



Thinned stand. Photo by U.S. Forest Service.

Outcomes

The principal outcome of the research on the SEF can be summed up in three words: Sustainably managed forests. Since 1950, the SEF has provided state-of-the-science information that has served as the foundation for sustainably managing oak and oak-pine ecosystems.

Partners

Forest Service scientists affiliated with the SEF collaborate with partners at the University of Missouri, the Missouri Department of Conservation, Mark Twain National Forest, as well as colleagues in the U.S. Forest Service Northern and Southern Research Stations.

Facilities

The SEF maintains an office, a workshop, and a three-bay storage building at the Mark Twain National Forest Salem Ranger District office. The SEF also has an on-site weather station that records hourly the air and fuel temperature, fuel moisture, wind speed and direction, relative humidity, dew point, and total precipitation.

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 Sinkin Experimental Forest

Websites:

<http://nrs.fs.fed.us/ef/locations/mo/sinkin/>

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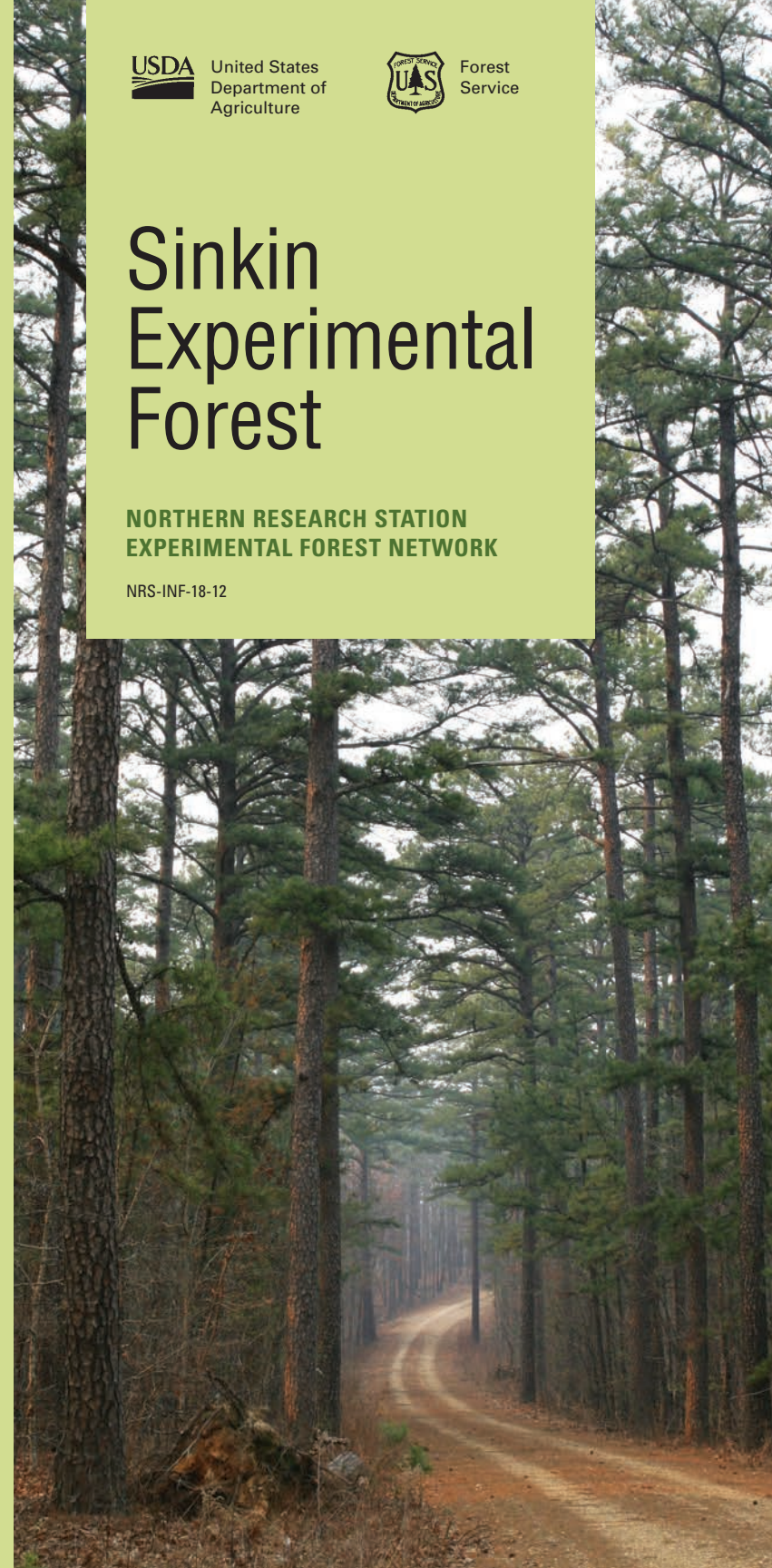
Pine stocking study at Sinkin Experimental Forest. Photo by Dan Dey, U.S. Forest Service.



