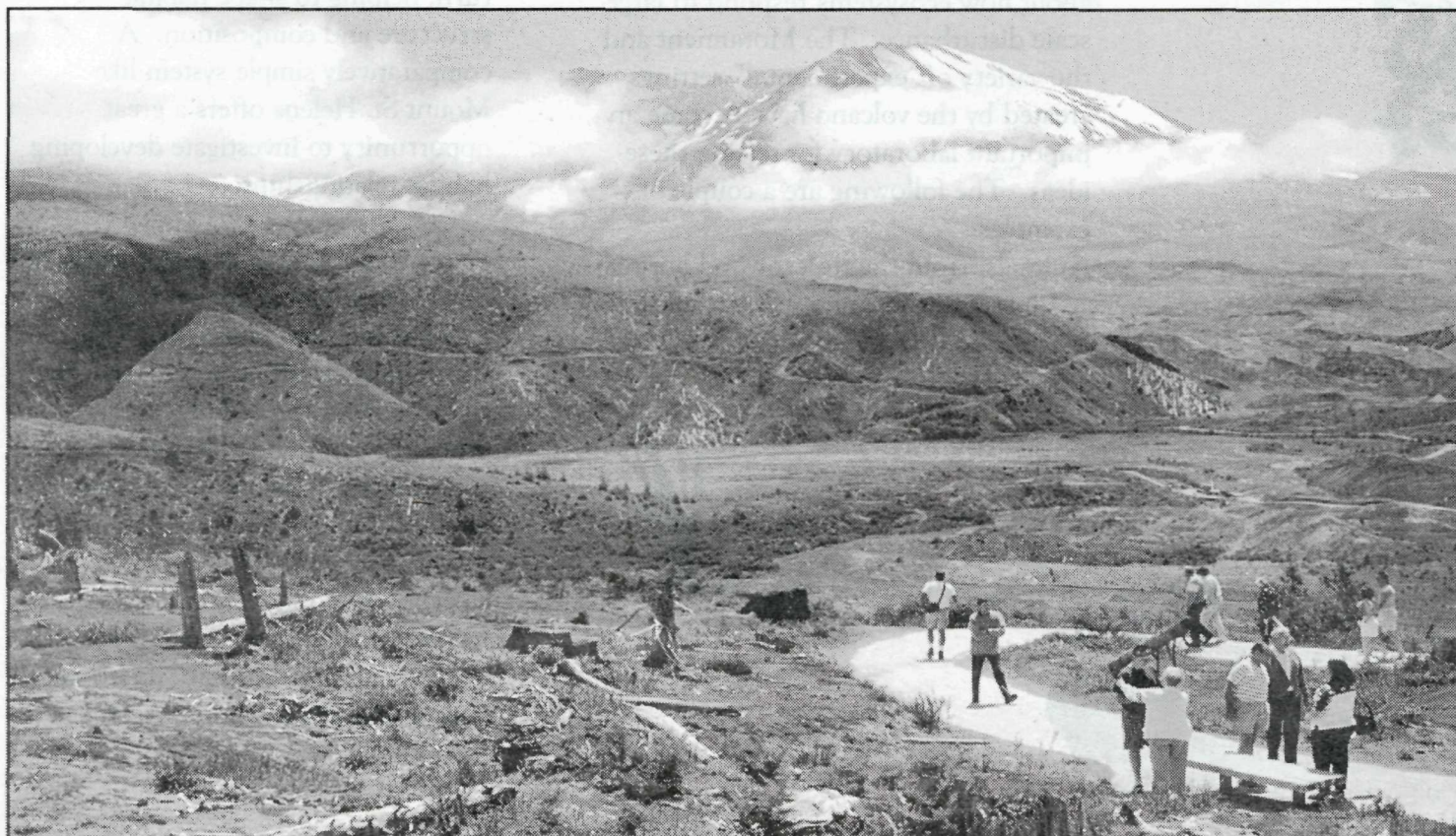
Levee from a 1997 debris flow

EXPLORE NEW LANDSCAPES...

There are many trails in the Mount St. Helens National Volcanic Monument leading hikers into a variety of exciting environments. Crater views, new lakes, ancient lava flows, mudflows and old-growth forest can all be discovered here. Trails vary in difficulty from short, barrier-free interpretive

loops to longer, steep narrow trails that challenge even experienced hikers. Consult with Monument staff to pick the trails that best meet your needs. To ensure your safety, wear sturdy shoes and familiarize yourself with the Ten Essentials listed on page 11.

Read on to discover hiking opportunities that await you!!!



