

# Know Your Cones

Think you know your volcanoes? Check your knowledge against these profiles of Washington's big cones. From north to south ...



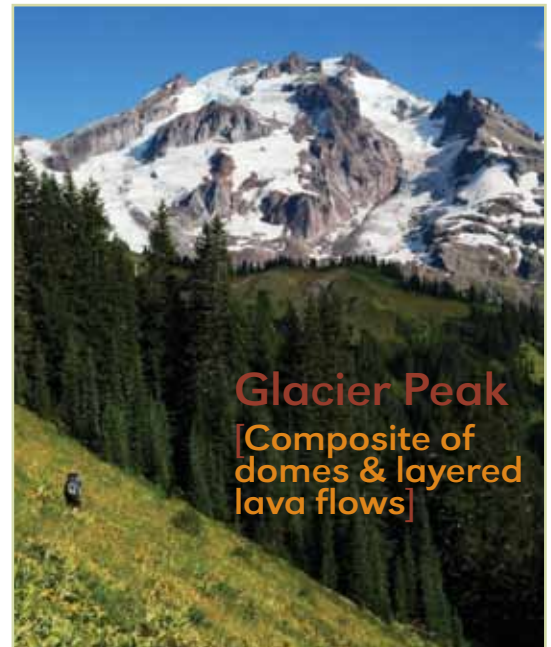
**[Names]** Various tribes have named this conspicuous peak. "Koma Kulshan," the Lummi name, literally means "mountain with a puncture wound" (the crater), but is figuratively translated as "shot at the point," probably referring to the flattened summit plateau. The Nooksack called it "Quck Sam-ik," meaning "white mountain," and the Skagit just called it "Kobah," meaning "mountain."

Spanish explorer Gonzalo Lopez de Haro named the mountain "Gran Montaña del Carmelo" in 1790, for the Carmelite monks' white robes. Two years later, George Vancouver bestowed the name used today in honor of his third lieutenant, Joseph Baker.

**[Volcanic activity]** While Mount Baker itself is about 40,000 years old, eruptions have occurred periodically for 1.2 million years in the Mount Baker Volcanic Field (MBVF). This volcanic area extends radially for 10 miles or so from the modern cone.

The Baker cone was built by perhaps 100 lavaflow eruptions from Carmelo Crater, now ice-filled beneath the summit ice cap. Baker itself appears to have had only relatively mild ash eruptions. The most recent magma eruption occurred 6,500 years ago, making Baker the youngest stratovolcano in the MBVF. Steam explosions occurred in 1843, and an increase in thermal activity led to eruption warnings in 1975. Before the Mount St. Helens eruption in 1980, Mount Baker was the center of volcano studies in the Cascades.

**[Age: about 40,000 years old.]**



**[Names]** The Sauk Tribe called this peak "Dakobed" or "Takobia," reportedly meaning "Great Parent." The descriptive name Glacier Peak first appeared on maps in 1898.

**[Volcanic activity]** Glacier Peak is smaller than the other glaciated stratovolcanoes in Washington's Cascades. Isolated and poorly studied, it has yet to be thoroughly geologically mapped. We do know that it consists of separate lava domes, including the summit area and Disappointment Peak to the south. There does not appear to be a discrete summit crater, as there is at Baker or Rainier. Volcanic rocks reach less than 3,500 feet above the nonvolcanic bedrock beneath the peak.

A few ash eruptions have occurred in the past 4,000 years, and Glacier Peak may have been volcanically active not too long before European settlement. Eruptions much larger than the one at Mount St. Helens in 1980 occurred around 13,100 years ago. Large quantities of pumice were ejected. The ash spread into Alberta, and hot ash flows scorched their way down the White Chuck, Suiattle, and Sauk valleys. These may have been the largest eruptions in the Cascades since the end of the Pleistocene ice advances.

