



A Closer Look:

Natural and Prehistoric Human History at Sunrise

Story by
Jeff Antonelis-Lapp

On your next visit to the Sunrise area at Mount Rainier, find a quiet place to sit and reflect for a moment. Choose a spot away from the sounds of the parking lot and out of view of human-made structures. Get comfortable, get quiet, and then consider this: you are amidst the footprints of people who have come before you, going back several thousand years.

Sunrise has a story to tell, one that connects an ancestral trail, a residential base camp, a hunting site, and one of the area's most entertaining mammals, the hoary marmot.

You won't find the Yakama Trail on your map unless you're using the first topo of Mount Rainier, the 1915 U.S. Geological Survey map. Indigenous people used the trail from Yakama and other tribal lands in central Washington until 1917, about the time the National Park Service began to put an end to Native American hunting and gathering in the park. But for ages prior, groups of men, women, and children traveled on foot for days up the American River drainage and over Chinook Pass before reaching their base camp on the flanks of Sunrise Ridge.

Now known as the Sunrise Ridge Borrow Pit, this site was used by engineers as fill material to develop the Sunrise area between 1929 and 1931. Recovered artifacts tell of well-organized hunter-gatherers using a trail system and established camps over the ages. Building on the work of other archaeologists and park staff and partnering with local Indian tribes, park archaeologist Greg Burtchard is steadily adding to our knowledge about prehistoric human activity at Mount Rainier.

The Sunrise Ridge Borrow Pit area holds a dense concentration of **debitage**, the stone chips left behind from making and maintaining stone tools. Other finds include a **ground stone**, which was probably used as a hammer to pound stakes or break bones. Fire-cracked rocks provide evidence of fire usage. Archaeologists have also found an **Olivella shell**. This small sea snail's shell had been ground into a bead and made part of a necklace, a trade item. Clues like these indicate repeated use of this site as a long-term residential base camp between 3,500 and 1,500 years ago, with probable use until historic times. Camping in temporary shelters during late summer and early fall for two months or more, these ancestors of present-day Yakama, Cowlitz, Muckleshoot and other tribal peoples hunted and gathered in preparation for winter.



At left: A view of Tahoma from Sunrise. Photo by Charles Ardary. Below: Archaeologists have found *debitage*—chips left behind from stone tools construction—in the Sunrise area. Photo courtesy of MRNP.



Women and children probably spent their July through September days gathering and preparing huckleberries for winter use. Although experts disagree on whether huckleberries were the primary reason to travel long distances to the mountain, there is no question that huckleberries and other mountain resources attracted indigenous people seasonally for thousands of years. Huckleberries were an essential overwintering staple, the berries of choice being black huckleberry (*Vaccinium membranaceum*), oval-leaf blueberry (*V. ovalifolium*), and blue-leaved or Cascade huckleberry, (*V. deliciosum*). Likely prized for their flavor, size and keeping abilities, the berries were also sought by sooty grouse, band-tailed pigeons, and northern flickers. When these birds came to dine on the huckleberries, they were often taken for food or their feathers. Black bears fattening up for winter were sometimes hunted too.

Native people used fire to preserve huckleberries intended for winter use. One method used long, low earthen mounds on which mats were spread on one side with the berries upon them. Small fires adjacent to the mats, carefully tended, provided heat to dry the berries. Mat-covered racks were also used to hold and dry the berries, with small fires built underneath. Park rangers reported these types of fires in the early twentieth century, but the sites have yet to be found at Mount Rainier. Dried berries were then poured into bags or baskets and stored in the shade until transported to the lowland villages.

The hunters in the group, probably men and boys, spent their days farther up Tahoma, one of the indigenous names for this mountain. They traversed Sunrise Ridge approximately two hours to the alpine tundra of Frozen Lake. A scant 2 miles west of today's Sunrise Visitor Center, Frozen Lake is the nexus for hikes to the Mount Fremont Lookout, Burroughs Mountain, or continuing on the Wonderland Trail. Long before, however, the Frozen Lake area was an important hunting and butchering location.

People likely were drawn to the area by the co-occurrence of suitable tooling material and abundant game. (Archaeologists refer to such areas as **task-specific sites**.) The rock here is part of the Tatoosh pluton, an intrusive rock older than the volcanic andesites and other material that constitute the mountain's bulk. Formed when magma cools under the earth's surface, this rock gives its name to the Tatoosh Range on the

Remembering Our Manners: Protecting Archaeological Sites as Outdoor Enthusiasts

There are currently over 14,000 documented archaeological sites in the state of Washington, with 20 new sites recorded each month on average. Typical prehistoric archaeological sites in Washington include shell middens, open sites or campsites, pictographs and petroglyphs, caves or rock shelters, wet sites, lithic sites, quarries and burial sites or cemeteries.

