



# Bristlecone Pines

*“On the roughest ledges of crumbling limestone are lowly old giants, five or six feet in diameter that have braved the storms of more than a thousand years. But whether old or young, sheltered or exposed to the wildest gales, this tree is ever found to be irrepressibly and extravagantly picturesque, offering a richer and more varied series of forms to the artist than any other species I have yet seen.”*

~ John Muir

**One autumn day in the year 336 AD a great basin bristlecone pine seed lands in just the right place to begin life.**

As the years go by, our seedling grows in height and its stem thickens. Single needles are replaced by those growing in bunches of five. As our infant tree enters its youth, it struggles to find its place. Roots search out water and nutrients while the main stem rapidly reaches for the sun. Branches are flexible to withstand the strong winds and snow.

**Middle-age comes in a few hundred years.** This is the time when our tree is most productive. Seed and pollen cones are produced on the many intertwined branches. Yet, this is when our tree begins to show its age. Limbs and trunks die and become bleached and cracked. Fire, lightning, beetles, ants, porcupines, and fungi take their toll.

**Over a thousand years later, our tree has reached old age.** It has withstood the ravages of wind, ice, sun, and other insults. Most of our tree is no longer alive. Soil erosion

has exposed its main roots. The living roots move water up the trunk above them, allowing sections of the tree to live. Unbelievably, our ancient tree continues to produce cones.

Thriving at high elevations where conditions are harsh and windy; nutrients are sparse; and ultraviolet light is intense. In these conditions our tree grows old, even ancient.

So is the life of a bristlecone pine. **These trees will die of something, but it will not be old age.**

## Bristlecone Pine Range



Bristlecones are part of the group known as foxtail pines. Three species are found in the western states at high elevations.

**The Foxtail Pine** (*Pinus balfouriana*) grows in Oregon and California.

**The Great Basin Bristlecone** (*Pinus longaeva*) can be seen in California, Nevada and Utah, including Cedar Breaks.

**Rocky Mountain Bristlecone** (*Pinus aristata*) is found in central and south-central Colorado, northern New Mexico and Arizona.

## Needles and Cones



As the name suggests, there are small bristles on the ends of each cone scale.

Needles of the bristlecone pines are short (0.5-1.5 in), sharp, deep green, and grow in bundles of five. Their needles attach all the way up and around the limb, making them look like foxtails. Unlike most pines where needles are replaced every two to three years, Bristlecones retain their needles for thirty to forty years.

## On Borrowed Time?

FOR MANY, IT IS A HUMBLING EXPERIENCE TO WALK AMONG THESE ANCIENT TREES. It is no wonder they have been given biblical names such as “Methuselah”, and “Prometheus”. Even a nearly 1,700 year old bristlecone pine at Cedar Breaks was given the name “Old Patriarch” by early settlers.

Fossil evidence suggests the ancestors to today’s trees have been living on western mountains for more than 40 million years. As the glaciers retreated the trees followed and are now found only in higher elevations. The slow passage of time has allowed these trees to evolve and thrive in harsh environments.

**With the rise in temperature these trees are facing new challenges.** Faster growth due to higher temperatures could make bristlecones more susceptible to fungal and insect damage. Bark beetles and rust fungi, which are not normally a problem at cool, high elevations, could begin to affect these pines. The risk of fire may also increase.