**[Age: Unknown.]**

## Mount Rainier [stratovolcano]



**[Names]** The Puyallup Tribe called this mountain various forms of “Tahoma,” meaning “mother of waters.” An alternative usage may have been “Ta-Koma,” which literally means “larger than Koma” (Mount Baker). The name Rainier commemorates British Navy Rear Admiral Peter Rainier. It was given by Captain George Vancouver in 1792.

**[Volcanic activity]** The earliest evidence of volcanism in the Rainier area is at least 840,000 years old and the current cone may be 500,000 years old.

One very small ash eruption from around 1840 is preserved in the geologic record. Other reports of eruptions as recently as 1880 are not verified.

Mount Rainier is a very dangerous volcano because large populations are within reach of its lahars. At least 55 of these lahars have descended river valleys since the end of the last great ice age. The largest, the Osceola Mudflow, occurred only 5,700 years ago, reaching saltwater via the White River and traveling perhaps as far as the site of Renton. The Electron Mudflow descended the Puyallup River valley about 500 years ago. This large lahar was associated not with an eruption but with gravitational collapse of part of the upper cone.

There have been at least 10 ash-producing eruptions from Mount Rainier in the past 2,600 years. The young Columbia Crest cinder cone forming the summit is probably less than 2,200 years old. Steamy fumaroles have melted a cave system between the floor of this young crater and the ice that fills it.

**[Age: 500,000 years old]**

**[Climb Baker] Route:** Easton Glacier, 7,600 ft elevation gain, 14 miles round trip. **Permits and Passes:** Northwest Forest Pass, \$5 per day or \$30 annual. **Registration:** not required. Mount Baker Ranger Station (Sedro Woolley, WA). **When:** The best time to climb is May through August. If you want to get a good ski in, do this early season (February–March) to avoid open crevasses. **Essential Gear:** crampons, ice axe, harness, carabiner, prusiks, runners, chest harness, helmet, rescue pulley, picket, wands, belay device, glacier rope. A cell phone and GPS unit are advised.

**[Height: 10,781 feet/3,286 meters]**

**[Climb Glacier] Route:** Disappointment Peak Cleaver (Gerdine Ridge), 8,200 ft elevation gain, 26 miles round trip. **Permits and Passes:** Northwest Forest Pass, \$5 per day or \$30 annual. **Registration:** not required. Darrington Ranger Station (Darrington, WA) or Verlot Public Service Center (Verlot, WA). **When:** The best time to climb is May through October; the long approach can be amazing if you climb at the peak of berry season (August) as huckleberries, blueberries, raspberries and thimbleberries line the route. **Essential Gear:** crampons, ice axe, harness, carabineer, prussiks, runners, chest harness, helmet, rescue pulley, picket, wands, belay device, glacier rope. A cell phone and GPS unit are advised.

**[Height: 10,541 feet/3,213 meters]**

**[Climb Rainier] Route:** Disappointment Cleaver, 9,000 ft elevation gain, 16 miles round trip. **Permits and Passes:** Mount Rainier National Park Pass, \$15 per vehicle valid for one week. Climbing permit, \$20 per person good for the calendar year. **Registration:** Yes. Paradise Ranger Station, White River Wilderness Info Center or Wilkeson Wilderness Info Center. **When:** Climbing Rainier is possible year-round; the best period to climb is May through August. If climbing earlier than May, be aware of the avalanche danger. If climbing later in the season, know that crevasses will be opened up. Navigation and route-finding may become more of an issue. **Essential Gear:** crampons, ice axe, harness, carabineer, prussiks, runners, chest harness, helmet, rescue pulley, picket, wands, belay device, glacier rope. A cell phone and GPS unit are advised.

