

Gary Lovett studies how man changes the ecology of our forest



By Carola Lott

Dr. Gary Lovett, Ecologist at the Cary Institute of Ecosystem Studies, investigates the way both air pollution and introduced pests and pathogens affect the forests of New England, especially those in the Catskills and the Hudson Valley.

Dr. Lovett has been at the Cary Institute for 25 years. He was born in Albany, NY, went to Union College in Schenectady then received his Ph.D. from Dartmouth. He is married with one daughter. He enjoys anything to do with the outdoors, especially hiking and skiing near his house in the Adirondacks.

Dr. Lovett has been studying the two components of acid rain - sulfur and nitrogen. While sulfur has declined thanks to the Clean Air Act, nitrogen caused for the most part by the burning of fossil fuels, has scarcely decreased at all. By acidifying the soil, nitrogen favors the growth of weedy

species, over slower growing trees so that eventually the composition of the forest will change.

Dr. Lovett's other concern is what he calls "biological pollution" - those foreign pests and diseases that have been introduced into this country on imported plants or in packing material made of untreated wood. Complicating matters is climate change, which Dr. Lovett says "is affecting every aspect of the ecosystem."

The Woolly Adelgid which arrived in this country in the 1950's on an imported hemlock from Asia, is a case in point. Cold winter nights when the temperature drops to minus 15 degrees Fahrenheit have kept the insect from spreading north. However we seldom get nights this cold any more; in fact it's a rare night that goes below zero. The adelgid is still moving slowly around here, but down in the Smokies it has been killing entire stands of hemlocks in just a few years.

Hemlock, one of the dominant species in New England forests, affects the many other species in an ecosystem. The hemlocks that grow along stream banks provide shade, and loss of the hemlock canopy will increase stream temperature, and algal growth, which will affect fish, salamanders, and other creatures in riparian zones. Hemlock stands are also the preferred habitat for many bird species. In Connecticut where the adelgid has killed the hemlocks several bird populations have declined precipitously.

Dr. Lovett says he has no idea what the forest will look like in 50 years. Although he is sure it will be green, he cannot tell what trees will be present in part because he doesn't know the full extent of the damage caused by current pests. And new pests are likely to appear.

The Institute has received a grant to study climate change and how it will alter the forests of the northeast. As native trees move further north other species will arrive from the south to replace them.

Dr. Lovett says, "I don't think there is any doubt that climate change is

happening and that it is caused by carbon dioxide thanks to the burning of fossil fuels." Many people are in denial in part because of a campaign designed to "produce obfuscation ... you don't have to say it isn't happening; you just have to create some confusion in peoples' minds... However as the science becomes more and more certain public opinion is going the other way which is a testament to the effectiveness of the disinformation campaign."

Dr. Lovett believes that "if we understood the consequences of what we're doing we would not cause quite so many problems as we are." It comes down to having people care about the problem and contact their representatives in congress about the environment.

From Dr. Lovett's Articles:

Small forested watersheds in the Catskills can vary up to 17-fold in the concentration of nitrate in streamwater.

This is important because nitrate is a significant acidifying agent in the streams, and can cause harmful algal bloom when it is delivered to downstream estuaries and coastal waters.

We are investigating the cause of nitrate variation through comparative studies in Catskill watersheds. Most of the variance in watershed nitrate export can be explained by the carbon to nitrogen ratio (C:N) of the watershed soils, and this ratio appears to be mainly controlled by the tree species composition of the watershed.

The beech bark disease, which was introduced to North America from Europe, is caused by a combination of a scale insect and a fungus.

The insect penetrates the bark of the trees to feed, and the tiny holes it leaves behind allow the fungus to become established. Once infected with the fungus, most trees die. The disease affects nearly every beech tree in the Catskills, and it is especially prevalent in the mid-elevation forests.

One of the effects of the disease has been a reduction in the Catskill's beech population, resulting in an increase in beech's major competitor, sugar maple.