

Welcome To The



Ancient Bristlecone Pine Forest

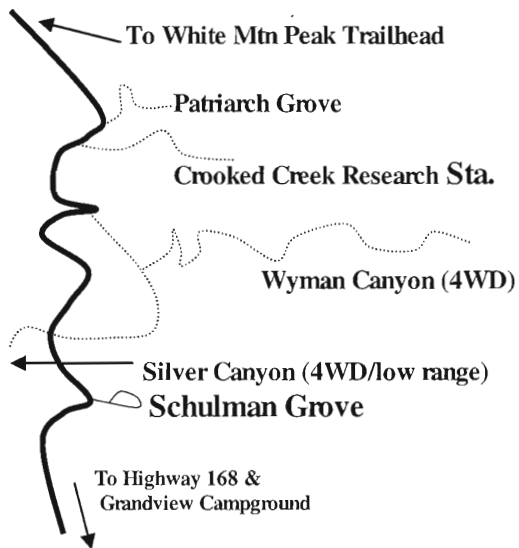
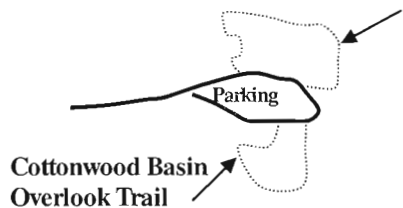
US Forest Service
Inyo National Forest
Eastern Sierra Interpretive Assn



In order to protect the ancients,
please observe the following regulations:

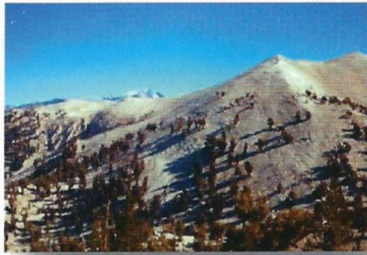
1. All vehicles must remain on designated roads.
2. Collection of any wood within the bristlecone forest is prohibited.
3. Campfires and overnight camping within the bristlecone forest are also prohibited.
4. Please stay on the trails within the developed areas of Schulman and Patriarch Groves.

At Patriarch Grove Timberline Ancients Nature Trail



A Journey Through Time

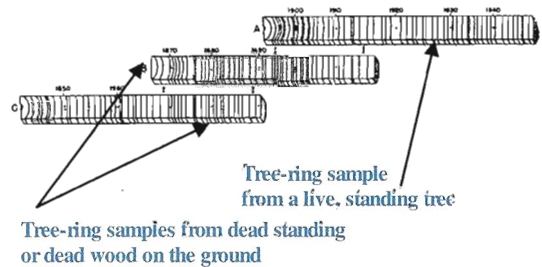
Standing as ancient sentinels high atop the White Mountains of the Inyo National Forest, the Great Basin Bristlecone Pines (*Pinus longaeva*) rank as the oldest trees in the world, having achieved immense scientific, cultural and scenic importance.



While the oldest trees are found in the mountains of eastern California, Great Basin Bristlecone Pines are widely scattered throughout the high mountain regions of Nevada and to a lesser extent, Utah. A close cousin, the Rocky Mountain Bristlecone Pine (*Pinus aristata*) is found in Colorado, New Mexico and in one isolated stand on the San Francisco Mountains near Flagstaff, Arizona.

Every year, trees produce a new layer of wood just under their protective bark. During periods of low precipitation or drought, the new layer of wood – known as a tree ring – may be narrow but in times of greater moisture the ring may be wider. This wide and narrow pattern of tree rings produces a very distinctive pattern which scientists can use to study past climatic trends. Since the wood here in the cold, dry environment of the

White Mountains decomposes very slowly, tree-ring patterns remain intact for thousands of years. By matching the overlapping patterns of live trees and dead wood this tree-ring pattern can be “extended back” continuously for thousands of years.



Scientists can now piece together these long tree-ring samples into one long continuous chronology that provides a look back into climate patterns all the way back to the end of the last ice age, some 11,500 years ago!!

You may notice groves or pockets of bristlecones growing on outcrops of a white rocky soil. This is dolomite, a highly alkaline limestone, and is in abundance in the White Mountains – hence the name!! It is not that the bristlecones need or “prefer” the dolomite, it’s a matter of



competition. These hearty trees have adapted to this challenging soil condition and can survive and even thrive in it – while most other plant species cannot. This gives the bristlecones a competitive edge in germination which they need as they grow so slowly.

“Not in Spite of Adversity but Because of It!”

The key to the bristlecones longevity, as they say, is location, location, location! The harshest growing conditions produce trees that live the longest – they put on tiny amounts of resinous, hard wood and are tough enough to survive the drought conditions that would fatally weaken most other trees. The “best” growing conditions – good soil and adequate water – may produce tall, large bristlecone pines but they will not live long enough to become one of the ancients.

The Trees that Re-wrote History

As improbable as it may seem, these ancient trees have played a role in modern interpretation of western European history. For many years scientists and historians relied on a form of age dating known as radiocarbon dating. It was discovered back in the 1960’s that this process was flawed and needed to be calibrated. Bristlecone pines to the rescue!!

The wood from these ancient trees provided precisely dated samples that were used to correct the process. This in turn caused a re-evaluation of some of the dates assigned to pre-historic sites which caused a new interpretation of cultural diffusion throughout the Mediterranean and European areas.