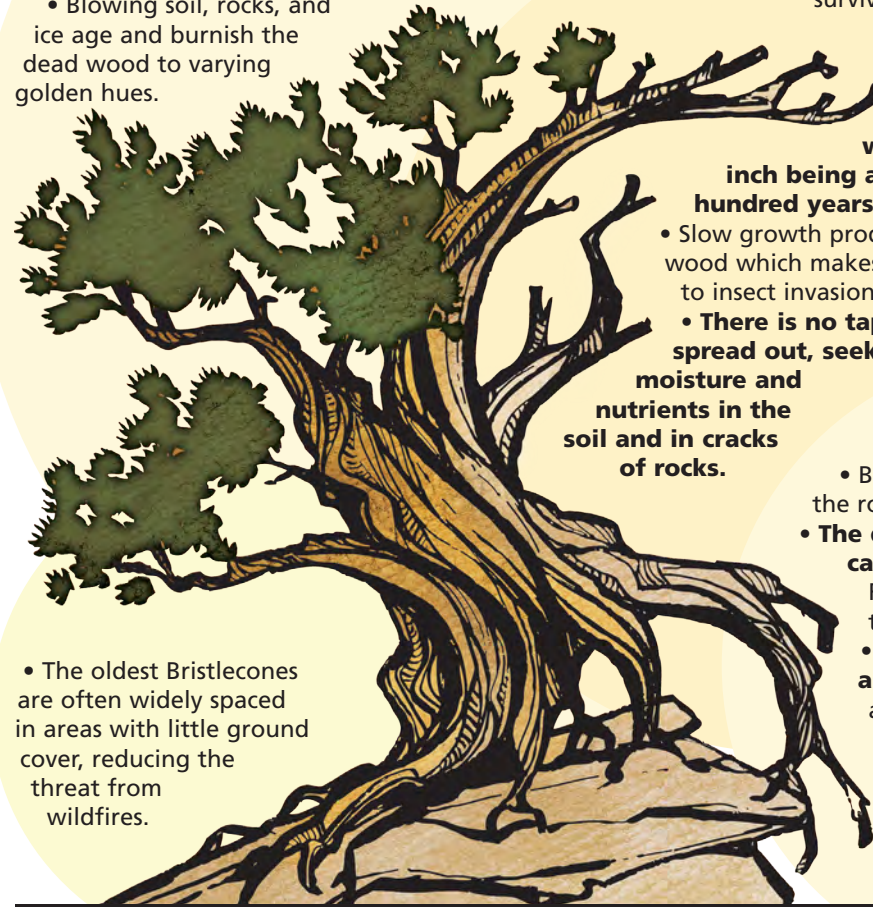
Because bristlecones already occupy the highest elevation, will the seeds they shed in autumn find a favorable place to call home?

## Where to Find Them?

**Cedar Breaks:** Spectra Point Overlook is home to the park’s oldest trees; younger bristlecone pines can be seen along the Alpine Pond Trail, near the Chessman Ridge Overlook.

**Bristlecone Walking Trail:** One mile west of the intersection of Highway 148 with Highway 14. Operated by the Forest Service, this 0.75 mile loop trail will take you to several Bristlecones and a viewing platform.

**Twisted Forest:** A one mile round trip trail in the Ashdown Gorge Wilderness. The trailhead is located four miles down the Bear Flat/Sugarloaf Mountain road (204 > 265 > 964) Off of State Route 143.



- The oldest Bristlecones are often widely spaced in areas with little ground cover, reducing the threat from wildfires.

- Bristlecones **average 45-60 feet in height.**

- Young trees put out a main shoot, capturing what sunlight they can.
- As the tree grows more stems are added and the crown widens.
- In advanced age, wind and frost will have broken the tops. Lesser branches twine around the bare ragged snags, giving each tree a unique, gnarled shape.
- Blowing soil, rocks, and ice age and burnish the dead wood to varying golden hues.

- **Bristlecones grow where other trees cannot.**
- High elevation, cold temperatures, extreme winds, short growing seasons, and nutrient poor, dolomite soils kill most other competing trees.
- Energy goes into surviving, instead of growing large.
- **Growth is slow with as little as one inch being added to its girth in a hundred years.**
- Slow growth produces denser, resin-rich wood which makes the tree less susceptible to insect invasion, disease, and rot.
- **There is no taproot so lateral roots spread out, seeking moisture and nutrients in the soil and in cracks of rocks.**
- Rot causing fungus, grows more slowly in this harsh environment.

### Roots serve as lifelines in another way...

- Boulders serve as anchors that the roots wrap themselves around.
- **The death of a major root does not cause the death of the entire tree.** Rather, roots feed only the section of the trunk and branches above.
- This growth pattern is called **sectored architecture**. It is not unusual to see a twisted old bristlecone with only a narrow section of living bark bearing branches and masses of needles.

The details in this brochure and more can be found in "The Bristlecone Book: A Natural History of the World's Oldest Trees" by Ronald M. Lanner

## A Word From Our Trees

*Please respect me. Remember me with a photograph rather than a piece of my wood.*

*The genes that have enabled me to live for centuries are in each seed in every cone I produce. Please do not take one. Maybe one will have what it takes to survive the changing climate. Rather, take in the rich aroma of my foliage.*

*Beetles have scarred my trunk and branches; leaving your initials may be the final insult I can withstand. If you stay on the trails you will lessen the erosive forces around my roots.*

*Leave me as I am, so perhaps your children’s children can also admire me.*

