

MOUNT ST. HELENS



National Volcanic Monument



Gifford Pinchot National Forest
Pacific Northwest Region
USDA • Forest Service



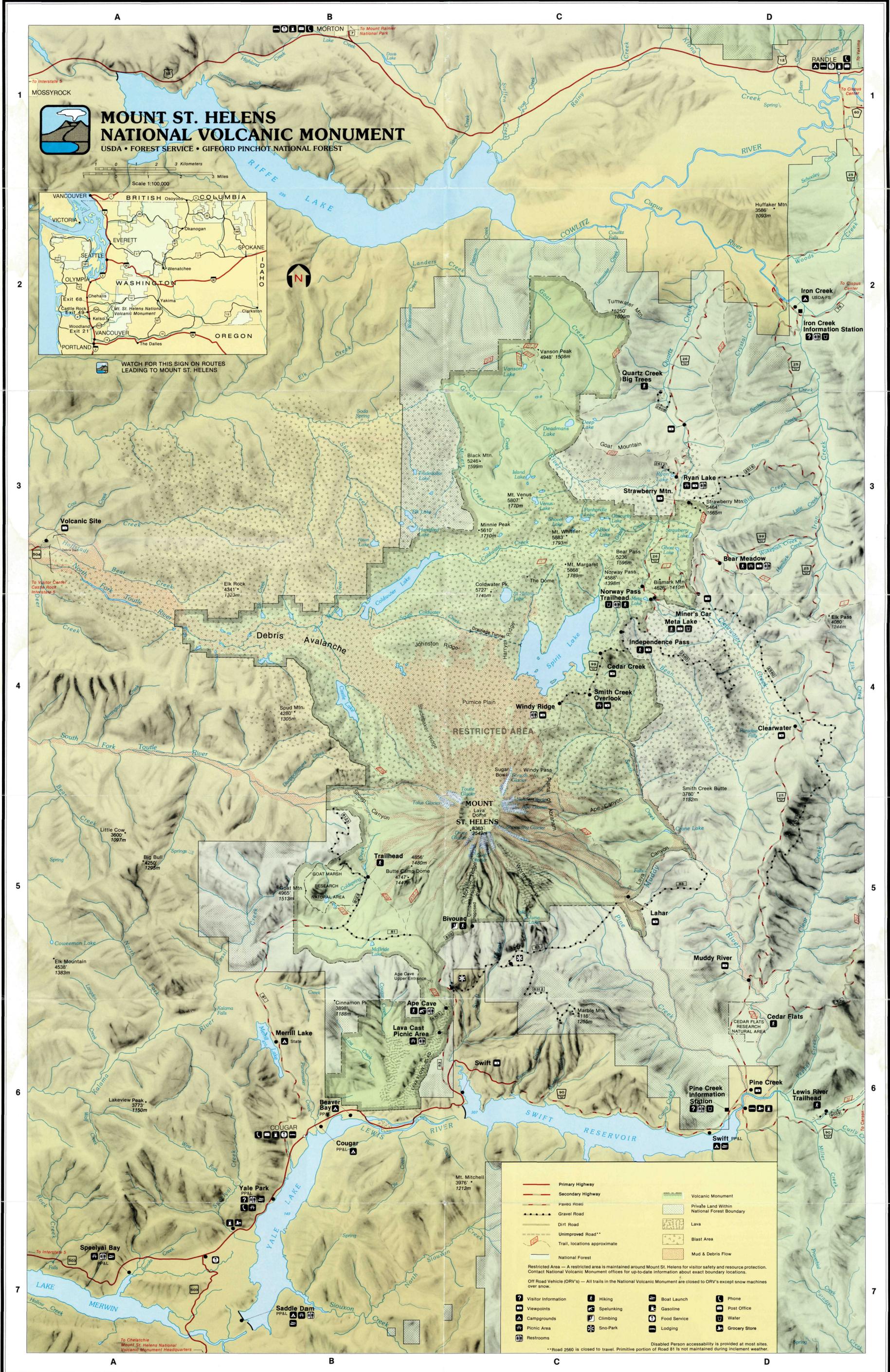
Enjoy Your Visit
 Mount St. Helens is one of three national monuments managed by the USDA Forest Service. As in our name, we stand for service to our visitors. If you have questions or need help, please contact any Forest Service employee. For further information, write or call:
 Mount St. Helens National Volcanic Monument Headquarters
 Route 1, Box 99
 Amity, WA 97001
 (509) 247-2473