Winds of Change Interpretive Trail

Symbol Key

Users

- Hiking
- Barrier Free
- Horseback
- Mountain Bike
- Caving

Trailhead Facilities

- Picnic Area
- Parking
- Campground
- Restrooms
- Drinking Water
- Information Station

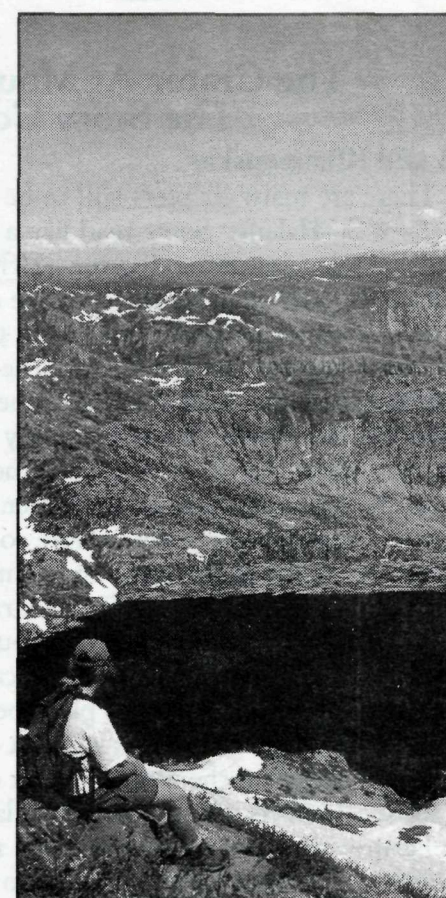
Trail Difficulty Definitions:

- Easiest:** Level to gently rolling. Easy hiking, suitable for children or individuals seeking a leisurely walk.
- More Difficult:** Vigorous hiking with moderate hills and slopes.
- Most Difficult:** Steep grades, narrow tread widths, low levels of maintenance. May require stepping over logs or traversing steep slopes or stream fords. Trails may be difficult to locate or follow. Suitable for experienced hikers in good physical condition. Expect a challenging experience.

West Side Trails							
*Interpretive Trail TRAIL NAME	Trail #	Users	Difficulty	Length (miles)	Dogs	Trail head Facilities	Elev. Change
*Birth of a Lake	246			.25	N		None
Boundary	1			19	N		up to 3000 ft.
Elk Bench	211D			.75	N		600 ft.
Hummocks	229			2.3	N		300 ft.
Lakes	211			5.25	N		150 ft.
South Coldwater	230A			3.1	N		1300 ft.
*Winds of Change	232			.25	N		None

West side trails offer closeup views of the crater, newly formed lakes and the barren pumice plain.

Hike on the landslide deposit and discover how water has created new habitats. *Drinking water is located at Coldwater Lake and the visitor centers.



St. Helens Lake

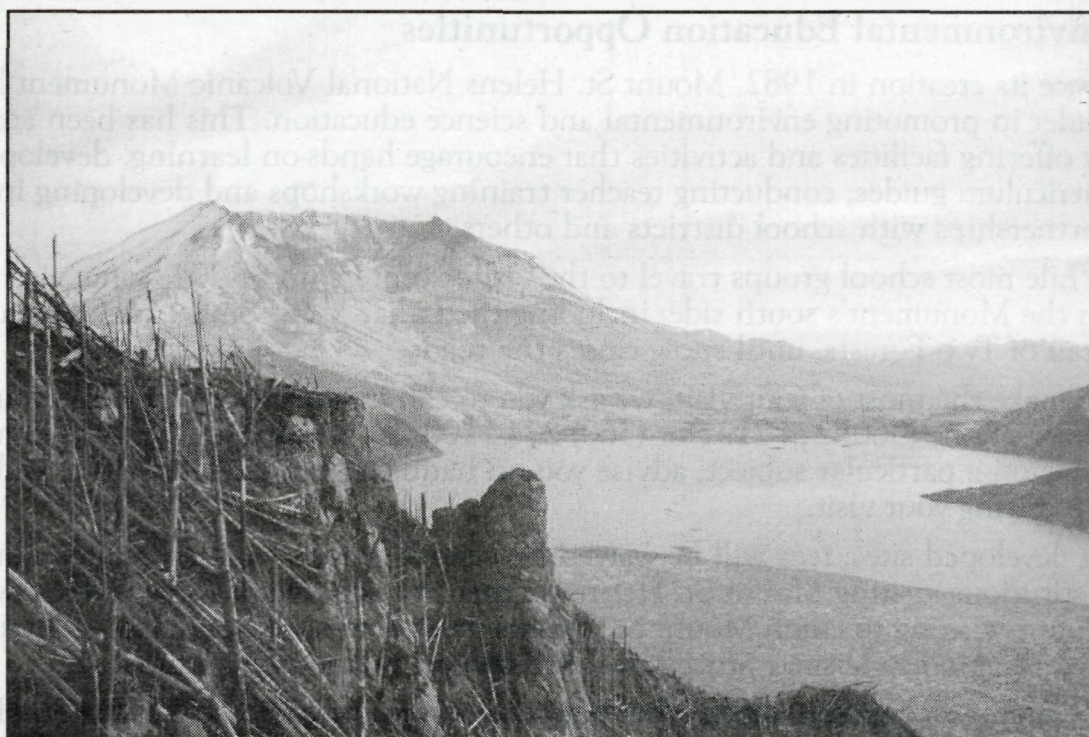
...ON TRAILS AT MOUNT ST. HELENS!!

