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

Species feeling the effects of climate change

Sitka Spruce

Picea sitchensis

Region:
Alaska, Pacific Northwest

Area affected:
Kenai Peninsula, Alaska

Climatic change:
Warmer temperatures

Impact:
Increased beetle outbreaks

ABOUT THIS SPECIES

One of the towering conifers of Pacific Northwest forests, Sitka spruce occurs in a narrow band along the West Coast, stretching from northern California to central Alaska. Its growth form ranges from scrubby and contorted on windswept dunes in the southern part of its range to 200-foot giants in coastal temperate rain forests. Young trees grow rapidly in optimal conditions, and the trees can live 500 years or more. The cover that Sitka spruce provide in old-growth forests is critical in the winter, insulating the forest floor and its organisms from heavy snowfall and frigid temperatures. The pale-colored wood of Sitka spruce is prized for its resonant qualities and is commonly used as the front surface of many acoustic guitars.

DESCRIPTION OF IMPACT

Alaska is warming faster than other parts of the U.S., causing big changes statewide. On the Kenai Peninsula in south-central Alaska, spruce beetle outbreaks—linked to rising temperatures—have decimated Sitka spruce, the closely-related white spruce, and a hybrid of the two called Lutz's spruce. The spruce beetle is not some new exotic invasive species, but rather a native insect that has coexisted in the region for millennia. Until recently, the beetle's ability to damage forests was checked by cold temperatures that limited the insect's growth rate. Now longer, warmer summers mean more beetles can mature in just one year (rather than two), and warmer winters mean less beetle mortality. Drought also plays a role—when a tree is water-stressed and its defenses are compromised, spruce beetles can increase to catastrophic numbers. Beetles capitalize on drought-stressed trees, windthrown trees and large-diameter logging slash. **In a positive feedback loop, drought-compromised trees create the ideal conditions for epidemic levels of beetles to overwhelm nearby healthy forests. In 2016, over 190,000 acres of Sitka and Lutz spruce were damaged by spruce beetle outbreaks in south-central Alaska.** Sitka spruce affected by beetles and drought provide fuel for wildfires which threaten to transform the entire ecosystem.

References

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