Great Basin

National Park Service
U.S. Department of the Interior

Great Basin National Park

Ancient Trees

Great Basin Bristlecone Pines

Near the mountaintops of the Great Basin, you will find the world's oldest living trees, the Great Basin bristlecone pine, Pinus longaeva. ***This remarkable tree ekes out a living in the most adverse conditions, growing at the same pace as the mountains over its four to five thousand year lifespan. Take the 1.5 mile walk (3 miles round trip) to the grove of ancient trees in the shadow of Wheeler Peak and experience the beauty of this tree that survives against the odds.***

The Oldest Trees

Great Basin bristlecone pines grow near treeline (10,000 - 11,000 feet) in three groves in Great Basin National Park. These trees are remarkable for their great age and their ability to survive adverse growing conditions such as freezing temperatures, harsh winds, and a brief growing season.

Adaptations that promote the tree's longevity include needles that live up to 40 years and dense, resinous wood that protects the tree from fungi and insects. The bristlecone pine's relation - ship with the Clark's nutcracker also adds to its success; it is the nutcracker who cashes bristl e - cone pine nuts in the high country, ensuring the germination of the next generation.

In the White Mountains of California there is a bristlecone pine that has been dated at 4,600 years old, making it the oldest known living tree on Earth. A bristlecone pine near Wheeler Peak was dated to be more than 4,900 years old in 1964. Unfortunately, before the area became a national park, the tree, now fondly known as Prometheus, was cut down and sectioned to obtain an accurate reading of its growth rings. A cross-section of this tree can be seen at the park visitor center.

Another species of bristlecone pine, Rocky Mountain bristlecone pine (*Pinus aristata*), is found in Utah and Colorado. These trees are impressive as well, living up to 3,000 years.

Is It Living or Dead?

Bristlecone pines that are several thousand years old usually appear mostly dead. Many are mult i - stemmed and are less than 30 feet tall, with only some of the branches still living. For a portion of the tree to remain alive, it must be protected by bark, with living cambium beneath it, continuously from the root to the end of the branch.

The incredible longevity of these trees comes from their ability to adapt to their ever- changing environment. In favorable years, a bristlecone pine grows as any other tree does, but in unfavorable years (especially cold or dry), the living foliage dies back until the moisture and nutrient requirements of the remaining foliage match the supply provided by the root system. The dense, resinous dead wood, exposed to high winds and winter ice, becomes beautifully sculpted and polished.

Tree Ring Research

The bristlecone pine's great age and sensitivity to climatic change makes it ideal for growth ring research, or dendrochronology. By studying annual variation in tree ring growth, scientists can accurately date the time of construction of prehistoric buildings (in which wooden beams still remain), compare dates from radiocarbon studies, and reconstruct the climate of the area for the past 11,000 years. Dead bristlecone wood is as valuable to scientists as a living tree because it extends the continuous climate record even farther into the past.

Visiting The Bristlecones

The Wheeler Peak bristlecone pine grove, the most accessible grove in the park, is reached via a 1.5 mile (3 mile round trip) trail that begins at the Wheeler Peak Campground. At the grove is a short self-guided nature trail that will tell you more about these amazing trees.

When you walk among these trees, consider the span of human history they have lived over. What was happenning when these ancients were seedlings? What will the world be like when the seedlings come of age?

During the summer, park rangers lead walks to the grove. Check at the visitor center for dates and times.

Please remember that everything in a national park is protected, including the dead and downed wood of the bristlecone pines. Some of this wood may be thousands of years old and important scientifically. Please leave all bristlecone wood as you find it.

Identifying the Tree

Drawing by Christine Stetter

Bristlecone pines are often confused with limber pines. They can be found growing together at the same elevations and will both be affected by erosional processes, so will look very similar.

A bristlecone pine's needles are about one inch long and grow in bunches of five. The needles completely surround the branches and the tufts may extend back a foot or more along the branch, giving it the appearance of a bottle brush.

The developing cones are a deep purple color, which helps them to absorb heat. The cones mature after two years, at which time they turn a brown color. The tree gets its name from the cones, whose scales are each tipped with a claw-like bristle.

Limber pines have needles in bunches of five that are between 1.5 and 3 inches long and grow at the ends of the branches. Also, the cones of limber pines do not have bristles. Limber pines earn their name from their very flexible branches, which can be easily twisted around a finger.

Distribution in the Park

The Wheeler Peak grove, located on the northeast side of Wheeler Peak, is unusual in that it grows on a glacial moraine consisting of quartzite boulders. Most bristlecone groves are found growing on limestone or dolomite. The Wheeler Peak grove's northern exposure is also unusual; most groves have southerly or westerly exposures.

The largest grove of bristlecones in the park is on Mt. Washington. Located in the west central portion of the park, the grove is difficult to access. No developed trails exist to this grove. Some sections of this grove have relatively tall (40+ feet) bristlecone pines that resemble high elevation spruce or limber pine more than the typical gnarled treeline bristlecones. Unlike the Wheeler Peak grove, the trees on Mt. Washington grow exclusively on limestone. In fact, nearby quartzite areas are notable for their lack of bristlecone pines.

The third grove in the park is near a peak (locally called "10,842" after its elevation) on a ridge between Baker Creek and Snake Creek. The terrain is steep and access is difficult. These bristlecone pines also grow exclusively on limestone soils, while the granitic soils in the area lack bristlecone pines.

Safety Considerations

Bristlecone pines are generally found above 10,000 feet in elevation. At this altitude, take things a little slower than you would closer to sea level. Be aware of hazards such as hypothermia, dehydration, and altitude sickness, especially if you are not accustomed to activity at high altitudes. Always drink plenty of water, and descend immediately if sickness ensues.

Weather conditions at treeline can change dramatically in a short time. Snow or sleet can fall any month of the year. In the summer, afternoon electrical storms are common. Be sure to carry warm clothes and rain gear. Do not hike on exposed ridges if thunderstorms are forecasted. Check at the visitor center for the latest weather and trail conditions.