"As American citizens, we have the privilege of sharing the natural treasures of our Nation. We also have the responsibility of preserving and nurturing that inheritance and bequeathing it, intact, to future generations."
 Gilbert M. Grosvenor
 President, National Geographic Society

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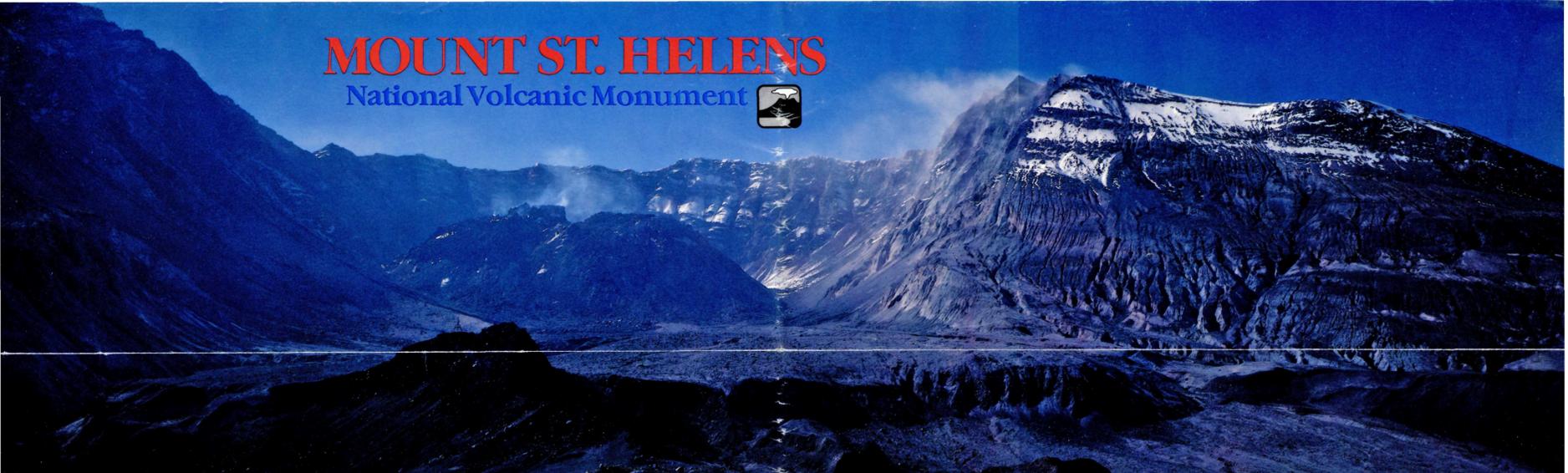
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EXPERIENCE AN ACTIVE VOLCANO

The Gifford Pinchot National Forest welcomes you to this unique part of our National Forest System. The Mount St. Helens National Volcanic Monument provides a rare opportunity to view an active volcano and observe the astonishing resurgence of life in the area surrounding it. You may drive and hike into the fascinating landscape that was so dramatically altered by the 1980 eruption, and look right into the crater, with its steaming lava dome. This map and information can help you plan and enjoy your visit to Mount St. Helens.

Recreational and educational facilities, including roadside viewpoints and hiking trails, are being developed at Mount St. Helens as an invitation to you and your family to explore, enjoy and learn from one of nature's most dynamic places. You can stop at the Visitor Center to see exhibits and distant vistas of the volcano, drive to superb viewpoints within the blown-down forest, or hike trails to view the awe-inspiring forces of nature in solitude. Informative signs and naturalist programs are available throughout the Monument to enrich your visit.

A Young And Active Volcano

In 1939 Dr. Donald B. Lawrence studied a recently fallen tree near Spirit Lake and noticed that the tree rings from the early 1800's were unusually close together. He was also intrigued because he noticed timberline was much lower on Mount St. Helens than on surrounding peaks. After further research into these mysteries, the botanist concluded that a major eruption of volcanic ash and pumice from Mount St. Helens about 1802 had suppressed the growth of nearby trees for several years.

Dr. Lawrence's discoveries were not the only evidence of recent volcanic activity. The first recorded eruption of Mount St. Helens was more than a century earlier, in 1835, when Meredith Gardner, a physician at Fort Vancouver, wrote about ashfall and what "appeared to be lava flows" visible through his telescope. Missionaries witnessed an 1842 eruption. Previously, Native Americans of the region had observed ashfall and numerous eruptions, and "Fire Mountain" had become prominent in their legends.