Trails In The Restricted Area

A restricted area has been established in the heart of the National Volcanic Monument to protect opportunities for scientific research and allow for the recovery of plant and animal life. The following rules apply in the restricted area:

- Stay on the trail; off-trail travel prohibited. (\$100.00 minimum fine).
- No camping is allowed in the restricted area.
- Disturbing research plots or removal of any natural features is strictly prohibited.
- Access into the crater is strictly prohibited.
- Fires are not allowed within the blast area.
- Pets and bicycles are prohibited.

For more detailed information and maps, contact one of the visitor centers or a Forest Ranger District Office.



Independence Pass

Safety

All hikers are responsible for their own safety.

Be prepared by bringing the ten essentials:

1. Map and knowledge of the trail you're hiking. Let someone know your destination and your return time
2. Flashlight
3. Extra food
4. Extra Clothing
5. Sunglasses/sunscreen/hat for blast area
6. First aid kit
7. Pocket knife
8. Waterproof matches, candles or fire starter
9. Water or the means to purify water (some areas are hot and dry in the summer)
10. Tarp, tent or emergency shelter

East Side Trails

*Interpretive Trail
TRAIL NAME:

Trail #	Users	Difficulty	Length (miles)	Dogs	Trail head Facilities	Elev. Change
Boundary (Norway Pass to Hummocks)	1		19	N		up to 3000 ft.
Harmony	224		1.0	N		572 ft.
Independence Pass	227		3.5	Y		500 ft.
Iron Creek CG	187		1.5	Y		None
Iron Creek Old-Growth	83		.25	Y		None
*Meta Lake	210		.25	Y		None
Truman	207		5.8	N		1200 ft.
Woods Creek Watchable Wildlife	247		2.5	Y		None

East, beyond reach of the volcano's power, old-growth forests and lush vegetation offer a sharp contrast to the shade of gray in the blast area.

Trails along Forest Road 99 lead hikers into the heart of the blast area and provide outstanding views of Spill Lake. *Water pumps are located at Norway Pass Trailhead on Forest Road 26 and the Meta Lake Trailhead on Forest Road 99.

South Side Trails

*Interpretive Trail
TRAIL NAME:

Trail #	Users	Difficulty	Length (miles)	Dogs	Trail head Facilities	Elev. Change
Ape Cave (Lower)	234		.75	N		100 ft.
Ape Cave (Upper)	239		1.5	N		400 ft.
Ape Canyon	234		5.5	Y		1400 ft.
June Lake	216B		1.5	Y		500 ft.
*Lava Canyon	184		3.0	Y		1350 ft.
Loowit	216		27	N		Varied
Sheep Canyon	240		2.8	Y		1200 ft.
*Trail of Two Forests	233		.25	Y		None

South side trails provide the hiker with outstanding opportunities to learn of the ancient lava flows and recent mudflows that scoured down the slopes of Mount St. Helens.

Discover the longest continuous lava tube in the continental U.S. formed over 1,900 years ago. *There are no water pumps on this side of the Monument.

EDUCATION AND FUN...

Environmental Education Opportunities

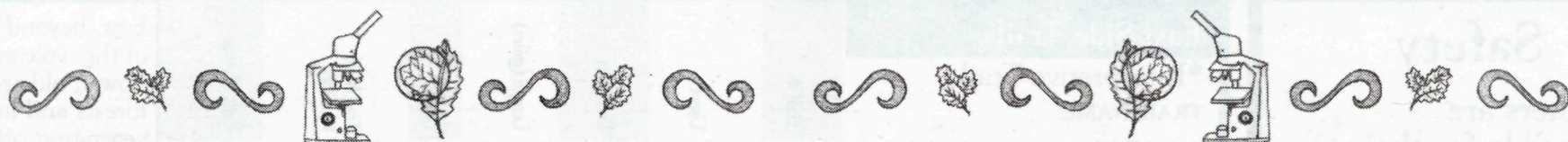
Since its creation in 1982, Mount St. Helens National Volcanic Monument has been a leader in promoting environmental and science education. This has been accomplished by offering facilities and activities that encourage hands-on learning, developing curriculum guides, conducting teacher training workshops and developing innovative partnerships with school districts and others.

