



Seeing the Forest for the Trees (and Snags)

Results of Annual Forest Health Survey for Weir Farm National Historic Site

Background

Forests of the northeast have a long history of resiliency and recovery. Ice ages, weather events, large scale clearing, and introduction of pests and invasive species have all played significant roles in shaping the forest communities we have around us today.

Long-term health of the forests of Northeast Temperate Network (NETN) parks is a high-priority for the network. The goals of the forest monitoring program are to assess status and trends in the composition, structure, and function of forested ecosystems, and to interpret and report the condition of forest systems in a way that effectively informs park managers and other stakeholders.

Purpose and Scope

To aid in reporting data in a clear and useful way, NETN developed the Ecological Integrity Scorecard, which interprets the condition of forested ecosystems by assessing a range of ecological components in relation to their natural or historical conditions.



Typical forest stand at Weir Farm. NPS photo.

Integrity is ranked in one of three categories: Good, Caution and Significant Concern. “Good” represents acceptable or expected conditions; “Caution” indicates a problem may exist; and “Significant Concern” indicates undesired conditions that may need management action. It is important to note that “ecological integrity” may not be the primary goal of natural resource management at all network parks, particularly at historical parks and sites where cultural resource management may take precedence. However, being able to compare the condition of park resources to ecological integrity benchmarks is valuable because it provides a deeper understanding of park condition, as well as a consistent baseline for assessment of management goals.

Results and Findings

The tree diameter distribution in the park is typical of second-growth forests in the northeast with few large diameter trees and many in small diameter classes. Dominant canopy species include red maple, sugar maple, yellow birch, sweet birch, and oak species.

Forest health appears to be impacted by a number of factors, including white-tailed deer browse, forest pests, invasive species, poor soil chemistry, and lack of dead wood in the form of snags and coarse woody debris. Seedling and sapling densities are below levels required to adequately restock the forest canopy and continued and/or increased deer browse pressure could result in a compositional shift in the canopy towards non-preferred browse species such as black cherry, and possibly a sparser canopy if regeneration of forest species continues to fail.

Dead wood, in the form of standing dead trees (snags) and fallen coarse woody debris (CWD), is an important structural feature of forests that provides habitat for a wide variety of species. Logging and hazard tree removal can reduce the quantity or quality of these features, but strategic land management can maintain or enhance snags and CWD. The forest plots of Weir Farm rated as Significant Concern for snag abundance and Caution for CWD. Both coarse woody debris and snag abundance are expected to increase over time as the park’s second-growth forests mature. NETN scientists suggest management efforts to improve forest health in the park should focus on controlling invasive species and reducing deer densities. Early detection of new invasive species and forest pests should also be a priority in the park.

