Outcomes

Though studies spanning decades are long-term from a human perspective, they represent a small fraction of the lifespan of the dominant tree species on the VFSEF. The verdict is still out on which treatments are capable of restoring and sustaining all of the components of oak-dominated ecosystems.

- **The principal finding of Forest Service research on the VFSEF is: *oak ecosystems will not be sustained without management.***
- **In order to maintain composition in oak-dominated stands, managers must establish advanced regeneration in partial shade and also control competing tree species.**
- **Declining wildlife such as cerulean warblers and bats prefer open woodlands over closed canopy forests.**

Partners

The cornerstone of the Forest Service's research program on the VFSEF is collaboration with Ohio University, Ohio State University, The Nature Conservancy, Ohio Divisions of Forestry and Wildlife, Wayne National Forest, and Forest Service scientists from other locations. The Ohio Division of Forestry is responsible for management and implementing silvicultural treatments. A Research Advisory Committee coordinates activities and reviews proposals for new research installations.

Facilities

The headquarters area of the Vinton Furnace contains a training center, quarters for six visiting scientists and technicians, equipment barn, weather station, and offices for Forest Service staff.

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 the Vinton Furnace State Experimental Forest

Websites:

http://www.nrs.fs.fed.us/ef/locations/oh/vinton-furnace/

http://www.dnr.state.oh.us/DNN/forests/vintonfurnace/tabid/23009/Default.aspx

Contacts:

Vinton Furnace State Experimental Forest.
(740) 596-4238.

Scientist in Charge, Northern Research Station, Forest Service, 359 Main Rd, Delaware, OH 43015.
(740) 368-0140.

ODNR Division of Forestry, Administrative Office, P.O. Box 330, S.R. 278, Zaleski, OH 45698.
(740) 596-5781.

On the cover: Igniting a prescribed fire. Photo by ODNR, Division of Forestry.

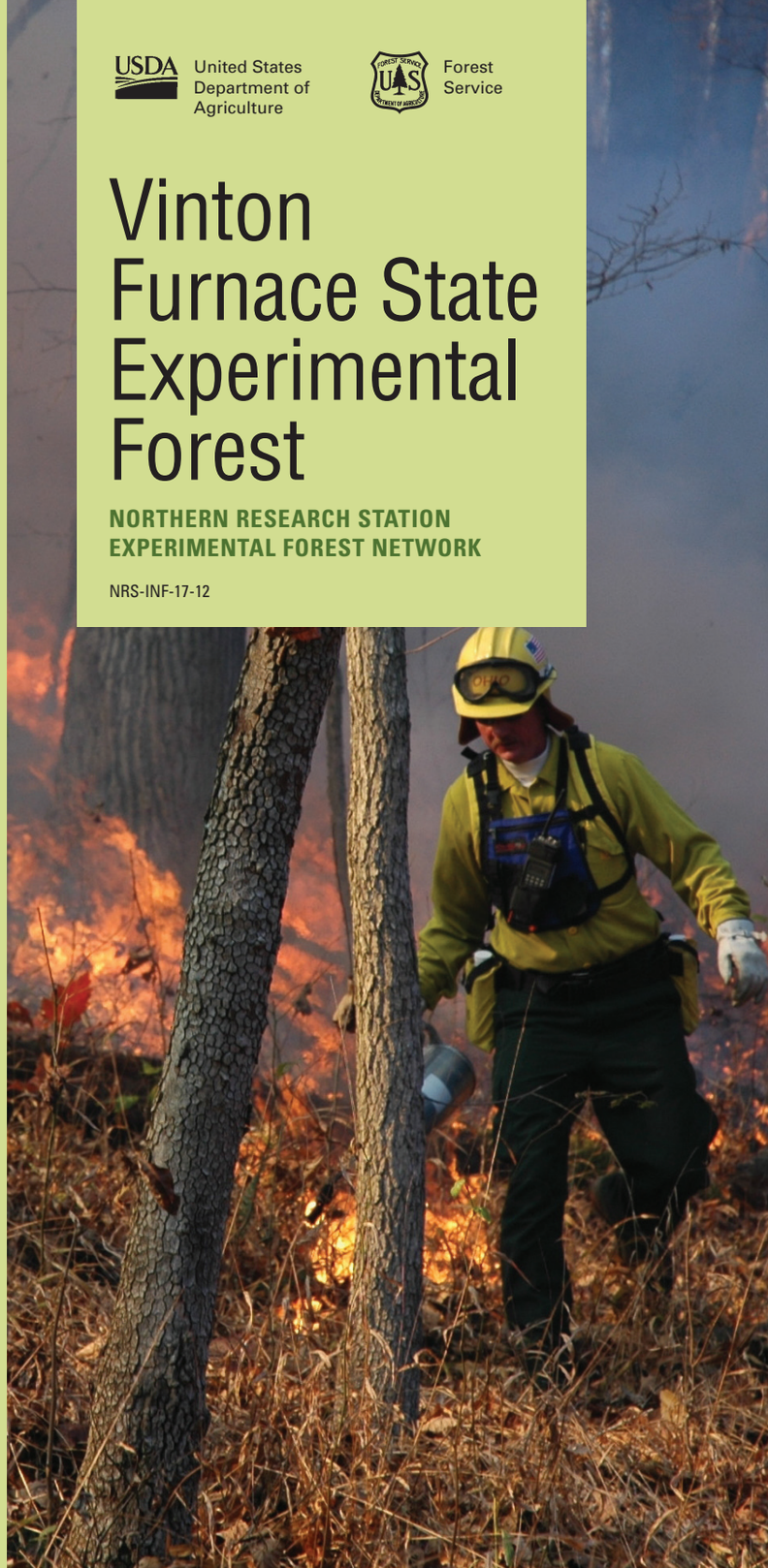
USDA United States Department of Agriculture