Even so, it was not until the early 1960's that the scientific community began to realize the potential for more eruptions. U.S. Geological Survey geologists Dr. Dwight Grandell and Dr. Donald Mullineaux found that many of the thick ash layers near Mount Rainier actually came from Mount St. Helens. It became increasingly clear that Mount St. Helens was a young and frequently active volcano. In 1978 they published a paper in the journal *Science* warning that Mount St. Helens would erupt again, perhaps before the end of the century, and could produce lava flows, ashfall, mudflows, pyroclastic flows, or volcanic domes. Their forecasts, however, were largely ignored - until 1980.

The May 18, 1980, Eruption

After 123 quiet years, Mount St. Helens reawakened in the spring of 1980. Magma pushed up into the volcano, causing earthquakes and small ash emissions for 6 weeks, and a 300-foot bulge formed on the north side of the mountain.

The May 18th eruption was triggered by a magnitude 5.1 (Richter Scale) earthquake. The swollen north flank slid into the Spirit Lake basin and down the North Fork Toutle River valley, forming the largest landslide in recorded history. A lateral blast produced a 650°F rock-laden current of ash and hot gas traveling at speeds up to 330 miles per hour. This blast toppled 150 square miles of forest north of Mount St. Helens. A vertical column

of ash erupted from the newly formed crater to a height of 12 miles. The ash, spread eastward by prevailing winds, circled the earth in just 2 weeks.

Lahars (volcanic mudflows), dense mixtures of rocks and ash mixed with water and resembling wet concrete, flowed down all slopes of the volcano. Pyroclastic flows of fiery, broken rocks, 700°F gas and ash came down the slopes at 60 miles per hour. These flows formed a pumice plain on the south shore of Spirit Lake.

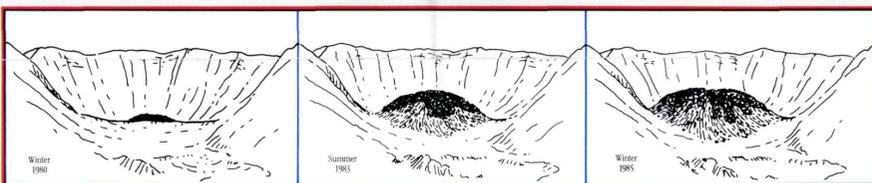
When the ash cleared, Mount St. Helens was 1,300 feet shorter. Spirit Lake was much larger, and the lush, green forest around it had been transformed into a blown-down, grey landscape. It was obvious that the powerful natural forces responsible for the Pacific Northwest's famed beauty were not just ancient history, but an ongoing natural process.

The National Volcanic Monument

Thousands of people personally witnessed the eruption, and the dramatic events were experienced by people around the world through television, radio and newspaper reports. Volcanoes have erupted in Alaska this century and Lassen Peak at the southern tip of the Cascade Range was active from 1914 to 1921, but rarely have people been able to view, record and study a major explosive eruption. (The volcanoes of Hawaii often spew lava, but rarely have explosive eruptions.) Now you have the opportunity to look through this window in time at the processes that are building the Cascade Range.

The 110,000-acre Mount St. Helens National Volcanic Monument was created through Congressional legislation in 1982 for research, education and recreation for present and future generations. The Monument was dedicated to protect and preserve this opportunity to observe the dynamic forces of nature and the natural recovery of the land.

Many visitors notice the rapid changes and wonder what they will see on their next trip. Some predict the dome will form a higher Mount St. Helens and that someday trees will again cover the mountains and valleys. But none are sure how long it may take. You can visit this magical, powerful place as a scientist or a curious visitor - and make your own predictions about the future of Mount St. Helens.



Five Years of Dome Growth Eruptive episodes between May 1980 and October 1980 produced explosive activity, pyroclastic flows and dome growth. From December 1980 to December 1985 eruptive episodes were predominantly dome growth. By winter 1985 the dome was about 900 feet high and 3000 feet in diameter.



Hikers enjoy the solitude and the dynamic landscape.



Canadian artist Paul Kane based this painting of the 1847 eruption on one of his earlier paintings and eyewitness accounts. [Reproduced by permission of the Royal Ontario Museum, Toronto, Canada.]



Before 1980, canoeing, fishing and swimming were popular activities at Spirit Lake. [Photo copyright, Ray Ahlbeck.]