When you are hiking in the history-rich lands of Washington, you could encounter an archaeological site. Here are a few tips to keep in mind that will help protect our state heritage.

What to do if you find an artifact

Unless you own the property on which it was found, leave the artifact where it is. It is illegal to remove an artifact from land that you do not personally own, such as all state and federal park lands. If possible, document the artifact by writing down details about the object's location and physical appearance, or even taking a photograph. If the artifact was identified on state or federal lands, you should contact the appropriate land manager and ask to speak to a cultural resources specialist. You may also contact the Department of Archaeology and Historic Preservation.

What to do if you find human remains

If you encounter human remains, stop your activities immediately and contact the state archaeologist at the Department of Archaeology and Historic Preservation and local law enforcement. It is illegal to knowingly disturb a precontact or historic burial. Remember, human remains are not always prehistoric in origin and could be associated with a crime scene or historic burial.

Remember that artifacts are priceless

Professional archaeologists believe that the importance of artifacts is not their supposed monetary value, but rather the information they provide for learning about past societies. For this reason, museums and professional archaeology societies do not offer monetary evaluations of objects. These institutions believe that objects recovered from a site should be kept together as a collection to be available for future study or display, and they do not buy, sell or trade any artifacts. If you have an artifact you think should be part of a museum collection, contact the Burke Museum of Natural History and Culture. The Burke Museum is Washington state's official natural history repository.

—Kelsey Lutz, National Park Service
Archaeology Collections Curator

park's southern border. The Tatoosh pluton bears **chert**, an opaque, glasslike rock which fractures well enough to be tooled into projectile points. Ready availability of chert on or near the surface made quarrying a relatively simple activity. The rock was then tooled into projectile points and attached to spears and **atlatis**, predecessors to the bow and arrow.

Why would people hike uphill to hunt on windy, treeless alpine tundra, and what did they hunt at Frozen Lake? Although archaeologists are still seeking the bone fragments that will definitively answer these questions, you may get some clues if you linger here for lunch or hike slowly through the area.

In *The Wolverine Way*, Douglas H. Chadwick reports on a comprehensive study of the wolverine (*Gulo gulo*) in Glacier National Park between 2002 and 2007. Scientists knew little of this elusive member of the weasel family until dogged researchers and advances in radio telemetry began to unravel wolverine folklore and weave in scientific evidence. With an oversized cardiovascular system, wolverines tirelessly patrol territories that range from 300 to 500 square miles. Wolverines have transmitted frequencies while climbing mountain faces too dangerous for the most daring human mountaineers. Wolverines are as tough as their comic book character and live up to their reputation as “badasses,” as Chadwick calls them. With jaws powerful enough to crush bones left behind by other predators, wolverines have been known to face off against grizzly bears to keep possession of a deer carcass.

Alas, the wolverine does not figure into our Frozen Lake story. The last documented wolverine sighting at Mount Rainier was in 1933. No, this part of the story is about its polar opposite, the anti-wolverine, the La-Z-Boy recliner-with-legs-and-a-tail of the animal world, the hoary marmot.

The largest member of the squirrel family, the hoary marmot is known to scientists as *Marmota caligata*. *Marmota* is French for “mountain mouse” and *caligata* means “booted,” to note the characteristic black hands and feet. Found in areas with rocky talus slopes and alpine tundra vegetation, visit the Sunrise area any day between June and September and you're likely to observe or hear this common alpine denizen. Scan the landscape to find them sunning outside their burrows, or listen carefully for their alarm calls that warn of intruders. Though they are also known as whistle pigs, marmots do not actually whistle, but instead use their vocal cords to shriek warnings when agitated or sensing danger.

Prehistoric people valued marmots for several reasons. First off, their tendency to feed and lie about for more than half of their aboveground lives surely made them easy targets. Marmot pelts, at their densest concentrations of fur as hibernation approached, were likely sewn into robes or blankets. Marmot flesh, described by Hazard Stevens after his 1870 Rainier ascent as “extremely muscular and tough ... [with] a strong, disagreeable, doggy odor,” was nonetheless seasonally abundant and probably found its way into prehistoric diets. Finally, known to some as “butter with legs,” marmots have a high fat content and the presence of stone scrapers suggests that people collected their fat for later use.

Lieutenant August Kautz gave us the first description of hoary marmots at Tahoma in his account of his 1857 summit attempt when he wrote, “The moment anyone stirred from camp, a sound between a whistle and scream would break unexpectedly ... and immediately all the animals that were in sight would vanish in the earth.”

Vanish they do, and herein is one of the keys to their antiwolverine-ness: hibernating from autumn through May, marmots spend 80 percent of their lives in burrows. When they are active, if you can call it that, a typical August day breaks down as follows: 40 percent feeding, 28 per-



Dozens of species of wildflowers, including the western anemone (*Anemone occidentalis*), featured above, thrive in the meadows at Sunrise. For a great flower-by-flower hiking guide, visit www.flowersofrainier.com and download their Mount Fremont Lookout map. Photo by Mary Campbell.