More Information

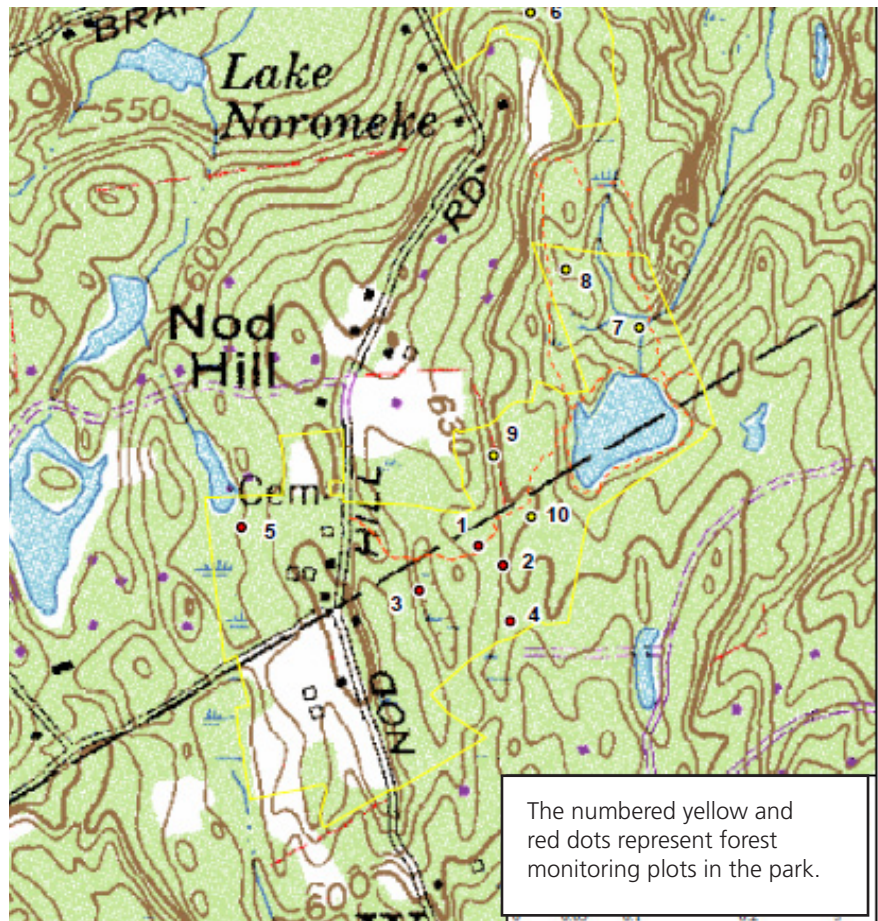
Brian Mitchell
NETN Program Manager

Phone/Email
802-457-3368 ext. 37
brian_mitchell@nps.gov

Kate Miller
NETN Plant Ecologist

207-288-8736
kathryn_miller@nps.gov

Full Report online at:
<http://science.nature.nps.gov/im/units/NETN/monitor/monitor.cfm>



Species Spotlight: Northern Red Oak

The Northern Red Oak or Champion Oak, (*Quercus rubra*), is native to the northeastern United States and southeastern Canada. Because of its tall and wide crown, the red oak is 10 to 20 times more likely to be hit by lightning than any other forest

tree. When hit, oak trees often burst into flames and ancient Europeans saw this as a direct connection to the gods. The *thunder tree* was venerated above all others. The most ancient Greek myths depicted Zeus, the thunder god, as an oak tree or at least living in one.

Red oaks grow most often on dry, rock ridge tops and south facing slopes, where deep roots and tough waxy leaves give the trees an advantage in finding and retaining groundwater.

In autumn, stands of red oak become very active places among local wildlife. Deer, raccoons, foxes, chipmunks, black bears, ruffed grouse, wood ducks, flickers, nuthatches and more come from far around to munch, peck, and crush acorns - one of the most nutritious woodland foods. Bears fatten up for hibernation by climbing up oaks and pulling limbs

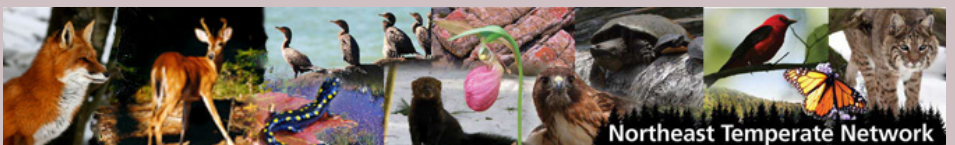
towards themselves to get at the acorns, often leaving conspicuous "bear nests" of broken branches behind. Squirrels, blue jays, and mice help spread the seeds by storing acorns in various locations. Those they fail to retrieve have a high germination rate. Populations of some wildlife species may rise and fall from year to year with acorn crop cycles. Millions of migrating passenger pigeons, which at one time blackened the skies with their huge flocks, were dependent on acorn and beechnut crops. Their extinction in the early 1900's is believed to have greatly limited the oaks ability to spread.



Andrew Michaels photo.



Northeast Temperate Network
54 Elm Street, Woodstock, Vermont 05091
802-457-3368
<http://www.science.nature.nps.gov/im/units/netn/>



Northeast Temperate Network