While most school groups travel to the visitor centers on SR504, some visit attractions on the Monument's south side, including the Lahar Viewpoint, Ape Cave, and the Trail of Two Forests, until snow closes the roads.

To make the most of your visit, we ask you to call in advance to schedule your date. Please phone (360) 274-2131 or (360) 274-2100. By scheduling ahead we can help you focus on a particular subject, advise you on hands-on activities available, and work with you during your visit.

At developed sites, fees will be waived for school groups from accredited educational institutions visiting Mount St. Helens as part of a school assignment. However, school groups wishing to climb Mount St. Helens must obtain and purchase climbing permits according to established procedures. Fee waivers will not be granted.

For more information about other educational opportunities at Mount St. Helens please contact the Environmental Education Coordinator at (360) 247-3900. You can also visit Mount St. Helens on the Internet at: <http://lithium.vancouver.wsu.edu/gpnf/>.



Can You Track an Animal?

Draw a line from the animal to the track it would leave.

1. Rabbit

2. Skunk

3. Chipmunk

4. Mouse

5. Owl

6. Deer

7. Pika



Tracks Answers
A-6, B-7, C-4, D-3, E-1, F-2, G-5

Mount St. Helens Foundation

Field Trips and Classroom Programs

Mount St. Helens' volcanic landscape is a powerful learning tool that initiates a sense of wonder and curiosity in students. A field trip to Mount St. Helens should be an exploration of the fascinating resources at their fingertips, from the moment the bus enters the Monument, until the students leave at the end of the day. However, many teachers need help to make the most out of a Mount St. Helens experience, whether during a field trip or in the classroom.

The non-profit Mount St. Helens Foundation conducts field trips, as well as earth and life science classroom presentations. The programs are inquiry-based, meet different learning styles and grade levels, and fulfill many Washington State Essential Academic Learning Requirements in Science. The Foundation also co-sponsors teacher's workshops targeted for middle and elementary school teachers. The next "A Living Laboratory-Volcanoes" workshops will be conducted on September 19 and October 3. For additional information write: P.O. Box 3084, Battle Ground, WA 98604; or call (360) 225-2129; or e-mail at mshffe@aol.com

...FOR EVERYONE!

Junior Rangers

The Mount St. Helens National Volcanic Monument offers a Junior Ranger program for children ages 5 thru 12 years. The program introduces children to the many plants and animals living near this active volcano, and teaches them how to help protect this unique area.

To become a Junior Ranger, go to any of the Monument visitor centers and ask at the counter for the activity sheet. After completing the requirements described in the sheet, kids are awarded an official Junior Ranger certificate. A Junior Ranger patch is available in the bookstores. Both kids and adults will benefit by sharing the fun of becoming a Junior Ranger.



Life Returns To Mount St. Helens

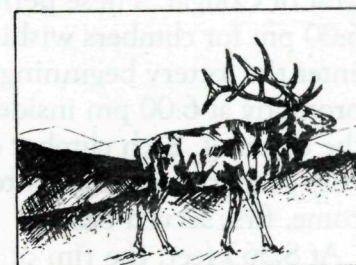
Northern Pocket Gopher

The pocket gopher is the farmer of a new landscape near the volcano. Though you may never see one of these palm-size mammals, they are abundant throughout much of the blast area. Gophers leave evidence of their winter's work as the snow melts and reveals long earth cores atop the ash. You may be surprised to find these cores are solid upon close inspection. The pocket gopher forms tunnels in the deep snow, then as it feeds on underground plant parts, it brings up fertile soil from below the ash, stuffing these long snow tunnels. This soil mixture becomes a seed bed for new plant life which, in turn, may provide roots and bulbs for a new generation of gophers.



Elk

Surprisingly, elk or "wapiti" were seen on the landslide deposit west of the volcano only weeks after the May 18th eruption. In recent years, as more plant life emerges, these large relatives of deer move throughout the blast zone, feeding in the valleys in winter and moving to the higher slopes in the spring and summer. As they climb steep slopes, their hooves erode the volcanic debris, uncovering soil and speeding the return of plants. Even the droppings of elk contribute valuable nutrients for plants, and carry plant seeds far into the blown down forest area, thus helping with the reintroduction of vegetation.



Fireweed

From seeds that float like parachutes in the wind, these hardy plants send out roots that can reach fertile soil below the sterile volcanic ash. By mid-summer the slopes and ridges near the volcano abound with the flaming pink flowers that appear in clusters along a stem. As the plants die back in the fall their leaves and stems collect on the ash providing organic matter for the creation of new soil.