The vertical eruption of May 18, 1980 spewed tephra and ash for 12 hours. The eruption plume rose to a height of over 60,000 feet.



Scientists are presently conducting more than 400 research projects, ranging from studying islands of life that survived the May 18th eruption to monitoring the growth of the lava dome within the crater.



Ape Cave And Lava Casts

Explore Ape Cave, a lava tube formed when the surface of a lava flow cooled and hardened, but the molten lava beneath the surface continued to flow. The cave opening can be entered with natural light, but for extended exploration, bring three sources of light, sturdy shoes and warm clothing, as the cave averages 42°F. (See the *Volcano Review* for details of naturalist-led walks in the cave.)

The Lahar And Ape Canyon

Stand in the boulder-strewn landscape, where mudflows swept down the mountain slope on May 18th. A 1/2-mile trail leads to a vantage point that offers a superb view of the volcano only 4 miles away and overlooks the place where the mudflow split into two drainages. For the adventuresome, hike down lahar-scoured Lava Canyon and explore the waterfalls and columnar basalt lined gorge. From the Lahar Viewpoint, hike 5 1/2 miles on the Ape Canyon Trail (#234) to the deep ravine where one of many Bigfoot legends originated. This trail continues across the barren Plains of Abraham to Windy Ridge.

Outside The Monument

At Cedar Flats Research Natural Area, walk an easy, 1-mile loop trail through 600-year-old Douglas fir and western red cedar growing on ancient mudflow deposits. Please be careful to stay on the trail, to prevent disturbance to ongoing scientific research. This superb remnant of old-growth forest provides a site for the study of natural processes in an undisturbed ecosystem. The magnificent cedars were essential to the native residents of the Northwest, providing long-lasting wood for their houses, canoes and utensils.

The vast Gifford Pinchot National Forest between Mount St. Helens and Mount Adams offers other outstanding recreational opportunities and numerous interesting examples of volcanism, including Indian Heaven Wilderness and Mount Adams Wilderness. The Lewis River has many beautiful waterfalls. Both the Lewis and Cispus rivers offer places to hike, camp, raft, and fish. Information and a \$1.00 forest map are available from the Gifford Pinchot National Forest, 500 W. 12th Street, Vancouver, WA 98660.

Close observation can provide new perspectives.

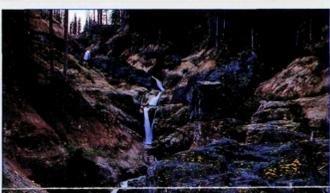
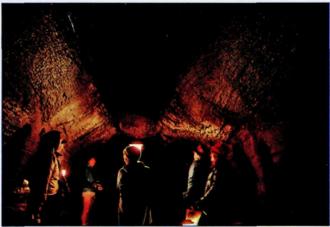


What To See And Do - Lahars And Lava Flows (South Side)



Near the lava cast picnic area, walk on a boardwalk across the jagged surface of a 1,000-year-old lava flow and examine casts created when tree trunks were engulfed by molten lava.

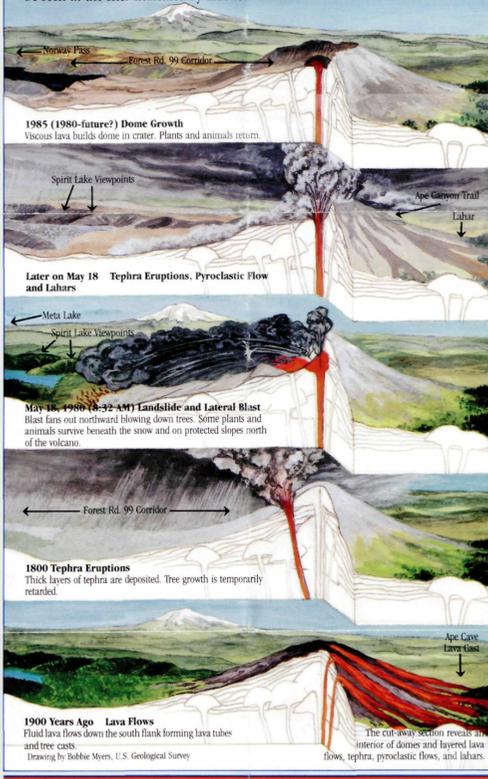
The lower 1/2-mile section of Ape Cave is easier to walk than the upper 1/2 mile.



For the adventuresome, hike down lahar-scoured Lava Canyon and explore the waterfalls and columnar basalt lined gorge.