The Future for Bristlecone Pines

With the Earth’s climate entering a period of global warming, scientists ponder the possible impacts on bristlecone pines. New generations of trees are already expanding their range at higher elevations. Will the current oldest trees be doomed by warmer conditions that bring competing plants, insects, pests and fire into the ancient groves? Only time will tell.....



Dendrochronology is defined as the science of studying tree-ring patterns. The art and science of dendrochronology has broadened over the years to include the disciplines of botany, fire history, archeology, geology and climatology. The scientists shown here have been instrumental in the advancement of the science of dendrochronology and have contributed immensely to our understanding of the natural history of the ancient bristlecone pine.

Andrew Ellicott Douglass, above, (1867-1962) has been referred to as the founder of modern dendrochronology. He began his



career as a mathematician and astronomer theorizing that the increased solar radiation from periodic sunspot activity might be recorded in tree ring-size variations as weather changes would change precipitation amounts. These changes in precipitation would then show up as wider or narrower tree rings.

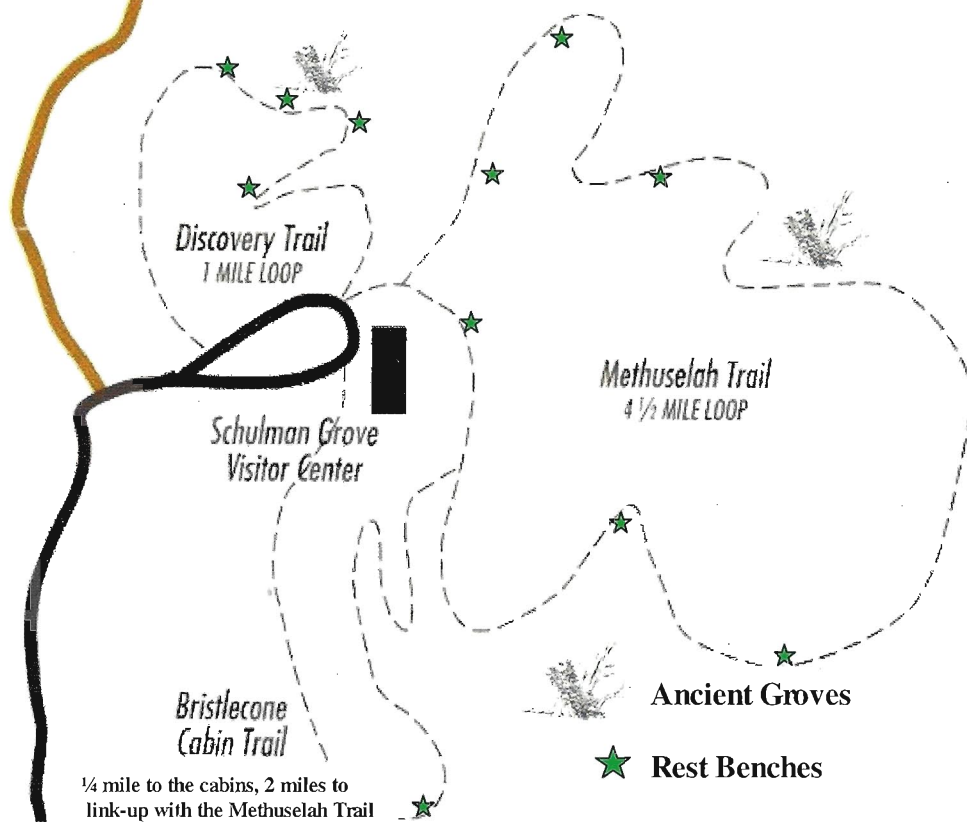
Drs. Edmund Schulman (1908-1958) above, Dr. Henry Michael (1912-2006) right, and Dr. Wesley Ferguson (1922-1986) below, were all instrumental in extending the long continuous tree-ring chronology. This long record of weather sensitive tree rings has provided scientists with an incredible wealth of climate and other environmental records.



Learn more about these remarkable men and their dedication to the science of tree-ring dating in the publication *Pioneers of Dendrochronology*, available for free distribution at the Bristlecone Pine Forest Visitor Center.

To Patriarch Grove:
12 Miles

Schulman Grove Trails



Hiking through the bristlecone forest is a wonderful way to explore and learn about the ancient trees.

The Discovery Trail is a short interpretive trail that loops through a grove of three to four thousand year-old trees. It begins and ends from the parking lot at Schulman Grove and is $\frac{3}{4}$ of a mile long with rest benches and interpretive trail panels along the route. The trail gains then loses about 300 feet in elevation, suitable for kids - leashed dogs are allowed.

The Bristlecone Cabin Trail wanders out to some old mining cabins a short distance from the visitor center. Continue on to join the Methuselah Trail to make for a longer hike or return back to the visitor center on the same trail. The cabins dates back to the 1860's but are not stable *and are unsafe to enter.*

The Methuselah Trail is a 4 $\frac{1}{2}$ mile hike through an ancient bristlecone pine forest. The trail journeys past ancient trees, a view spot into Death Valley National Park, a mountain mahogany woodland and the magical Methuselah Grove. It is a moderately strenuous hike with an 800 foot elevation loss which regains the elevation as the trail returns to the visitor center. Rest benches are available along the way so take your time, water, sun protection and a snack; enjoy your journey through the ancients. An interpretive trail guide is available at the trailhead (\$1.00). Since anonymity is its best defense against souvenir hunters, the Methuselah Tree is not marked, signed, or identified in any manner.