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# ENVIRONMENTAL Fact Sheet

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## Global Climate Change and its Impact on New Hampshire's Forests and Timber Industry

### Species Will Be Affected

Climate change may affect different species of trees in different ways. Some may respond well to overall temperature increases along with drier conditions. Others species may sicken, perish or migrate north due to climate changes. Northern hardwoods may be adversely impacted and struggle to survive. Likely, the makeup of New Hampshire forests will change.



### What is Global Climate Change?

Life on Earth is possible because the sun's energy warms the Earth and its atmosphere. As this warmth radiates back into space, a portion is absorbed by a delicate balance of heat-trapping gases in the atmosphere, creating an insulating layer. The insulating layer, functioning much as a conventional greenhouse, acts to elevate temperatures on Earth. This "greenhouse effect" is a necessary natural global mechanism. Without it, the Earth's climate would be hostile to human life. Human contributions to greenhouse gases have led to an "enhanced greenhouse effect," often referred to as climate change or global warming. Today's atmospheric concentrations of carbon dioxide (CO<sub>2</sub>), the primary greenhouse gas, are 30 percent above the pre-industrial levels of 200 years ago. At present rates, they may double as early as 2050.

### Potential Impacts on New Hampshire's Forests

Global climate change may have a positive impact on certain forest areas.

- Certain trees and forests may flourish due to longer growing seasons, more abundant carbon dioxide, and wet summers.
- White pine and red oak--two very profitable timber species in New Hampshire--could increase in number.
- Other species may adapt.

It is more likely on balance that global climate change will bring adverse impacts to New Hampshire's forests.

- In general, ecological models predict that warmer temperatures and extreme weather events associated with climate change would move optimal conditions for the growth of

northern hardwood forest species northwards by at least 100-300 miles by the end of the next century.

- Climate change of the magnitude predicted by some of the current climate models may both alter the species of trees and cause decline and widespread mortality in the forests of the White Mountains. Disturbances will increase, for example, pest and pathogen outbreaks, flooding, and wind damage. Disturbances can kill a large number of trees and forests.
- Extreme events, such as periods of winter thaw followed by intense cold; spring and summer drought; and summer heat stress, have been associated with diebacks and declines in several northern hardwood species in New England in the last 100 years.
- Sugar maple, ash and yellow birch, all northern hardwoods, are sensitive to extreme weather events and may decline or even collapse.
- Foliage may dull, brilliant fall colors will fade and become more brown as trees sicken, drop leaves early and other less colorful southern species move north.
- Forest products is the fourth largest employer in New Hampshire and third in terms of revenue. Gross revenues may be affected.

### **For More Information**

For more information on climate change, its impacts on New Hampshire's forest and timber industry and other resources, visit [www.des.nh.gov](http://www.des.nh.gov) or contact the DES Air Resources Division at (603) 271-1370.