EXPERIENCE AN EVERCHANGING VOLCANO

These simplified diagrams depict eruptions at Mount St. Helens. The view is to the east; Mount Adams is shown in the background. Evidence of these eruptions can be seen at the sites indicated by arrows.



The cut-away section reveals the interior of domes and layered lava flows, tephra, pyroclastic flows, and lahars.

What To See And Do - Crater Views And Blown-Down Forest (North Side)



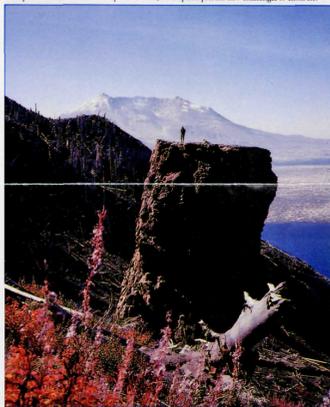
Road 99 to Spirit Lake Viewpoints and Windy Ridge

View and photograph breathtaking panoramas of the volcano and Spirit Lake. From the east, Road 99 begins in forest where a layer of pumice is the only sign of recent volcanic activity, then enters a transition zone where trees were killed but left standing, and finally ends at Windy Ridge within the blown-down forest.

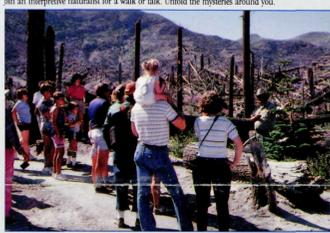
The picnic area at Bear Meadows offers the first view of Mount St. Helens. A dramatic sequence of photographs documenting the May 18th eruption was taken from here. Imagine the experience of the photographer and others camped here as the mountain suddenly erupted and ash clouds raced toward them.

Turnouts along this road also provide vistas of mudflows and older, glacier-carved volcanoes: Mount Hood to the south, Mount Adams to the east, and Mount Rainier to the north. Short trails and interpretive talks are available to help you enjoy and understand this special place. (A schedule of naturalist activities is contained in the *Volcano Review* available at the Visitor Center and information stations.)

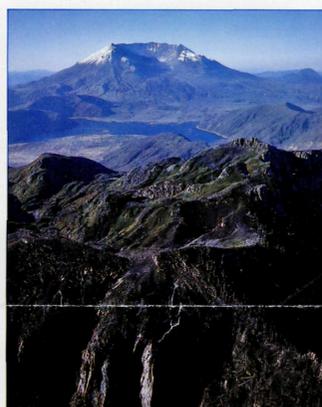
Rock pinnacles hidden in forests prior to the 1980 eruption present new challenges to climbers.



Join an interpretive naturalist for a walk or talk. Unfold the mysteries around you.



Hikers to Norway Pass have spectacular views into the crater and the steaming lava dome.



Northwest views quickly return to the volcanic landscape.

Meta Lake

Take the flat, paved, 1/2-mile trail to Meta Lake, and see how small trees protected by deep snow survived the blast, while taller ones were killed. Listen for the sounds of birds, frogs and insects recolonizing the area.

Norway Pass

For an outstanding view of the crater and lava dome, hike 2 miles up Boundary Trail #1 to Norway Pass. This trail crosses a sheltered hillside covered in mid-summer with avalanche lilies that survived the 1980 blast. Water is available at the trailhead.

Ryan Lake

Picnic at this small lake located near the northernmost extension of the blown-down forest. Nearby trails lead to Goat Mountain, Vanson Peak and through stands of old-growth Douglas fir along the Green River and Quartz Creek.



The unique "outdoor classroom" at Mount St. Helens provides everyone, from scientist to casual visitor, the opportunity to explore and learn about the effects of a volcanic eruption.

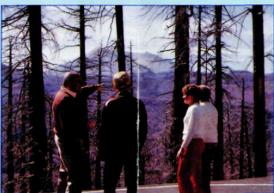
PLANNING YOUR VISIT

Driving Times Within the National Volcanic Monument and from Seattle and Portland. (Time Shown to the Nearest 1/4 Hour - Letter and Number Indicate Map Location)

