Climate Change and Ecosystem Services

USDA Forest Service
Northeastern Area
State and Private Forestry

Description: Forests supply a bounty of goods and services: cleaner water and air, timber, recreation, and other values, each vital to human health and economies. Millions of Americans rely on these *ecosystem services* that flow abundantly from State and privately owned forests in the Northeast and Midwest. Yet our forests face a host of natural and human-caused stressors, jeopardizing their capacity to deliver ecosystem services. Many of these stressors are directly or indirectly related to climate change.

While forests can blunt the effects of climate change, they are also dramatically affected by it. Healthy forests are ecological life-support systems. Trees and forests store (sequester) carbon in the soil and in their biomass (trunks, branches, foliage, and roots), acting as carbon sinks or "banks" that accumulate carbon "interest" as they grow. Forests also release carbon through biological processes, such as when they are disturbed or converted to nonforest uses.

Northeastern Area State and Private Forestry (NA S&PF) provides critical Federal leadership and coordination for efforts to mitigate climate change through forests. NA S&PF provides:

- Information about and technical assistance for forest-based mitigation and adaptation to climate change.
- The economic value and true-cost accounting of critical ecosystem services that forests provide.
- Funds for competitively selected projects that address climate change mitigation or adaptation.

Key Issues:

- Forests must adapt to climate change if they are to continue to provide essential ecosystem services.
- Because ecosystem benefits are hard to quantify, they are often undervalued in traditional cost-benefit accounting—or left out entirely. Decisionmakers often lack vital information about the social, economic, and health-related benefits of trees and forests.
- More than 74 percent of forests in the Northeast and Midwest are privately owned, providing benefits to owners and adjacent communities. Shifting demographics, climate change, and economic pressures are jeopardizing many of these forests.
- Developing a market or payments for some ecosystem services, including carbon sequestration, could improve the financial viability of owning private forest land, helping to ensure that the land remains forested, sustainably managed, and an active provider of ecosystem services.

Accomplishments:

- Developing the *NA Strategic Framework for Responding to Climate Change*. This document is in line with the overall Agency's vision for mitigating and adapting to climate change, and collaborating with partners to meet the challenges that climate change presents for forest management.
- Creating a climate change response framework to engage private and other non-Federal landowners across a broad landscape. This effort is expected to become a regional and national model. Its partners include the Chequemegon-Nicolet National Forest and the Northern Research Station (NRS).
- Partnering with the U.S. Environmental Protection Agency to provide more than $500,000 in funding through the Great Lakes Restoration Initiative to catalyze economically sustainable payments or markets for ecosystem services in the Great Lakes Region.

- Contributing to a multiunit effort across the Forest Service to research, write, and publish the first landscape-level manual on watershed stewardship in an era of climate change: GTR–PNW–812, *Water, Climate Change, and Forests: Watershed Stewardship for a Changing Climate*, which is available at http://www.treesearch.fs.fed.us/pubs/35295.
- Hosting a series of climate change workshops for land managers that present the latest tools for modeling, mitigating, and adapting to climate change across landscapes and political jurisdictions. Two workshops, one in New England in 2008 and another in the Mid-Atlantic in spring 2010, were cosponsored with Department of Interior land management agencies.
- Enhancing the information, tools, and resources available to private forest land managers and others on the U.S. Forest Service's Climate Change Resource Center Web site (http://www.fs.fed.us/ccrc/). Partners in this effort include the U.S. Forest Service's Northern, Pacific Northwest, and Southern Research Stations.

Budget History

Project Funds related to Climate Change and Ecosystem Services *(thousands)*		
	FY 2009	**FY 2010**
Forest Stewardship	$650	$1,378
Forest Health	0	86
Urban & Community Forestry	142	363
Great Lakes Restoration Initiative	n/a	489
Totals	**$792**	**$2,316**

Future Direction:

Northeastern Area State and Private Forestry will continue to provide State partners and other stakeholders with the latest research on forest management in a changing climate. NA S&PF will also continue to solicit and fund on-the-ground projects that 1) apply the latest climate-related science; 2) catalyze landscape-level conservation to protect, enhance, and restore forests and forested ecosystems; and 3) facilitate actions to ensure that forests continue to provide ecosystem services in an era of climate change.

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