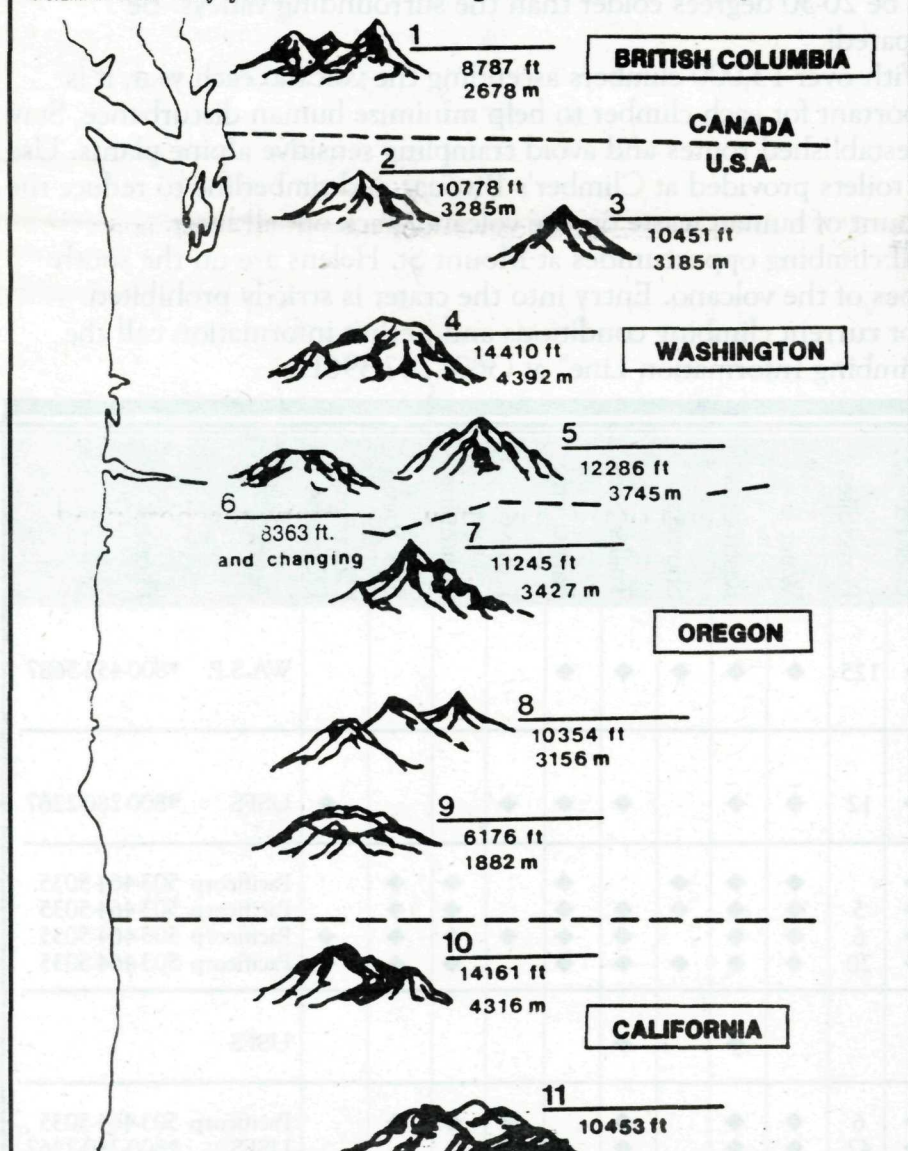
Mountain Bluebird

The downed trees and shattered trunks of the remaining forest near the volcano have provided homes for some forest creatures. The mountain bluebird nests in cavities found in snags. These birds prefer open areas where they feed on insects. The sky-blue color of the male bird contrasts with the ashen colors in the blast zone. Its soft high warble can be heard in the early morning.



The Cascade Mountains

The Cascade Mountains extend from British Columbia, Canada to California. Try your luck at naming them all on the map below.



