THE **HEAT** IS **ON**

Species feeling the effects of climate change

Whitebark Pine

Pinus albicaulis

Region:
Rocky Mountains

Area affected:
Greater Yellowstone Ecosystem

Climatic change:
Warming temperatures

Impact:
Mortality from insect infestations

ABOUT THIS SPECIES

What the whitebark pine lacks in towering majesty, it makes up for in ecological importance. These small pines are found at the highest elevations of the northern Rocky Mountains, Cascades and Sierra Nevadas; windblown and stunted versions only a few feet tall are found up to the tree line, where forest gives way to alpine tundra. Whitebark pines can tolerate the heavy snows and hurricane-force winds that characterize these places in winter, as well as the droughts that are common in summer. These pines are particularly important to wildlife due to the very high nutritional value of their seeds. Each whitebark pine cone contains about 75 seeds that are more than 50 percent fat and also contain protein, carbohydrates and minerals, making them one of the best food items for alpine birds and mammals. Several species of squirrels and birds, such as Clark's nutcrackers, harvest the seeds and bury them in caches. Grizzly bears and black bears raid these caches to feast on the seeds, an important pre-hibernation food source.

DESCRIPTION OF IMPACT

Whitebark pine is declining range-wide, due to the increasing impact of mountain pine beetle, wildfire, and white pine blister rust, all exacerbated by climate change. Warmer and drier conditions have lead to more intense and severe, tree-killing fires. White pine blister rust, a nonnative fungal pathogen, has expanded its range and taken a toll on the species. Similarly, the mountain pine beetle, a native insect that historically fed on lower-elevation forests, has also expanded into whitebark pine areas. Beetle growth rates correlate with temperature, so warming conditions allow the pine beetle to mature faster and survive better over winter. Mountain pine beetles also attack trees weakened by white pine blister rust. **Tree mortality has reached 96 percent in some places, leading the U.S. Fish and Wildlife Service to list the species as federally threatened in 2022.**

References

U.S. Fish and Wildlife Service. 2022. Endangered and Threatened Wildlife and Plants; Threatened Species Status with 4(d) rule for Whitebark Pine (*Pinus albicaulis)*. 87 Fed. Reg. 76882. http://www.govinfo.gov/content/pkg/FR-2022-02-15/pdf/2022-27087.pdf

Fryer, J.L. 2002. *Pinus albicaulis* in Fire Effects Information System. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. http://www.feis-crs.org/feis/

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