

Climate Change and Ecosystem Services

USDA Forest Service
Northeastern Area
State and Private Forestry



Description: Healthy forests are ecological life-support systems that can help prevent (mitigate) climate change, but they are also dramatically affected by it. Trees and forests store, or “sequester,” carbon in the soil and in their biomass (trunks, branches, foliage, and roots), acting as carbon sinks or “banks” to accumulate carbon in the form of carbon as they grow. Yet forests also release carbon through natural biological processes, such as when they are disturbed or converted to nonforest uses.

Forests naturally provide a life-supporting bounty of goods and services that include clean water, purified air, timber, recreation, and other values vital to human health and economies. Millions of Americans rely on these *ecosystem services*, which flow abundantly from State and privately owned forests in the Northeast and Midwest. However, the health of our forests, and thus their capacity to continue to deliver critical ecosystem services, is in jeopardy. Many forest stressors are directly or indirectly related to climate change.

Northeastern Area State and Private Forestry (NA S&PF) provides critical Federal leadership for efforts to conserve and enhance the extent and health of private forests in the Northeast and Midwest. NA S&PF provides:

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

Key Issues:

- Because ecosystem benefits are hard to quantify, they are often economically undervalued—or left out of—traditional cost-benefit accounting. Vital information about the social, economic, and health-related benefits of trees and forests is not available to decisionmakers.
- If forests are to continue to provide essential ecosystem services, they must have the capacity to adapt to climate change.
- More than 90 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 placing many of these forests, and the ecosystem services they provide, in jeopardy.
- Developing a market or payments for some ecosystem services, including carbon sequestration, could potentially improve the financial viability of private forest land ownership, thereby helping to ensure that the land remains forested, is sustainably managed, and actively provides ecosystem services.

Accomplishments:

- Developing the *NA Strategic Framework for Responding to Climate Change*. It parallels the national-level agency vision for mitigating and adapting to climate change, and collaborating with partners to address the social and ecological challenges of climate change on forest management.
- Cooperated with the Northern Research Station to develop and publish the *Management of Forests for Carbon Benefits Bibliography*. This practical, accessible tool for stakeholders and land managers covers the latest scientific forest management practices to maintain and enhance carbon sequestration.
- Hosted a Climate Change Workshop to educate NA S&PF leadership and staff about climate change science, its implications, and potential management strategies to consider for financial and technical assistance to partners and landowners.
- Hosted a *Climate Change Continuing Education* series of Webinars for external stakeholders, partners, and Forest Service land managers. Accessed by hundreds of stakeholders, it explores forest management and adaptation in the face of climate change, demonstrating practical modeling and carbon economic valuation tools (<http://www.na.fs.fed.us/ecosystemservices/carbon/index.shtm>).

- Collaborating with the Chequamegon-Nicolet National Forest and the Northern Research Station to create a climate change response framework. Serving as a regional and national model, the new strategy will engage private and other non-Federal landowners across a broad landscape.
- Partnering with Department of Interior land management agencies to host 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. A 2008 workshop in New England will be followed by a Mid-Atlantic workshop in spring 2010.
- Working with the Wisconsin Department of Natural Resources, Wisconsin County Forest Association, and several Wisconsin county forests on a forest carbon market scientific inventory and feasibility analysis to determine the potential for forest carbon payments to replace or act as a substitute for timber revenues under a variety of scenarios.
- Providing the latest, most relevant scientific, policy, and ecosystem market-related developments to stakeholders and partners in an Ecosystem Services newsletter. The NA S&PF Web site also provides comprehensive tools and information for understanding the challenges and opportunities of managing forests in a changing climate. http://www.na.fs.fed.us/ecosystemservices/carbon/update_archive.shtm

Budget History:

Project Funds related to Climate Change and/or Ecosystem Services (\$ Thousands)		
State(s)		FY09 Funds*
NY	Developing New York's Green Infrastructure	\$500
WV, OH	Mid-Ohio River Valley Woody Biomass Feedstock Zone	\$253
MD, DE	Delivering Landowners to Multiple Ecosystem Service Markets through the Baybank	\$300
MN, WI, MI	Sustaining Working Forests through Landowner Assistance and New Market Opportunities in the Upper Great Lakes Region	\$203
MO, KS	Assessing, Protecting, and Sustaining Green Infrastructure in Metro Kansas City	\$132
VT	Certifying Vermont's Private Woodlands	\$149
CT	Biomass from Connecticut's Urban Forest	\$44
TOTAL		\$1,581

Future Direction:

NA S&PF will continue to provide State partners and other stakeholders with the latest research regarding 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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