Answers:

1. Mt. Garibaldi 2. Mt. Baker 3. Glacier Peak
4. Mt. Rainier 5. Mt. Adams 6. Mount St. Helens
7. Mt. Hood 8. Three Sisters 9. Crater Lake
10. Mt. Shasta 11. Lassen Peak

MOUNT ST. HELENS CLIMBING & CAMPING INFORMATION



FEE AREA

Reaching The Summit

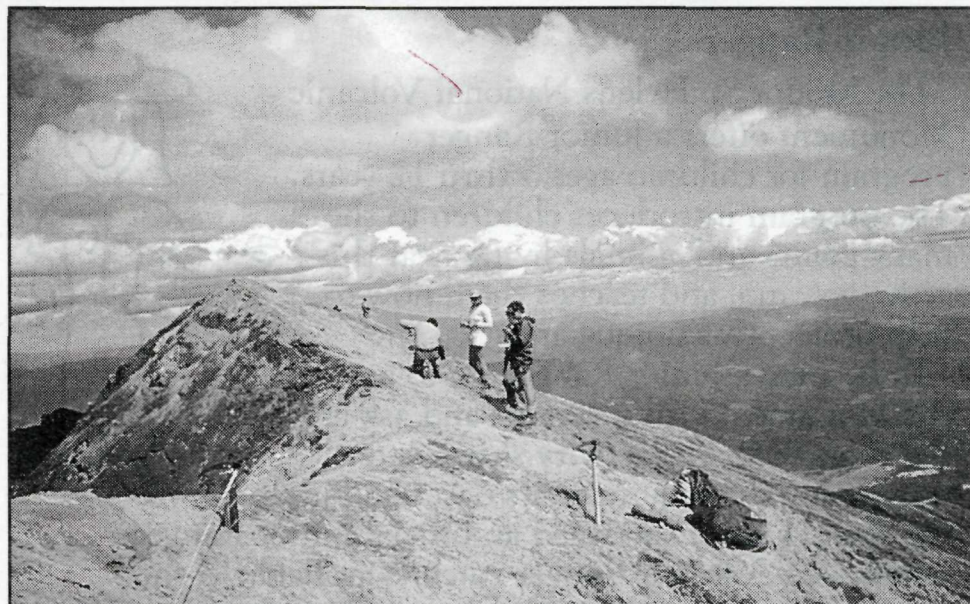
The climb to the crater rim of Mount St. Helens is only one of many ways to experience the volcano. The climb is not a trail hike, it is a rugged, off-trail scramble. This climb is suitable for people in good physical condition who are comfortable on steep terrain.

Permits are required year-round to climb above 4,800 feet elevation on Mount St. Helens. From April 1 through October 31, there is a \$15.00 per person fee for a one-day climbing permit. An annual pass is available for \$30.00. The climbing permit fee is part of the Recreation Fee Demonstration Program. It allows the Monument to retain up to 80% of the funds collected from climbing permits to support services and facilities for climbers.

From May 15 through October 31, access is limited to 100 climbers per day. During the quota season advance reservations are available from Monument Headquarters. Plan ahead because the demand is high, and many dates are filled far in advance.

Un-reserved permits for 50 climbers are available daily at Jack's Restaurant and Store. Jack's Restaurant and Store is located on State Route 503, 23 miles east of Woodland, WA (I-5 Exit 21) and 5 miles west of Cougar. These permits are distributed by lottery each day at 6:00 pm for climbers wishing to climb the following day. You may enter the lottery beginning at 5:30 pm. The lottery will take place promptly at 6:00 pm inside the store. All climbers present may enter the drawing. Each climber drawn may purchase up to four permits. Any permits remaining after the lottery will be available on a first come, first served basis.

At 8,363 feet, the rim of Mount St. Helens provides outstanding views of the crater, lava dome, blast area, and surrounding volcanic peaks. The most popular route to the summit is Monitor Ridge, starting at Climber's Bivouac. Most climbers complete the round trip in 7 to 12 hours. The route begins on the Ptarmigan Trail #216A which gently climbs for about 2 miles to timberline. Above timberline, the route travels over steep, rocky lava flows on the lower slopes. The upper slopes are covered in loose, sandy volcanic ash. In early summer,



Summit of Mount St. Helens

snow is commonly encountered, especially in gully bottoms.

All climbers should carry extra clothing and rain gear, sun protection for skin and eyes, extra food and water, sturdy boots, gaiters, and a first aid kit. If you plan to climb on snow, an ice axe is highly recommended.

Weather and climbing conditions can change rapidly. Wind, rain, fog and even snow can form quickly. The temperature at the summit can be 20-30 degrees colder than the surrounding valleys. Be prepared!

With over 13,000 climbers ascending the volcano each year, it is important for each climber to help minimize human disturbance. Stay on established routes and avoid trampling sensitive alpine plants. Use the toilets provided at Climber's Bivouac and timberline to reduce the amount of human waste on the volcano. Pack out all litter.

All climbing opportunities at Mount St. Helens are on the south slopes of the volcano. Entry into the crater is strictly prohibited.

For current climbing conditions and permit information call the "Climbing Information Line" at (360) 247-3961.

Camping

Dispersed camping is permitted outside of the Restricted Area of the National Volcanic Monument. Private, State and National Forest campgrounds can be found near the Monument boundary.