	Ape Cave B-6	Bear Meadows C-5	Cougar WA B-6	Iron Creek Info Sta. D-2	Lahar Viewpoint C-3	Meta-Norway Trailheads C-3	Pine Creek Info Sta. D-6	Rainier WA D-1	Windy Ridge Spirit Lake C-4	Visitor Center*
Ape Cave B-6		1 1/2	1 1/4	1 1/4	1 1/4	1 1/4	1 1/2	2	2	1 1/2
Bear Meadows C-5	1 1/2		1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1	1 1/2	2 1/2
Cougar WA B-6	1 1/4	1 1/2		1 1/4	1 1/4	1 1/4	1 1/2	2	2	1 1/4
Iron Creek Info Sta. D-2	1 1/4	1 1/2	1 1/4		2	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
Lahar Viewpoint C-3	1 1/4	1 1/2	1 1/4	2		2	1 1/4	2 1/4	2 1/4	1 1/4
Meta-Norway Trailheads C-3	1 1/4	1 1/2	1 1/4	2	1 1/4		1 1/4	1	1 1/2	2 1/2
Pine Creek Info Sta. D-6	1 1/2	1	1 1/2	1 1/4	1 1/4	1 1/4		1 1/2	1 1/2	1 1/4
Rainier WA D-1	2	1	2	1 1/4	1 1/4	1	1 1/2		1 1/2	1 1/2
Windy Ridge Spirit Lake C-4	2	1 1/2	2 1/4	1 1/4	2 1/4	1 1/4	1 1/2		1 1/2	1 1/4
Visitor Center*	1 1/2	2 1/2	1 1/4	1 1/4	1 1/4	2 1/2	1 1/4	1 1/2		1
Seattle WA										2
Portland, OR										1 1/2

*E of Castle Rock, WA

Viewed from above the crater rim, the 1/2 mile wide and 800 foot high lava dome fills the crater. Spirit Lake and Mount Rainier are in the background.



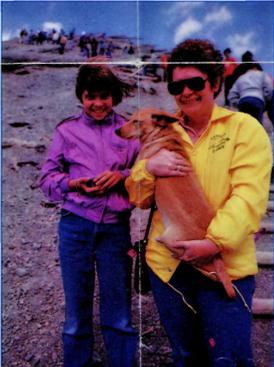
Visitors share their experiences and ideas about Mount St. Helens.



Hikers to Norway Pass have spectacular views into the crater and the steaming lava dome.



The slopes of Mount St. Helens beckon skiers and snowmobilers.



Picnic along the way at Ryan Lake, Bear Meadow, Lava Cast or a host of other scenic locations in the Monument.

Visitors enjoy the Mount St. Helens National Volcanic Monument.

Information and Interpretive Services

The new Mount St. Helens National Volcanic Monument Visitor Center, opening in 1986, is located east of Castle Rock, 5 miles from Interstate 5 (Exit 49). The Center's mailing address is 3029 Spirit Lake Highway, Castle Rock, WA 98611. You may call the Center at (206) 274-4058. Except for some major holidays, it will be open daily throughout the year. Exhibits and audiovisual programs at the Visitor Center describe the geologic, biologic and cultural history of the area. Interpretive naturalist present programs and are available to answer your questions and help plan your visit.

Pine Creek and Iron Creek Information Stations, south and north of Mount St. Helens, are open daily during the summer to provide you with current information and maps. A variety of talks, walks and campfire programs are conducted by interpretive naturalists throughout the Monument during the summer.

The *Volcano Review*, available free at the Visitor Center and information stations, gives up-to-date information on interpretive activities and services within the Monument. The Visitor Center and Pine Creek Information Station also sell books.

Regulations

- A restricted zone around Mount St. Helens is closed to entry for visitor safety and resource protection. During periods of volcanic activity, some additional areas of the Monument may be closed.
- All blown-down forest and fringe areas are closed to open campfires. When critical fire conditions exist, use of camp stoves and smoking may also be prohibited. In extreme conditions entry may be restricted in high hazard areas.
- Licensed off-road and other motorized vehicles may be used only on Monument roads, except for snow machines or snow.
- Trails in the blown-down forest are closed to horses to prevent the spread of foreign seeds, but numerous other trails in and near the Monument are open to horses.
- Summit climbs will be permitted by 1987 (depending upon the volcanic risk at the time).
- Hunting and fishing are allowed in parts of the Monument, but Washington State licenses are required.

Land Ethics

- Please leave pumice, plants and other natural materials for others to see. The removal of "just a couple" of these may seem trivial, but when multiplied by millions of visitors, real damage is done. Non-commercial huckleberry and mushroom picking is permitted.
- Don't litter; if you brought it in, please take it out.
- Walk lightly on the land; stay on trails and try to avoid stepping on small plants.