

INTERMOUNTAIN BRISTLECONE PINE

COMMON NAME

Pinus longaeva

SCIENTIFIC NAME



Photo Credit: Stan Shebs

Importance

How old are the oldest plants? According to studies of the intermountain bristlecone pine, also called Great Basin bristlecone pine or the western bristlecone pine, a single tree can be over 4,800 years old. An unusually long-lived species, *Pinus longaeva* trees are among the oldest, if not the oldest, living organisms on earth. Even after death, the dense, resinous wood can continue to persist for hundreds and thousands of years. Because of their age and persistence, the timber from these trees provides an invaluable historical record of past environmental conditions.

Tree ring chronologies dating back over 9000 years have provided surprising records of past environments. By examining the rings from these trees, scientists have found evidence of past climate change. These trees are also living genetic reservoirs. Trees over 3,000 to 4,000 years old can still produce viable seed, meaning that their offspring carry a genetic heritage thousands of years old.

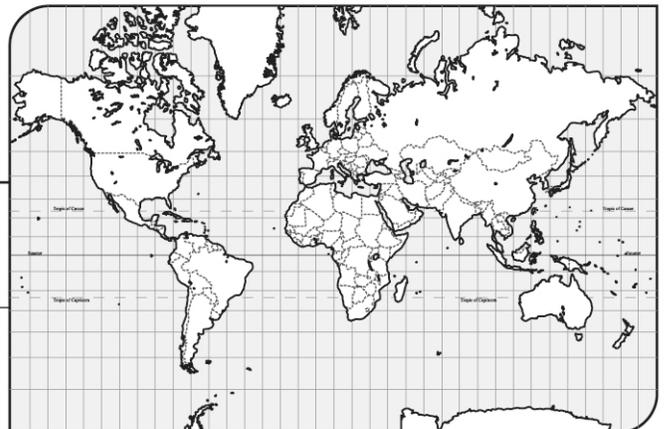
The diverse habitat provided by these long lived trees is important for a wide variety of

Pine Family (*Pinaceae*)

FAMILY

Vulnerable

RED LIST CATEGORY



of small birds and mammals. These pines are also an important food source for mountain bluebirds, chickadees, and other small mammals. They are suspected to be a food source for Clark's nutcrackers, which if demonstrated, would be a key form of dispersal for this species. Great Basin bristlecone pines also contribute to community diversity. For example, they are hosts to 2 species of bark beetles that had only been collected in the White Mountains as of 2004.

Because of their exposed habitats on the high, windy peaks of mountains, old, dead, and partially dying trees dominate most populations. The high winds and drought conditions on the mountain top often kills off this tree's thin bark, killing the wood underneath. The wind then shapes the dead wood into wonderfully gnarled and twisted shapes. Their shrinking mountain habitat, slow rate of seed establishment, and slow growth, puts these trees at risk. Our changing climate further endangers their habitat while creating conditions that put these trees at increased risk of attack by pests and disease.

Description

Form: This small conifer has a highly variable growth form. While low-elevation trees may be tall and upright, reaching up to 50 feet (15 m), at high elevations intermountain bristlecone pine becomes twisted and contorted by the wind and harsh growing conditions, and grows very slowly. These trees can have single or multiple trunks, and the highly branched, shallow root system can be exposed in older trees.

Leaf: *P. longaeva* has short, curved evergreen needles. These dark green needles range from 1 to 1.5 inches (2.5 to 4 cm) long, grouped in bundles of 5 and often covered with white dots of dried resin. The needles remain on tree for 10 to 17 years, giving a bushy appearance that resembles a fox's tail.

Flower: This tree is monoecious, with the small, dark orange male cones and the female cones, which often have a dark purple cast, found on the same plant. Male cones are often clustered near the ends of branches, while female cones occur singly or in pairs near the ends of branches.

Fruit: The cones of this pine are moderately sized (about 3 inches or 7.5 cm long) with a short stalk. The scales are tipped with a long bristle, giving rise to its common name and the seeds are winged.

Bark & Twigs: The young bark is thin, smooth, and gray-white later becoming furrowed and reddish brown. On harsh, windy sites, the bark is often stripped from older trees, leaving a high proportion of dead wood on the trunk and branches. The twigs are orange-brown when young but darkening with age.

Habitat and Ecology

The intermountain or Great Basin bristlecone pine is endemic to the western United States – it is found only in along the tree line in the high mountains of eastern California, Nevada, and Utah. Though the range of this species has varied over time, today it is typically found between 7,200 to 12,000 feet (2,200 to 3,700 m) and occurs in dry climates that are cold in winter and droughty in summer.

While the appearance is similar to the Rocky Mountain bristlecone pine, the ranges of these two pine species have been separated by the Colorado-Green River drainage for millennia and there is a 160 mile gap between the closest points of their ranges in Utah and Colorado, respectively.

Throughout its range, Great Basin bristlecone pine grows in pure stands in timberline and upper subalpine zones. At lower elevations, the tree associates with a variety of other trees, and bristlecone pine-limber pine forests are seen throughout its range. Pollen and seeds are wind dispersed. While seeds can germinate immediately, without any additional conditions required, this pine typically grows in dry, nutrient poor soils and seedling germination is rare. Nonetheless, the tree is often found in multi-aged stands, possibly due to the astonishing longevity of this species.

Threats

This slow growing tree is also slow to recruit new seedlings, meaning that mature individuals age without young individuals replacing them. Under present climatic and environmental conditions, current rates of regeneration are probably not sufficient to replace the population. Insect, parasite, and fungus attacks and the effects of a changing climate may also pose threats to this species in the future.

Because of its thin bark, intermountain bristlecone pine is adapted to survive only low-severity surface fires. Increased incidence of wildfire in the western mountains may also pose a threat to this species, though the low productivity and widely spaced stands of this

pine provide poor fuel for the spread of fire. Still, the resinous individual trees are likely easy to ignite when fire is present.

Conservation Action

Many of the areas where the bristlecone pine occurs are protected areas such as national parks, botanical reserves, or other areas where traffic is limited and cutting or gathering wood is prohibited. Visiting our national parks or other botanical reserves as a tourist helps support the protection and future of trees in those parks and helps set aside additional land for future use. Want to visit the pines from the comfort of your home? You can learn more about ancient bristlecones in photographer Mark Schlenz's book, *A Day in the Ancient Bristlecone Pine Forest* and share the book and what you learn with others.

References

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