**[Height: 14,411 feet/4,392 meters]**

*Volcano profiles by Dave Tucker, a Cascade volcanism researcher and the author of the Northwest Geology Field Trips website. Climbing information by Cheri Higman, self-proclaimed “extreme alpinist.” Photos: Mount Baker, Charles Ardary; Glacier Peak, Pete Kairis; Mount Rainier, Dale Blair; Mount St. Helens, Don Geyer; Mount Adams, Darryl Lloyd.*

**More Cones>>**

## Mount St. Helens

[A composite of domes & layered lava flows]



**[Names]** In the interior Sahaptin language (Yakama), Loowit was the “keeper of the fire.” The Klickitats called the peak “Louwala-Clough,” meaning “smoking mountain.” The current official name honors a British diplomat named Alleyne Fitzherbert, also known as Baron St. Helens, a patron of Vancouver’s voyage in 1792.

**[Volcanic activity]** The last eruptions occurred from 2004 to 2006. Mount St. Helens is by far the most active volcano in the entire Cascade volcanic range. In the past 550 years, there have been four large explosive eruptions, each larger than the 1980 eruption; an eruption only 530 years ago was five times larger. With the renewal of activity in 1980, Mount St. Helens became the proving ground for volcanology in the United States.

More domes of hot, sticky lava are likely to erupt over the ensuing decades, if not centuries, filling the gaping 1980 crater. Those domes will eventually overtop the crater rim and shed hot rock and ash flows down the flanks of the volcano. Eventually, the symmetrical cone that was partly destroyed in 1980 may be rebuilt from this erupted material. The newly named Crater Glacier, which is growing around the 1980–1986 and 2004–2006 domes in the crater, is the youngest glacier in North America.

**[Age: modern cone, about 40,000 years ago]**

**[Climb St. Helens]** **Route:** Worm Flows (Swift Glacier), 5,500 feet elevation gain, 12 miles round trip (winter to early spring). Monitor Ridge, 4,500 ft elevation gain, 9 miles round trip (late spring to summer). **Permits and Passes:** Sno-Park Pass, \$20 one-day pass or \$40 season (winter months) or Northwest Forest Pass, \$5 per day or \$30 annual; between April 1 and October 31: climbing permit to climb above 4,800 feet, \$15. Apply for permits well in advance. **Registration:** Yes. Lone Fir Resort (Cougar, WA) and Marble Mountain Sno-Park. **When:** The best time to climb is between February and September. For snowshoeing and skiing, the best time is February to early summer. I suggest early summer to avoid the scree, ash, and heat found during the summer months. **Essential Gear:** ice axe and crampons, if climbed early season. Plenty of water, especially during the summer months.

**[Height: 8,365 feet/2,550 meters]**

## Mount Adams

[stratovolcano]



**[Names]** The Klickitats called this mountain “Pah-to.” The name Adams commemorates President John Adams, a supporter of the Lewis and Clark expedition.

**[Volcanic activity]** The youngest parts of the cone are 10,000 to 20,000 years old. Several cinder cones on the flanks of Mount Adams have erupted lava and ash; the most recent eruption was around 3,500 years ago.

Adams is a huge volcano. Its volume is about 30 cubic miles, larger in volume than Mount Rainier, and second only to Shasta in the Cascades. Mount Adams is also a potentially active volcano. The summit ice cap has weak fumaroles emitting steam and hydrogen sulfide. There have been numerous large lahars in surrounding valleys.

**[Age: over 220,000 years]**

**[Climb Adams]** **Route:** South Spur, 6,800 feet elevation gain, 12 miles round trip. **Permits and Passes:** Northwest Forest Pass, \$5 per day or \$30 annual. Between April 1 and October 31: Cascade Volcano Pass, \$15 on weekends, \$10 on weekdays per person for a one-time pass, \$30 annual pass. **Registration:** Yes. Mount Adams Ranger Station (Trout Lake, WA). **When:** The best time to climb is between May and October. Go early to avoid the chossy mess at the top when the snow melts off and to enjoy the 2,000-ft glissade off the top of the false summit, Pikers Peak. **Essential Gear:** ice axe and crampons.

**[12,276 feet/3,742 meters]**