This chart summarizes camping opportunities in the Mount St. Helens vicinity. Open fires are not permitted in the blowdown forest of the Monument (gas camp stoves only). When fire danger is high, trails and access in some areas may be closed.

Location	Campground	#Of Sites	User Fee	Picnic Sites	Water	Restrooms	Showers	Trailer Sites	Barrier Free	Fishing	Swimming	Boat Ramp	Campfire Programs	Agency	Phone #
West Side: State Hwy. 504	Sequest State Park	92	◆	125	◆	◆	◆	◆	◆					WA.S.P.	*800-452-5687
East Side: Forest Road 25	Iron Creek	98	◆	12	◆	◆		◆	◆	◆			◆	USFS	*800-280-2267
South Side: State Hwy. 503	Cougar Beaver Bay Swift Cresap Bay	60 78 93 73	◆ ◆ ◆ ◆	5 6 20	◆ ◆ ◆ ◆	◆ ◆ ◆ ◆	◆ ◆ ◆ ◆	◆ ◆ ◆ ◆	◆ ◆ ◆ ◆		◆ ◆ ◆ ◆	◆ ◆ ◆ ◆		Pacificorp Pacificorp Pacificorp Pacificorp	503-464-5035 503-464-5035 503-464-5035 503-464-5035
County Rd. 81	Kalama Horse Camp	10				◆		◆						USFS	
Forest Road 90	Swift Lower Falls	93 42	◆ ◆	6 42	◆ ◆	◆ ◆		◆ ◆	◆ ◆	◆ ◆	◆ ◆	◆ ◆		Pacificorp USFS	503-464-5035 *800-280-2267
North Side: U.S. Hwy 12	Lewis & Clark State Park	25	◆	62	◆	◆	◆	◆						WA.S.P.	*800-452-5687
Forest Road 23	Tower Rock	22	◆		◆	◆								USFS	*800-280-2267

*Reservations required



The Northwest Interpretive Association



The Northwest Interpretive Association is a private non-profit organization that supports Forest Service interpretive and visitor services through the sale of a variety of publications, maps and educational materials. Proceeds from the sale of interpretive materials are used to fund Monument interpretive programs, the Volcano Review newspaper, new exhibits and displays, training seminars and much, much more.

MOUNT ST. HELENS

Eruptions of Mount St. Helens: Past, Present and Future.

Tilling, 47 p. 4.95

This photo-packed book explores the vast array of information gathered from one of the world's most studied geologic sites.

Fire Mountain.

Boly, 74 p. Softcover 9.95 Hardcover 18.95

Information about Mount St. Helens' eruption in a conversational tone. Includes diagrams and black and white as well as color photos.

Mount St. Helens: The Eruption and Recovery of a Volcano.

Carson, 160 p. 19.95

This book documents the eruption and subsequent recovery of Mount St. Helens.

Story Behind The Scenery: Mount St. Helens.

Corcoran, 48 p. 7.95

Spectacular photographs and revealing text tell the Mount St. Helens story, focusing on the May 18, 1980 eruption.

Mount St. Helens, The Continuing Story in Pictures.

Quiring, 48 p. 7.95

French, German or Spanish 8.95

A continuation of the Story Behind The Scenery book about Mount St. Helens, focusing on the rebirth of plant and animal life in the area.

Truman of St. Helens: The Man and His Mountain.

Rosen, 163 p. 9.95

Conveys Truman's love for the mountain in a colorful style.

Ape Cave.

Halliday, 25 p. 1.95

Learn how and when this longest known continuous lava tube in the contiguous 48 states was formed.

Roadside Geology of Mount St. Helens and Vicinity.

Pringle, 115 p. 4.95

Examines the history, structure and processes of Mount St. Helens and early Cascade volcanoes. Describes geologic features in the Monument.

Portrait of Mount St. Helens

Williams/Warren, 80 p. 12.95

With vivid photographs, this book illuminates the mountain's pristine pre-eruption beauty, the blast itself, the dramatically changed post eruption landscape, and astonishing recovery of the ecosystem surrounding it.

LAPEL PINS

Interpretive Lapel Pins from parks and forests around the Northwest: Mount St. Helens NVM, Mount Rainier NP, Olympic NF, North Cascades NP. Each 3.95

Friends of Mount St. Helens 5.00

MAPS AND TRAIL GUIDES

Mount St. Helens - Pathways to Discovery.

Seeshotz, 166 p. 14.95

Visitor guide to Mount St. Helens. General information on roads and trails.

Mount St. Helens NVM

Map 4.00

A map and guide for visitors to the National Volcanic Monument.