Is that you? Marmots identify colony members by sniffing, chewing and nose-to-nose contact. Photo by Janelle Walker.

cent in the burrow, 20 percent lying about and sunning, and 12 percent play-fighting, digging, and burrow inspecting. With this schedule, the marmot doesn't exactly sound like the world's most industrious rodent, does it?

But with a seven-month hibernation period looming, putting on body fat is serious business. Weight at hibernation is tied to overwintering mortality, and starvation during hibernation is a greater threat than predators in August. Simply put, a fat marmot has a better chance of surviving the winter than a lean one.

Besides being Olympic-caliber eaters and loungers, marmots are highly social. The basic unit consists of a reproductive male, several adult females, a few nonreproductive adult males, yearlings and young of the year. Females are fertile every other year, which probably allows them to restore important energy reserves. Fertile females become pregnant in late May, just after their emergence from hibernation. Depending on a variety of factors, hoary marmots may be either monogamous or polygamous.

After a thirty-day gestation period and another thirty days to become fully furred and mobile, the young emerge in late July. They remain part of the colony until they disperse to form their own group, generally in their third summer.

Marmots use a variety of greeting behaviors to identify colony members that range from sniffing to nose-to-nose contact to face, neck and back chewing. They appear to seek each other's company and prefer to feed together, a strategy that might provide additional opportunities for warnings about nearby predators. Popular belief holds that marmots use sentinels to survey for predators, but there is no evidence that specific animals serve this function.

Hoary marmots are primarily herbivores, preferring flowers and flower heads of common Sunrise-area plants that include Indian paintbrush (*Castilleja* spp.), avalanche lily (*Erythronium montanum*), western anemone (*Anemone occidentalis*), lupine (*Lupinus* spp.), and green false hellebore (*Veratrum viride*). Research from the Olympic Peninsula indicates that the closely related Olympic marmot has a great influence on plant communities. Seeing that plant diversity is greater in areas grazed by marmots than in ungrazed areas, scientists have concluded that marmots play a crucial role in plant diversity in alpine areas.

Watch a group of marmots feed, and you'll see that they spend a significant amount of time looking about for predators. At Mount Rainier, coyotes, red-tailed hawks and golden eagles are the most likely predators, with black bears occasionally digging out late fall or early spring hibernators. The hoary marmot's average life span ranges to fifteen years.

With nearly 100 recorded archaeological sites, there is abundant evidence that people have been drawn to this mountain for millennia for a variety of reasons. Known as Tahoma to indigenous people, this great volcano drew people for its resources and for spiritual reasons, dating back over 8,000 years. Trails between east and west provided the most direct route for travelers. Even today, Native people continue to practice their hunting, gathering and spiritual traditions in mountain areas. As more mysteries are uncovered and stories sewn together, we will continue to see the ever-developing interplay between The Mountain, its people and its flora and fauna. ♦

Jeff Antonelis-Lapp teaches in the Environmental Studies planning unit at The Evergreen State College in Olympia. This article is from his book-in-progress on the natural history of Mount Rainier National Park.



Hey, look! A marmot!

Do you want to see a marmot? Of course you do. While marmots can be spotted fairly easily all over Washington, there are some known haunts, like Paradise, where marmots tend to hang out. Here are a few spots with a high likelihood of marmots, as suggested by WTA members:

Church Mountain, North Cascades

You are certain to see marmots here, and that may not be all. "You can sometimes see a wolverine at the very far end of Skyline Divide, where the trails start to disappear."—Ken Lassesen

Sahale Arm, North Cascades

"A dozen, two dozen? I don't remember how many marmots I saw on my way to Sahale Arm, but it was a lot. I do, however, remember the one particular marmot who nearly made off with my trekking poles. Watch your gear!"—Wade Trenbeath

Lake Josephine, Central Cascades

"The Pacific Crest Trail south of Stevens Pass to Lake Josephine is a great place to see marmots. Just past the top ski lifts there is a boulder field where the marmots just sit on the rocks and stare at you. No fear in these animals."—Janice Van Cleve

Seattle Park, Mount Rainier National Park

"The Spray Park Trail leads from Mowich Lake to the subalpine meadows of Spray Park and beyond to Seattle Park. Once you hit the scree fields keep your eyes and ears open for bumbling marmots plodding through the meadows or sunning themselves on nearby boulders."—Tami Asars

Obstruction Point, Olympic National Park

"You will see them on any of the hikes from Obstruction Point. Even on the drive out, there is a spot halfway up that is an open meadow, and it's always full."—Sarah Kirkconnell

Photo of marmot among lupine by Goyo Myers. For more adorable marmot photos, watch for a link to an all-marmot photo gallery in the May edition of *Trail News*, WTA's monthly e-newsletter.