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Forest Service

Massabesic Experimental Forest

NORTHERN RESEARCH STATION EXPERIMENTAL FOREST NETWORK

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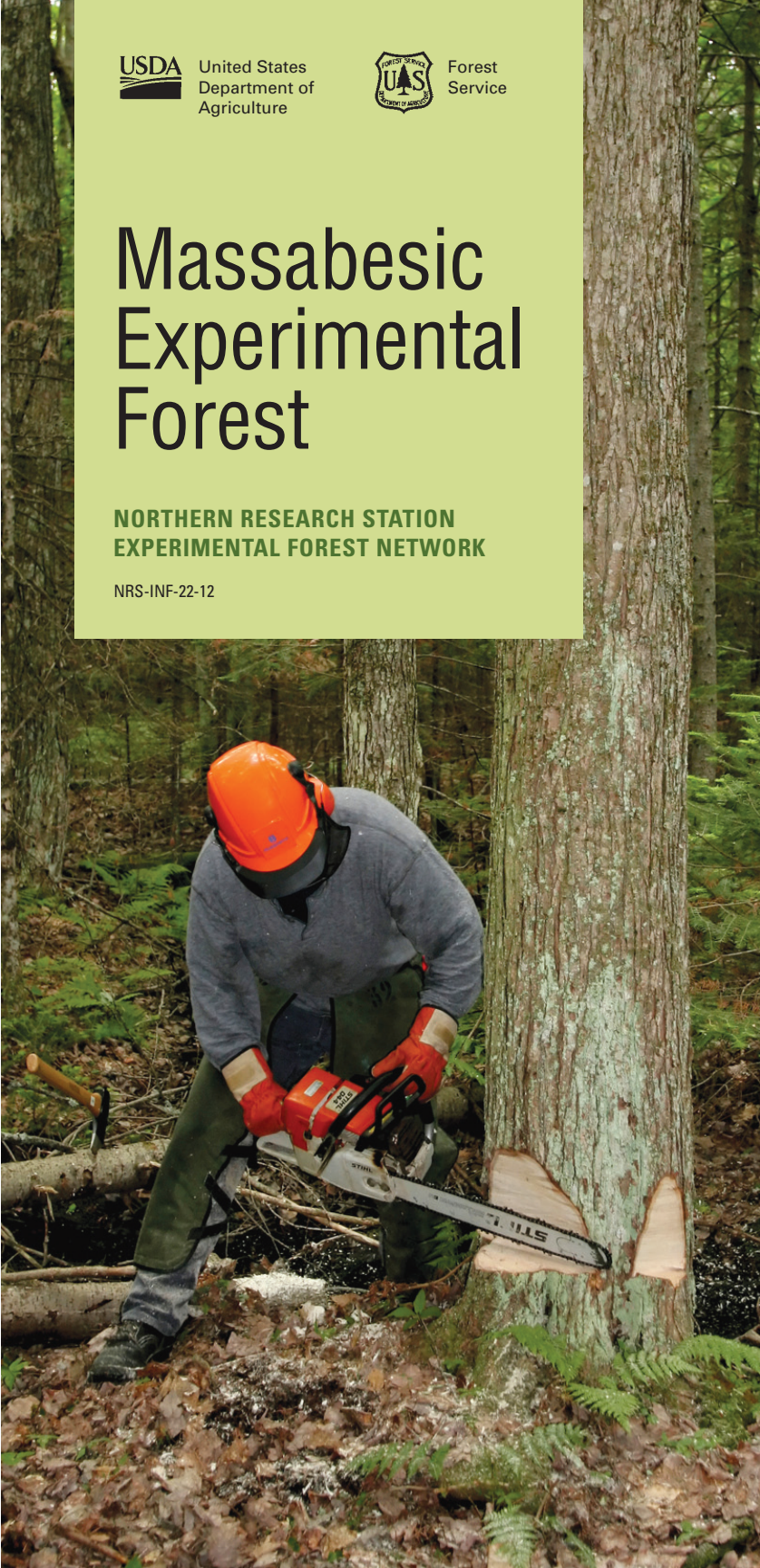
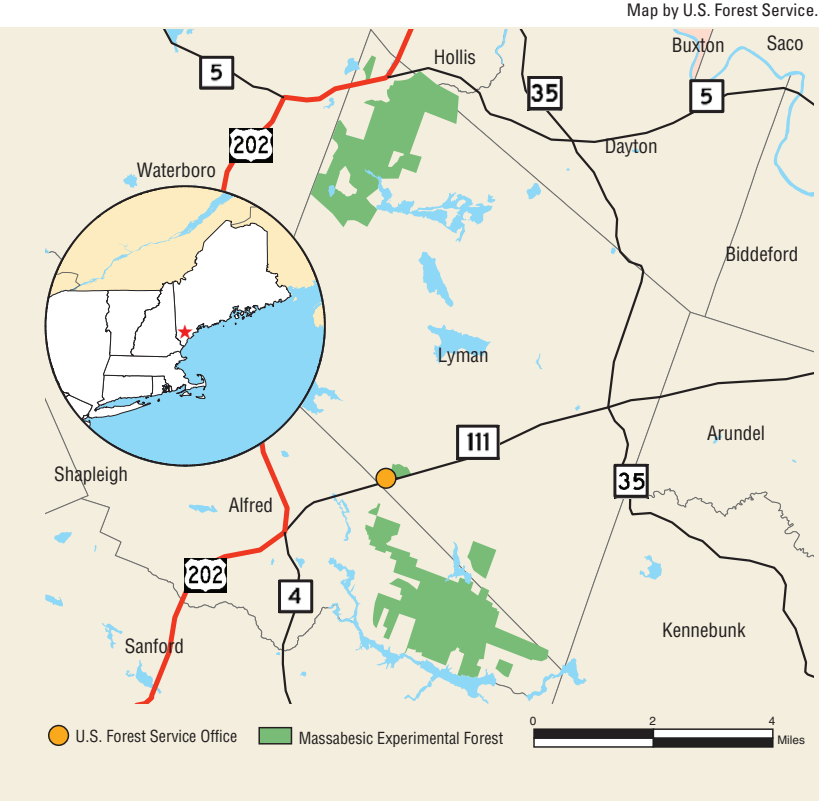