A Complete Guide to Mount St. Helens

Vielbig, 157 p. 12.95

A guide for hiking, climbing, skiing and nature viewing for the Mount St. Helens area.

Road Guide to Mount St. Helens.

Decker, 59 p. 4.95

German translation 6.95

This book is designed to guide visitors on a driving tour of the major sites in the National Volcanic Monument.

National Forest Maps each 4.00

Detailed topographic maps of Mount Adams, Mount Baker-Snoqualmie NF, Gifford Pinchot NF, Goat Rocks Wilderness, Mount Hood NF, Olympic NF, Wenatchee NF, Willamette NF.

Huckleberry Book 9.95

Bowen, 90 p. A charming book which examines the lore and fact of the huckleberry of the West. Full attention is given to defining types, picking, preserving and proper manners in a huckleberry patch. Generously supplied with recipes from across the mountains.

VIDEO

The Fire Below Us 24.95

A dramatic 60 minute documentary combining eyewitness accounts and spectacular footage about Mount St. Helens, reminding us of the power of nature. VHS and PAL format.

Fire Mountain: The Eruption and Rebirth of Mount St. Helens 29.95

A 60 minute exploration of Mount St. Helens before and after the eruption of May 18, 1980. Explains why the mountain erupted, how life survived, and what the future may hold for this changing landscape. VHS and PAL format.

Message from the Mountain 19.95

Experience one of the earth's most dramatic volcanic eruptions with a film that puts you in the path of Mount St. Helens fury. This award winning movie is shown at Johnston Ridge Observatory. 20 min.

POSTCARDS AND POSTERS

12 Mount St. Helens postcards 3.00

Rosenquist Strip: 1.50

5 postcards showing the actual sequence of the eruption.

Eruption Poster 7.95

Power and Spirit Panorama 4.00
12x36 panoramic poster of Mount St. Helens and Spirit Lake.

Membership entitles a 15% discount. Orders must be accompanied by full payment: check, charge or money order. Make checks payable to Northwest Interpretive Association (NWIA). Washington residents must add sales tax. Allow 3 to 4 weeks delivery. All books are paperback unless otherwise noted. Prices subject to change without notice.

For more information contact (360) 274-2125.

PACIFIC NORTHWEST

Cascade/Olympic Natural History.

Mathews, 625 p. 22.50

A field guide for the Cascade and Olympic Mountain ranges. With photographs and drawings.

Volcanic Landscapes

Mueller, 223 p. 12.95

Area maps and photographs of South Cascades volcanic cinder cones, lava flows, caves, craters and more.

Plants of the Pacific Northwest Coast.

Bojar/MacKinnon, 528 p. 19.95

Easy to use field guide features 794 species of plants found along the Pacific coast from Alaska to Oregon.

The Volcano Review is produced by the Northwest Interpretive Association in Cooperation with the USDA Forest Service.

FOR CHILDREN

Discovering Volcanoes.

Fields/Machlis, 31 p. 4.95

Earthsearch. Cassidy, 109 p. 19.95

A children's hands-on geography museum in a book. Conceived and developed by teachers.

Mount St. Helens

Activity Kit 16.50

Activity kit that explores geological processes and events that occur during an eruption. Includes tested classroom activities, teacher info, map and ash from the 1980 eruption.

Magnets each 1.00

Assorted Mount St. Helens magnets displaying the beauty of the 1980 eruption and the post-eruption landscape.

SMOKEY BEAR

Smokey Bear T-shirts.

Cotton/polyester. 15.95

Adult sizes (S,M,L,XL) 10.95

Children's sizes (XS,S,M,L) 8.00

Smokey Bear Doll 8 1/2" 15.00

Smokey Bear Hand Puppet

Large Emblem 2.00

Prevent Forest Fires 1.00

Junior Forest Ranger 1.00

Protect Our Forests 2.60

Think - Thanks 2.25

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• Stephen Mather..... 500.00

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*Includes a copy of:

☐ Forests of Mount Rainier

☐ Islands of Rivers

☐ Drummers and Dreamers

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Send your order form and any correspondence to:

Northwest Interpretive Association, 3029 Spirit Lake Highway, Castle Rock, WA 98611

MOUNT ST. HELENS RECREATION MAP

Recreation Site Information

- Telephone
- Ranger - Led Activities
- Monument Passes sold here
- Viewpoint
- Visitor Information
- Trail Access
- Campground
- Restrooms
- Horse Access
- Ranger Station
- Picnic Area
- Barrier Free Access
- Water
- Gas
- Spelunking
- Food Concession

Legend

- Paved Road
- Gravel Road
- Trail
- Mount St. Helens National Volcanic Monument
- Monument Restricted Area