Forest Service

Vinton Furnace State Experimental Forest

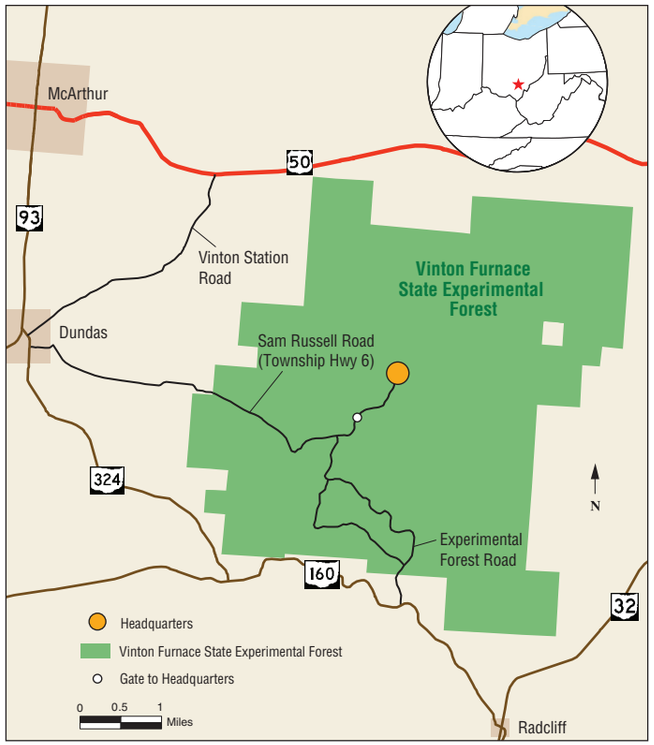
NORTHERN RESEARCH STATION EXPERIMENTAL FOREST NETWORK

NRS-INF-17-12



Vinton Furnace State Experimental Forest

The 12,089-acre Vinton Furnace State Experimental Forest (VFSEF) is located 75 miles southeast of Columbus, near McArthur, Ohio, and is an area with one of the highest diversity of tree species in the United States. Since 1952, land at the Vinton Furnace has been dedicated toward forest use and sustainability research. Though originally owned by forest industry, the Ohio Department of Natural Resources purchased the property in 2010. Data collected at the forest has been cited in hundreds of scholarly papers on forest ecology, forest management, and wildlife habitat. This research plays a prominent role in forming forest policy of federal and state agencies in the central hardwoods region.



Map by U.S. Forest Service.

Documenting prescribed fire behavior. Photo by U.S. Forest Service.

Cerulean warbler. Photo by The Ohio State University.

Features

Climate at the VFSEF is typical of that of the Ohio River Valley—cool and wet in the spring and fall, hot, humid summers, and cold, humid winters. Annual precipitation averages 40.3 inches. Mean annual temperature is 52.4 °F, with January the coldest (29.5 °F) and July the warmest (73.1 °F). The growing season consists of 158-day frost-free period. Soils at the VFSEF are unglaciated silt loams derived from sandstones, siltstones, and shales, with some scattered, discontinuous limestone beds.

- **The VFSEF is representative of the mixed mesophytic forest of the Allegheny Plateau.**
- **More than 50 tree species are found in the forest, dominated by white, scarlet, black, and chestnut oaks; red maple; hickories; and yellow-poplar.**
- **Oak dominance of the ecosystem was perpetuated by frequent, low-intensity anthropogenic fires.**
- **The forest has an uneven-aged appearance due to the invasion of shade-tolerant tree species following fire suppression policies initiated in the 1920s.**
- **The forest is home to the state's largest known population of bobcats and is also home to black bears, timber rattlesnakes, cerulean warblers, and at least 15 rare plant species.**

Research

Past studies concentrated on silvicultural practices, regeneration, and growth and yield of desirable hardwood species. Current research focuses on the effects of using shelterwood harvests, herbicide, and prescribed fire to restore and sustain mixed-oak ecosystems; fire history, behavior, and dynamics; landscape ecology; and managing for rare plant and wildlife species.

Science Delivery

Though research on the VFSEF was initiated in cooperation with forest industry, it has been used by forestry practitioners, researchers, students, landowners, policy makers and the public. Research results are communicated through forest tours, demonstration areas, presentations, and publications. Visitors from as far away as China regularly travel to the VFSEF to see side-by-side comparisons of outcomes of management alternatives. More than 200 scientific publications have been produced so far, and much of the Forest Service's data and publications are electronically available to researchers and students.

Tour of area with five prescribed fires, an herbicide application, and a shelterwood harvest. Photo by U.S. Forest Service.