Massabesic Experimental Forest

The Massabesic Experimental Forest (MEF) is located in two major units in the Maine towns of Alfred, Lyman, Hollis, and Dayton, roughly 25 miles southwest of Portland, ME. The 3,676-acre forest was established in the late 1930s as a site for U.S. Forest Service research on the ecology and management of white pine, much of it on abandoned agricultural lands covered by 'old-field' pine. The October 1947 fires that swept across much of southwestern Maine also burned much of the MEF. After the 1947 fires, traditional management studies (shelterwood, diameter-limit, patch cuts, and strip cuts) were augmented with re-establishment studies of white pine, competition removal and chemical control, as well as white pine weevil control, woodlot management, and white pine and paper birch thinning studies. Today, with the continued interest in managing New England oak-pine resources, MEF management studies have been re-installed and available as demonstration areas and sites for future research.

Map by U.S. Forest Service.



MEF red pine plantation. Photo by Ken Dudzik, U.S. Forest Service.

Features

MEF lies in the Northeastern New England Coastal Lowlands and Sebago-Ossipee Hills and Plains subsections of the Lower New England Section of the Eastern Broadleaf Forest Province. MEF terrain is flat to gently rolling; elevations range from 200 to 450 ft. MEF upland soils are loamy sands to stony, sandy loams intermixed with poorly drained organic soils. Exposed ledge is common. Climate is cool and humid. Mean annual temperature is 46.6 °F, with July the warmest at 70.2 °F and January the coldest at 21.5 °F. Mean annual precipitation is 47 inches with September typically driest and November wettest. May 4 is the average date of the last killing frost and the growing season averages 157 days.

- **In the Experimental Forest Network, MEF provides the sole place in New England to study oak-pine ecosystems.**
- **Common trees include eastern white pine, eastern hemlock, northern red oak, white oak, red maple, paper and gray birches, and trembling and bigtooth aspen.**
- **Exemplary Atlantic white-cedar occurs in a forested wetland drainage on the southern unit.**
- **Extensive wetlands and aquatic habitats occur on both MEF units.**

Snapping turtle female laying eggs in a gravel road. Photo by Mariko Yamasaki, U.S. Forest Service.

