

# THE HEAT IS ON

Species feeling the effects of climate change



## Piñon Pine

*Pinus edulis*

### Region:

Southwest

### Area affected:

Colorado Plateau

### Climatic change:

Heat, drought

### Impact:

Mortality, reduced seed production

### ABOUT THIS SPECIES

Although this small and unassuming tree rarely grows to more than 30 or 40 feet tall, piñon (also known as pinyon) pine is one of the most ecologically and culturally important tree species of the southwestern United States. The large, edible seeds of this pine are high in protein and fat and have been a staple food source for Navajo and Pueblo people for more than 6,000 years. Birds such as the pinyon jay and Clark's nutcracker harvest and bury huge numbers of piñon pine seeds—up to 30,000 per bird—as a food source for the winter months. Turkeys, rodents, bears and deer also feast on the cached seeds, and new trees sprout from undiscovered caches. Piñon pines grow in dry, rocky areas of the Southwest at elevations between 5,000 to 8,000 feet. The tree has an extensive root system—which is often as deep as the tree is tall—to capture what little moisture is available in the region.

### DESCRIPTION OF IMPACT

Despite their adaptation to the arid climate of the mountainous regions of the Southwest, piñon pines are not immune to drought. This is especially true when a prolonged drought is combined with high temperatures, as occurred in 2000 to 2003. That period, although not drier than the last major drought in the 1950s, was marked by much higher temperatures, typically up to 2.4 degrees F higher than the long-term average. The combination of heat and lack of moisture interfered with the ability of the trees to produce sap and, consequently, to fend off beetle infestations. **Widespread die-offs of mature piñon pine trees occurred, with losses of 40 to 80 percent noted across the region, and more than 90 percent mortality at some sites.** More recently, researchers have discovered that cone production over the past decade is almost 40 percent lower than it was in the 1970s.

### References

Breshears, D. D. et al. 2005. Regional vegetation die-off in response to global-change-type drought. *Proceedings of the National Academy of Sciences* 102(42): 15144–15148. <http://www.pnas.org/content/102/42/15144.full.pdf>

National Park Service. Colorado Pinyon. <http://www.nps.gov/brca/naturescience/pinyonpine.htm>

University of Colorado. 2013. Southwest regional warming likely cause of pinyon pine cone decline, says CU study. *CU Boulder Today*. February 12. <https://shar.es/1JUT6i>



DEFENDERS OF WILDLIFE

1130 17th Street, NW  
Washington, DC 20036-4604

For more information on other wildlife affected by climate change, visit our website at [www.defenders.org/climatechange](http://www.defenders.org/climatechange)