

## **NORTH AMERICAN FORESTS IN A WARMING WORLD**

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Almost one million acres of mature white spruce forest in central Alaska have ceased growing. About 90 percent of the pinyon pines in New Mexico have died in the last five years and high rates of mortality have been recorded elsewhere in their range throughout the southwest of America. Islands of white spruce on the northern plains have few if any recruitments as the grasslands continue to encroach the islands.

Four native species of bark beetles throughout western North America have killed in excess of one billion trees over the past decade -- or enough wood to supply the entire U.S. housing market for more than five years. Bark beetles are spilling over the east side of the northern Rocky Mountains, the Yukon and into the Jack pines of the North West Territories. Spruce and mountain pine beetles have significantly accelerated their life cycles and lethal frigid temperatures have not occurred in the far north for the past 15 years.

In 2006 more than 10 million acres were consumed by wildfires in the United States. And in the American southwest some parts are now entering their eleventh consecutive drought year.

Managing forest in the 21st century is fraught with difficulties as snow-packs diminish, demand for water rises, the number of recreations increases and models projecting a conservative rise of about 3 degrees Fahrenheit over the ensuing decades.