Sinkin Experimental Forest

**NORTHERN RESEARCH STATION
EXPERIMENTAL FOREST NETWORK**

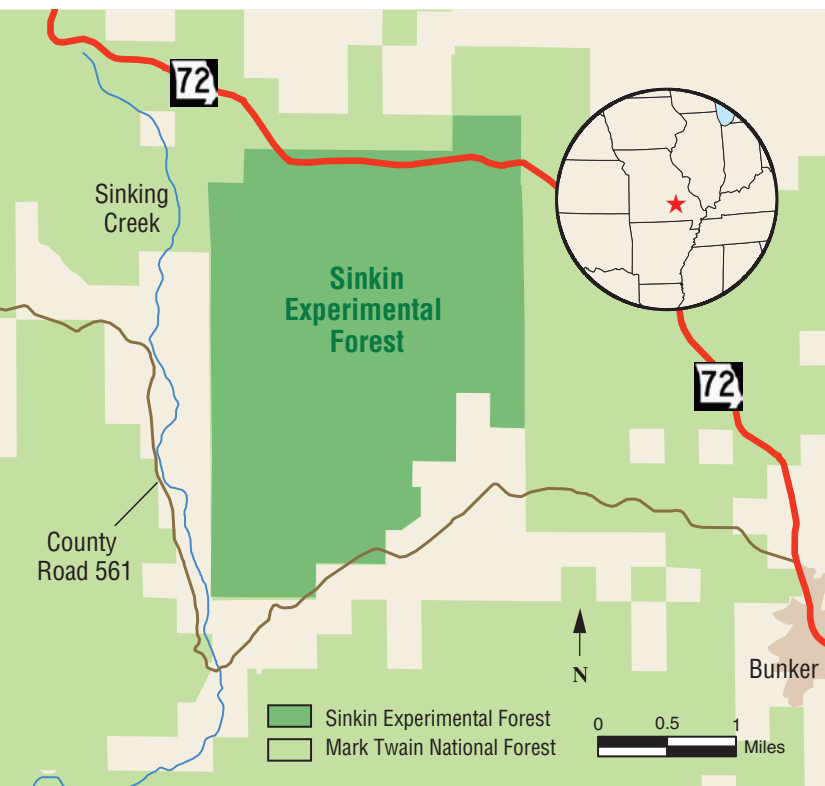
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Sinkin Experimental Forest

The Sinkin Experimental Forest (SEF) covers 4,100 acres in southeastern Dent County, Missouri, about 25 miles southeast of Salem. The land that became the SEF originally was a compartment within the Salem Ranger District of the Mark Twain National Forest. In 1950 this compartment was designated as an experimental forest to provide information for managing oak and oak-pine forests in the region. The SEF is operated and maintained cooperatively by the Northern Research Station and Mark Twain National Forest. The headwaters of Sinking Creek (formerly known as "Sinkin" Creek) originate in the general vicinity of the experimental forest, hence the name "Sinkin."

Map by Dale Gormanson, U.S. Forest Service.



Training foresters.
Photo by Dan
Dey, U.S. Forest
Service.

Features

The SEF includes upland oak-hickory and oak-shortleaf pine forests and woodlands typical of much of the western and southern Central Hardwood Forest Region. The dominant oaks include black oak, white oak, scarlet oak, and post oak. These occur along with pignut hickory, mockernut hickory, black hickory, red maple, blackgum, walnut, black cherry, and flowering dogwood. Shortleaf pine comprises 15 to 20 percent of the stocking but this species was once more prominent—about half of the forest volume in 1821 when the General Land Office survey was conducted in the region. The soils of the SEF are represented of those occurring elsewhere in forested portions of the Ozark Highlands. The parent materials were derived from sandstone and dolomite and are highly weathered. Consequently, the soils are acidic and have a low nutrient supply capacity. They also contain a large volume of cherty gravels and cobbles that limits the water holding capacity. Fire has been an important disturbance in this region for hundreds of years and along with the droughty soils has played a prominent role in shaping the plant communities in the SEF.

- The soils mostly are loamy-skeletal, siliceous, semiactive, mesic, typic Paleudults.
- The average annual precipitation is 1100 mm (43 inches) with about 60 percent falling in April through September. Snowfall averages 35 cm (14 inches) but varies greatly from year to year.
- The average annual temperature in winter is 1 °C (34 °F) and the average daily minimum temperature is -4 °C (24 °F). In summer, the average temperature is 24 °C (76 °F) and the average daily maximum temperature is 31 °C (88 °F).

Research

Initial research on the SEF concentrated on solving regeneration and management problems of shortleaf pine. This research included studies of natural and artificial regeneration, an examination of the effects of stand density on growth and tree quality, and the development of yield and volume tables for shortleaf pine stands. Later research focused on the silvicultural issues associated with the regeneration and management of oak stands. Studies were established to answer questions about natural regeneration with even-aged and uneven-aged methods and artificial oak regeneration. Much of the research was used to generate fundamental information about the growth and yield of oak and oak-pine stands.

Current research has broadened to examine the ecology and developmental dynamics of oak and oak-pine ecosystems including the interactions among the forests overstory, the ground flora, and wildlife populations. Many studies compare the effects of prescribed fire to other silvicultural treatments for enhancing the native biodiversity.

Science Delivery

The Sinkin Experimental Forest has played an important role in the development of essential information for regenerating and managing oak and oak-pine ecosystems. More than 200 scientific papers have been produced and many of the silvicultural techniques and management guides used by foresters in the Central Hardwood Region were developed by scientists working in association with the SEF.

Research on oaks led to the development of numerous contributions to the Central Hardwood Notes management guide series and culminating in the seminal publication "Ecology and Silviculture of Oaks" first published in 2002 and the second edition in 2009. Outreach is also central to the mission of the SEF. Educational field tours, workshops, and demonstrations are held regularly to share the latest information with scientists, professional foresters, National Forest System silviculturists, and others.