

## **EXPERTS: NEW ENGLAND'S FALL COLORS COULD VANISH IN 100 YEARS DUE TO UNCHECKED GLOBAL WARMING**

*Same Climate Shifts Ruining Regional Maple Syrup Industry Could Erase Autumn Forest Colors; Big Changes Ahead If Boston's Weather Becomes Like That of Richmond or Atlanta.*

**BOSTON, MA.///October 28, 2004///**As the fifth disappointing New England fall color display in as many years draws to a close, experts are warning that the region's once glorious autumnal forest leaf displays could disappear altogether in as little as 100 years if global warming continues on its current path. A University of New Hampshire professor said that climate-related factors already undercutting such traditional New England industries as maple syrup production also could end up making New England fall colors a thing of the past.

Barrett Rock, professor of natural resources, University of New Hampshire, said: **“Just 40 or 50 years ago, New England and New York produced about 80 percent of the world's maple syrup, compared to 20 percent in Canada. Now, that ratio has been reversed as the optimal sugar maple growing and tapping conditions have shifted north to areas that are still cold enough in the fall and winter for optimal production. Unfortunately, this was only the leading edge of the wedge of what New England is likely to see in terms of forest-related changes. While you can't definitively link one or two isolated weather incidents to global warming, you can stand back and see an emerging pattern that suggests strongly that some of the things that define New England – such as its fall color display – are going to disappear if global warming continues unchecked.”**

Rock noted that projections set out three years ago in the New England Regional Assessment (NERA) of expected climate change impacts appear to have been right on track or even a bit on the conservative side. The NERA report forecasts a 100-year shift in present temperatures of 6-10 degrees over 100 years. The severity of what might seem at first to be an innocuous climate change shift may be seen in that a six degree change in Boston's 30-year-average temperature would result in the same 30-year-average temperature now experienced by residents of Richmond, VA. A shift of 10 degrees in the 30-year-average temperature for New England over 100 years would result in the current 30-year-average temperature experienced in Atlanta, GA., in the deep South. While the Atlanta extreme is the worst-case scenario for Boston, the still difficult to imagine notion of Richmond-like weather is considered a middle-of-the-road scenario for the region in just 100 years.

Such expected climate changes in New England would simply mean an acceleration of significant weather-related changes that already are underway and have been for some time, the experts said.

Adam Markham, executive director, of the nonprofit Clean Air-Cool Planet, which has offices in Portsmouth, NH and New Canaan, CT., said: **“As with the rest of the country, we are experiencing a long-term warming trend. On average, New England has warmed by almost one degree since 1895. Winters have warmed more than summers, and the greatest warming has been in New Hampshire, Vermont and Rhode Island. Annual precipitation for the region**

**as a whole has increased, especially in southern New England, where the change has been more than 25 percent over the last century. More rain is falling in intense storms than in the past. On the other hand, there has been a significant decrease (15 percent) in snowfall in northern New England since 1953. Snow is lying on the ground 7 days less than it was 50 years ago and the ice comes off lakes a few days earlier now than 100 years ago.”**

Frank Smith, senior fellow, Civil Society Institute, which is located near Boston in Newton, MA., commented: **“When you start talking about a New England without fall colors and maple syrup production, that’s when global warming gets very real very fast for people. We don’t want to be alarmist about this; hysteria and fear do not lead to problem-solving. But facing hard facts, with the knowledge that there are steps that can make a difference will get things moving. The wisest course of action is to start changing things now. To do less is to be both reckless and irresponsible. This is the message we want to send to business leaders and elected officials: If you think of climate change as just a vague theoretical abstraction that will only have an impact on your great grandchildren, you need to realize that the time to do something about global warming is now.”**

In New England, climate change is a significant threat to the forest and alpine ecosystems of the most important public lands in the region, including Acadia National Park, the Allagash Wilderness Waterway, Baxter State Park, the White Mountains National Forest, and the Mount Washington State Park. The experts highlighted the following ways that New Englanders are likely to see changes in relation to New England fall colors and other aspects of regional forests:

- ***Decline of fall colors long before temperatures rise dramatically.*** Why have recent fall color displays in New England been so underwhelming? The reasons for the disappointing leaf colors are many, but among them are longer growing seasons and the lack of repeated fall frosts – including at least one or two well-timed “hard” frosts – needed to kill the chlorophyll in the leaves and cause the desired brilliant color display, such as the bright reds that once were common among the region’s sugar maples. As falls become warmer and arrive later, the traditional and reliable fall color displays of 20 or even just 10 years will become fewer and farther between.
- ***Loss of birds that keep tree-attacking pests in check.*** According to the American Bird Conservancy and the National Wildlife Federation, a great many species of birds in New England will be affected by climate change. For example, several species of wood warbler are expected to extend their ranges northwards, perhaps by hundreds of miles, while disappearing at the southern edges of their current ranges. Five species, including the bay-breasted warbler and Cape May warbler are predicted to disappear from New England entirely. These birds help to keep spruce budworm outbreaks in check by consuming millions of larvae during the breeding season. If they are pushed northwards many forests could become much more vulnerable to insect pests. A study of 35 North American warbler species showed that 20 percent of them have already shifted their ranges an average of 65 miles northwards during the last 25 years.
- ***Rise of insects and less attractive “Southern” fauna.*** With fewer birds present to hold down the population of insects, such pest species as the spruce budworm and the gypsy moth will do greater damage to sugar maples, oaks and other hardwood forest staples. The unbalanced

ecosystem could see more trees die and go unreplaced, thus reducing the beauty of the region's forests in fall. On the other hand, global warming could tend to favor opportunistic, fast-moving and adaptable species. In keeping with the emergence of a more Richmond- or Atlanta-like climate, such species as purple loosestrife, garlic mustard, Tartarian honeysuckle and Morrow honeysuckle are some of the troublesome non-native species that are predicted to benefit as others decline or disappear. While birds may be able to shift north to colder climates, trees cannot make such radical changes in their territories. It is estimated that most trees can "migrate" no more than 20-25 kilometers over the span of 100 years, which will leave sugar maples and other hardwood forest trees far behind more northern climates as New England heats up.

