FORESTS AND CLIMATE IN THE NEWS

BY ALISON BERRY

Since January, with funding from the USDA Northeast Climate Hub, I have been distributing a weekly email newsletter, *The Pulse*, focused on forests and climate change in the northeastern United States. The goal is to provide updates for forestry and natural resource professionals in the region, who are working at the intersection of land management and climate adaptation and mitigation.

Each week, I share news on various topics including carbon markets, biomass energy, forest management, and more. With so much happening in relation to forests and climate change, it is helpful to have relevant local, national, and international stories compiled in one weekly email.

As the year goes on, several topics have regularly appeared in *The Pulse*, and it seems timely to share some highlights and pull together central themes.

Biomass

So far in 2023, much of the news about woody biomass centers on the debate over whether it should be considered a renewable resource. Lawmakers in Europe discussed the pros and cons of using woody biomass to generate energy. Supporters of biomass energy point out that wood is a renewable resource, and sustainably managed forests can play an important role in carbon uptake and storage. Critics question the carbon accounting of biomass energy, and claim that incentives for using wood as an energy source can lead to threats to local and distant forests.

Similar discussions were going on in many states in the northeastern US. Legislators in Maryland and Massachusetts considered bills that would eliminate incentives for biomass energy. Proponents of these bills cited air-quality concerns and carbon emissions associated with biomass incinerators. On the other hand, opponents noted that modern biomass systems are designed to minimize emissions, and they provide an important market for waste wood. County commissioners in Allegany County, Maryland supported biomass energy, and wrote "woody biomass will play a key role in our region's energy transition."

In New York, where woody biomass does not qualify as renewable according to the state's Renewable Portfolio Standard, the biomass energy plant on the Fort Drum Military Base, ReEnergy Black River, shut down in March. Lacking tax credits that would come with the Renewable Portfolio Standard, the plant was no longer financially viable for its owners. In the aftermath of the closure, local loggers have lost a market for waste wood, and an important source of revenue. "We've lost half our bottom line," said Kirk Kleiboer, foreman at K & E logging.

A similar situation is playing out in Berlin, New Hampshire, where Governor Chris Sununu recently vetoed the continuation of rate subsidies for the Burgess biomass plant. For nearly a decade, the plant has produced electricity at above market rates, and subsidies have helped to keep the operation afloat. Now, the future of Burgess is uncertain. Like the Fort Drum plant, Burgess provides an important outlet for waste wood from the forest products industry, but lawmakers are no longer willing to provide financial support for more expensive electricity.

Meanwhile, in Vermont's Northeast Kingdom, Clean Energy Technologies is working to build a new biomass energy plant that would produce 14,600 MWh of electricity annually, stating "This project serves as a blueprint for numerous forthcoming biomass projects." The company uses proprietary technology to burn wood at high temperatures, producing not only electrical power but also biochar and heating fuel.

Researchers in Maine are studying the feasibility of a biomass pipeline, which would transport biomass in a watery slurry from forests to ports. In addition, advances continue in the field of biofuels, where scientists are working to perfect the synthesis of transportation fuels from woody feedstocks.

Wildfire

This spring and summer, fire made headlines and dramatic images of flames and smoke grabbed readers' attention. *The Pulse* shared stories about local fires in several northeastern states, including large fires in New Jersey's Pine Barrens, and a fire in the Queen's River Preserve in Rhode Island, which was that state's largest fire since 1942. Years of cumulative drought, rising temperatures, and low winter snowpacks all contributed to the problem, leaving forests vulnerable to pests and drying out fuels that burn more easily.

In June, smoke from Canadian wildfires blanketed the northeast, resulting in air quality concerns throughout the region. Smokey conditions provided a fitting backdrop for legislators discussing wildfire policy in Washington, D.C. Lawmakers from western states used the smoke as a wake-up call, emphasizing the importance of public land management as a national, rather than regional, issue.