Prescribed fire treatment. Photo by Ken Dudzik, U.S. Forest Service.

Research

A series of silvicultural treatments (patch cuts, shelterwood, group selection, and low-density thinnings) was installed on the northern unit beginning in 2007. Measurements over time, designed to follow woody regeneration, growth, breeding songbird usage, and winter mammalian usage, among others have been established on these areas. A prescribed burning treatment to improve blueberry production, and pine seedbed and nonforest habitat conditions for early successional wildlife has also been installed with similar measurements taken. Plans are being finalized to develop a forest practices demonstration area on the southern unit as an educational outreach effort to better inform the various publics of the effects of forest management in oak-pine ecosystems. Some of the numerous cooperator-initiated studies on MEF include investigations of vernal pools fauna, wetland salamanders, turtles, dragonflies, mosquitoes, aquatic fauna, and stream chemistry, among others as well as many forest insect studies. An upland array of long-term inventory plots has been re-established to measure tree species composition, stocking, growth, and volume over time as well.

Science Delivery

Users of MEF findings include forestry practitioners, researchers, students, landowners, policy makers, and the public. Research results are communicated through forest tours, demonstration areas, presentations, and publications. With renewed research interest in MEF, there is continuing local and regional interest in visiting these study areas to compare and contrast these management alternatives and integrated silviculture/wildlife habitat practices.

MEF low density thinning area, post-thinning. Photo by Ken Jaeger, U.S. Forest Service.

Outcomes

Integrated silviculture/wildlife habitat research on MEF asks the question – does opening size matter? Even in the short time since study installation, forest regeneration that is both valuable as timber species (red and white oaks and white pine) and as dense, young forest habitat (aspen, gray, paper, and sweet birch, and red maple) has been created. Patch cuts, low- and very low-density thinnings of white pine are growing well and providing young forest breeding habitat for a number of early successional songbirds such as the eastern towhee, indigo bunting, cedar waxwing, American goldfinch, and chestnut-sided and prairie warblers, and for the New England cottontail in the future.

Partners

Various partnerships are essential to the revitalization of oak-pine ecosystem research on MEF and include: White Mountain National Forest, Northeastern Area State and Private Forestry, Maine Forest Service, Maine Natural Areas Program, and Maine Inland Fisheries and Wildlife, Small Woodland Owners Association of Maine, University of New Hampshire, University of Southern Maine, and University of Maine, the Nature Conservancy, and towns of Alfred, Lyman, Waterboro, Hollis, and Dayton.

Facilities

The U.S. Forest Service maintains an administrative site with buildings scheduled to be renovated in 2013. Facilities will include an office and a garage with dry lab space.

U.S. Forest Service Experimental Forest and Range Network

Forest Service Research and Development (R&D) works at the forefront of science to improve the health and use of our nation's forests and grasslands. Research has been part of the Forest Service mission since the agency's inception. Today, Forest Service researchers work in a range of biological, physical, and social science fields; their research covers all 50 states, U.S. territories, and commonwealths. The Northern Research Station is one of six in R&D, and includes 20 states in the north-central and northeastern U.S., comprising both the most densely populated and most heavily forested portions of the country.

The Experimental Forest and Range (EFR) network contributes importantly to R&D's research infrastructure and is increasingly viewed as one of its most valued assets. There are currently 22 official experimental forests in the Northern Research Station, and 80 EFRs nationwide. Taken together, these sites provide a record of forests and forest change that dates back more than 100 years. Though initially focused on local and regional topics, EFRs are becoming increasingly networked to address issues of national and international concern such as climate change, carbon sequestration, air and water quality, and invasive plants and animals.

For more information about Massabesic Experimental Forest

Website:

http://www.nrs.fs.fed.us/ef/locations/me/massabesic/

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Sampling red maple tree for a rot study. Photo by Ken Dudzik, U.S. Forest Service.