- ***Long-term damage to trees from extreme weather incidents.*** The heavier rainfall expected with climate change will make for shorter displays of fall colors, as leaves are knocked to the ground. But a much graver problem arises with such extreme incidents as the 1998 ice storm that resulted in extensive damage to trees in New England. Broken tree limbs and other branches do more than inflict short-term damage that can be repaired, they also leave trees vulnerable to potentially devastating blight outbreaks that can stunt or kill substantial numbers of trees in a season. Summers, such as the one seen in 2004, that had an above average number of cloudy and rainy days also cause oak "mast" (acorns) to flourish, which in turn feed rapidly expanding populations of mice and deer that are hosts to tick infestations that can pose health threats to humans.
- ***Decline of remaining New England maple syrup production.*** New England and New York produce approximately 75 percent of the dwindling amount of maple syrup that is still produced in the US today. For Vermont, it is a more than \$100 million industry with over 2,000 mainly family-owned sugar producers. There is a very short time in the year when conditions are right for sugar production. Sugar bushes need a prolonged period of temperatures below 25 degrees to convert starch to sucrose and to get high sugar content in the sap. A freeze/thaw cycle of cold nights and warm days (above 38-40 degrees) is required to get the sap moving. When the nights no longer freeze the season is over. Sap once flowed during late February and early March. Sugarmakers are reporting that their season is starting earlier and earlier. Traditionally, in much of Vermont, tapping coincided with Town Meeting Day (the first Tuesday in March). But this is changing, and during the last decade approximately a quarter of Vermont's sugar production has occurred before Town Meeting Day. With such a short window of opportunity, the decision on when to tap the trees is critical to successful production. Tap too early and you risk "drying out" the tree prematurely, but tap too late and you miss some of the best sap runs. By making the beginning of the season more unpredictable and increasing temperature fluctuations, global warming will make the decision on when to tap far tougher and less profitable for New England syrup producers.
- ***Loss of forest jobs and fall-related tourism.*** There are parts of the United States where "fall colors" are synonymous with New England. Without sugar maples, the autumn experience in New England would be radically different and of much less economic value to the region. Fall-foliage tourism accounts for 20-25 percent of total annual tourism in Vermont and Maine. NERA estimated that a 50 percent drop in fall foliage tourism could result in approximately 20,000 job losses. Additionally, higher summer temperatures and increased pollution from road

traffic will likely contribute to greater ground-level ozone formation with the effect of reducing forest productivity and harming commercial tree species like red spruce and white pine. More than 300,000 people in New England and New York are employed in the forestry and forest products sector. Milder winters will likely increase the vulnerability of commercial forests to insect pests including eastern spruce budworm, gypsy moth and pear thrips. Any economic losses are likely to disproportionately affect smaller, non-industrial private landowners. More than 250,000 private forest landowners are likely to be affected in New England alone.

For more about global warming in New England go to <http://www.cleanair-coolplanet.org/information/implications.php>, <http://cleanair-coolplanet.org/information/saveoursyrup.php> and [www.necci.sr.unh.edu](http://www.necci.sr.unh.edu). You also can learn more about global warming at <http://www.ResultsForAmerica.org>.

## **ABOUT THE GROUPS**

Results For America (<http://www.ResultsForAmerica.org>) is a project of the Civil Society Institute, which is based in Newton, Massachusetts. The mission of CSI is to serve as a catalyst for change by creating problem-solving interactions among people, and between communities, government and business, that can help to improve society. You may visit Civil Society Institute on the Web at <http://www.CivilSocietyInstitute.org>. RFA seeks to shape and tap the tremendous amount of community-level knowledge, experience and innovative action that could solve America's problems in four key areas, including the environment.

Clean Air-Cool Planet works with colleges and universities, corporations, and cities and towns from Maine to New Jersey to help them find ways to reduce greenhouse gases and inspire others to do the same. Founded in 2000, CA-CP has offices in Portsmouth, NH and New Canaan, CT. Visit CA-CP on the Web at <http://www.cleanair-coolplanet.org>.

The Institute for the Study of Earth, Oceans, and Space (EOS) at the University of New Hampshire (UNH) is a multidisciplinary scientific research institute dedicated to understanding the integrated behavior of the Earth and its surrounding universe. Established in 1985, the Institute has become a world leader in the fields of space science, terrestrial ecosystems, oceanography, atmospheric science and global climate change. The Institute may be found online at <http://www.eos.sr.unh.edu/>.

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**EDITOR'S NOTE:** A streaming audio recording of a related news event will be available on the Web as of 5 p.m. EDT on October 28, 2004 at <http://www.resultsforamerica.org>.