Scientists weighed in on the future of wildfire and smoke in the Northeast. "A warmer world means more fire for Canada," said Mike Flannigan, a fire scientist at Thompson Rivers University in British Columbia. The weather patterns that brought smoke to the northeast states this spring are more difficult to predict. "The conditions may not be like this every year, but it's probably going to happen again," said Nicole Riemer, professor of atmospheric sciences at the University of Illinois at Urbana-Champaign.

The risk of wildfire in the Northeast is tied to environmental conditions. According to the National Oceanic and Atmospheric Administration (NOAA), the Northeast can expect increases in rain, but also increases in temperature as a result of climate change. Looking forward, fire risk will depend largely on how wet or dry the conditions are.

In the Adirondacks, Mark Lesser, associate professor of environmental science at SUNY Plattsburgh is expecting only minor increases in fire incidence. "It takes pretty unique conditions of the timing and length of drought conditions here in the Northeast to burn a northern hardwood forest," he says. "Those conditions may be becoming a little more prevalent due to climate change, but not to any major extent."

Weather

In the beginning of the year, *The Pulse* shared reports of long-term trends in weather. Headlines revealed that the past eight years were the warmest on record globally. In the US, 2022 was among the top three years in terms of the number of individual weather events costing more than $1 billion. In the Northeast, Massachusetts recorded the 6th warmest year in 2022. And, 2022 brought record temperatures to the world's oceans for the fourth year in a row.

With a few exceptions, warm trends continued over the remainder of the year. January 2023 was the warmest on record for New Jersey and all of New England, according to NOAA. A warm winter impacted logging in the Northeast, where a lack of frozen conditions limited operations. Sam Lincoln, of Lincoln Farm Timber Harvesting in Vermont, stated that this winter was "one of the worst" in 25 years of working in the region, lamenting a lack of frozen ground even in late January. Winter precipitation in the Northeast was also low, with places like New York City recording one of the longest periods without snow in the city's history.

The summer brought record-breaking high temperatures on a global scale. July was the hottest month in 174 years, according to both NOAA and NASA. The Earth's surface temperature in July was two degrees Fahrenheit warmer than the 20th Century's average.

Floods affected many parts of the Northeast during the summer. Heavy rain in mid-July brought flooding to New York, Vermont, Massachusetts, and Connecticut, with Vermont receiving more than nine inches of rain in just a few days. Flash floods also affected areas of Pennsylvania in mid-July and West Virginia in late August.

Looking forward, weather news is focused on moving away from La Niña and into El Niño. These are regularly cycling patterns observed in the Pacific Ocean that affect weather worldwide. Although local conditions can vary, El Niño usually brings warmer and wetter weather to the Northeast, with more precipitation falling as rain vs. snow.

Carbon

Carbon is a huge, complex topic making headlines nearly every week in *The Pulse*. Here are a few themes that are continuing to evolve:

Carbon markets and carbon offsets are often in the news. The basic concept here is that a person or a business can "offset" their carbon emissions by paying for activities like forest protection or tree planting that will result in carbon uptake or storage. Whether or not the basic concept is sound (and there is some debate about that), there have been many problems with the implementation of these programs, to the extent that some people question if carbon offsets are a viable climate solution.

An investigative report from *The Guardian* in January

identified problems with rainforest carbon offsets, stating that many carbon credits sold to large corporations "do not represent genuine carbon reductions." A few projects, notably three in Madagascar "achieved excellent results," but out of 29 projects studied, 21 had "no climate benefit."

In response to *The Guardian* report, some observers say that the best climate solution is to focus on reducing carbon emissions, rather than allowing offsets. Other reporting has focused on ways to improve carbon markets, such as encouraging more transparency, more accurate carbon accounting, and a potential role for government regulation, among other suggestions.

On US forests, news has focused on a recent report from the Forest Service, "Future of America's Forest and Rangelands." The report finds that US forests, which currently absorb 11 percent of US carbon emissions, will become net emitters of carbon by 2070. The switch is due to a number of factors, including natural disasters like hurricanes and wildfires that kill trees and result in a release of carbon into the atmosphere.

Another factor is aging forests. Older, mature trees store a lot of carbon, but they absorb carbon at a lower rate than younger trees. "Naturally, the forest is going to reach a saturation point where it plateaus in how quickly it is sequestering carbon from the atmosphere," said Lynn Riley, a senior manager of climate science at the American Forest Foundation.

In the Northeast, a few stories have focused on local forest landowners managing forests for carbon. For example, in northern New Hampshire, Bluesource Sustainable Forests Company recently purchased more than 100,000 acres of forested land, and there is concern that the company, which plans to sell carbon credits, will significantly curtail timber harvesting.

Previously, this land was managed for timber and played an important role in the local forest products industry. The switch in management priorities has locals concerned about a loss of timber tax revenue and potential impacts to mills and logging businesses in the region.

Forest Management

Some interesting things are going on in the world of forest management as land managers and scientists work to find ways to help forests adapt to climate change, while also playing a role in climate mitigation. *The Pulse* shared stories about assisted migration from Vermont, Quebec, Michigan, and Minnesota, with titles like "Traveling Trees," and "If Trees Had Feet."

The basic concept of assisted migration is to help tree species or populations move in response to climate change through tree planting efforts. According to Leslie Brandt, a USDA Forest Service climate adaptation specialist, "Natural migration is very slow for most tree species, they just don't have a very far seed dispersal distance, and they just cannot keep up with the rapid pace of climate change." Scientists have had success expanding species' range and encouraging population shifts in various regions of North America.

Another management approach in the headlines is agroforestry, which combines farming, ranching, and silviculture for multiple benefits. In January, *The Pulse* shared an interview with Anne Marsh, the new director of the US National Agroforestry Center. The interview notes that the USDA is investing more than $60 million in agroforestry training through its Partnerships for Climate-Smart Commodities program. According to Marsh, "Agroforestry provides so many benefits – increased productivity, market diversification, improved air and water quality, pollinator habitat, and more."

The State of Pennsylvania recently hired agroforester Robbie Coville, who says his work focuses on "trees as nature-based solutions." He adds temperature regulation and stormwater moderation to the list of agroforestry benefits, and aims to connect private landowners with the resources that they need to incorporate agroforestry into their land management practices.

More traditional forest management activities, including timber harvests and thinnings, are also at play in northeastern forests. For example, a new timber harvest on the Housatonic State Forest in Connecticut will remove dead and dying trees resulting from an infestation of spongy moth caterpillars, while creating habitat for a variety of wildlife species.

The New England Forestry Foundation and the New England Wilderness Trust are partnering on a project that incorporates both active management and conservation to "work toward a resilient future." They describe the approach as "leaving portions of the land free from logging to maximize biological richness and carbon storage, while simultaneously introducing improved management practices everywhere else."

In northern Maine, the East Grand Watershed Initiative will also incorporate both conservation and active management on 12,000 acres of private land protected through conservation easements. The property will be managed for multiple benefits including wildlife habitat, recreation, and timber.

More on Forests and Climate

Clearly, there is a lot going on in the world of forests and climate in the northeastern US. I've mentioned a handful of themes recurring in *The Pulse* since the start of 2023. But there are many more topics that have been covered this year: advances in biofuels, the use of AI in forest management, trends in forest insects and invasive species, climate benefits of urban forests, and innovations in forest products and sustainable building materials like cross-laminated timber, to name a few.

The Pulse also includes scientific studies each week to help readers stay on top of the many advances in research that are relevant to forests in a changing climate. A list of events and announcements also keeps readers updated on funding, learning opportunities, jobs, and more. For professionals working in forestry and natural resources in the Northeast, *The Pulse* is a go-to resource to stay informed in the world of forests and climate in the news.

To subscribe and read past issues of *The Pulse*, check out our website at: www.climatehubs.usda.gov/hubs/northeast/project/pulse

Alison Berry is the owner of Woodland Resources, providing research consulting in forestry and natural resources.