



United States  
Department of  
Agriculture



Forest  
Service

# Pike Bay Experimental Forest

**NORTHERN RESEARCH STATION  
EXPERIMENTAL FOREST NETWORK**

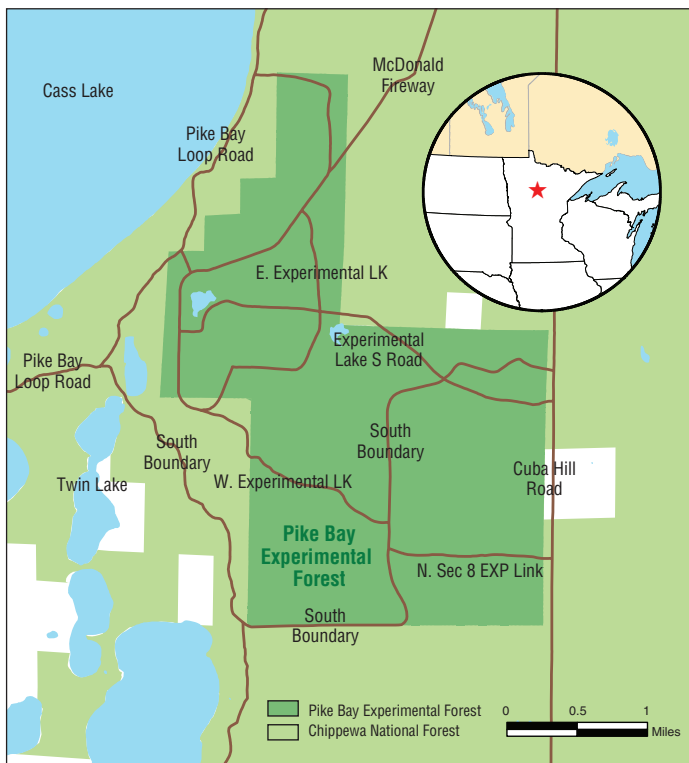
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PLOTS & CONTROL

# Pike Bay Experimental Forest

The Pike Bay Experimental Forest is located on the Chippewa National Forest on the eastern shore of Cass Lake in north-central Minnesota, about 40 miles west of Grand Rapids. Research began on this 3,960-acre experimental forest when it was formally established in 1932 as a site for long-term U.S. Forest Service research on trembling aspen and northern conifers.

Map by U.S. Forest Service.



## Features

The Pike Bay Experimental Forest is in the Laurentian Forest Province, a broad ecotone between the eastern broadleaf forest to the south and boreal forest to the north. The climate at Pike Bay is continental. Maximum summer temperatures are 32 °C with high humidity (80 percent) and minimum winter temperatures descend to -35 °C. Growing season length is 100 to 120 days. Average annual precipitation is 50 to 65 cm. Snow depths average 1 m. Soils have developed mainly in the Guthrie till plain with deposits covered to varying depth by a silt loam loess cap. The eastern edge of Pike Bay is adjacent to the Bemidji Sand Plain, an area where fires occurred frequently. Much of the forest is dominated by mature trembling aspen and northern hardwoods, but with white pines and red pines, particularly near the eastern edge. Pike Bay is noted for its abundance of small seasonal wetlands. These vary greatly in depth and duration of flooding. Black ash is the most common tree species in seasonal wetlands.

## Research

Plantations of trembling aspen, red pine, and white spruce established on the same soil type in the 1930s have provided important information on the role of species on soil development. Beginning in the 1940s, trembling aspen research began and has included thinning in young stands, prescribed burning, and effects of clearcutting on soil and stand productivity. Currently, the most active forest research is the Long-Term Soil Productivity (LTSP) Study. Pike Bay includes one of the three trembling aspen LTSP sites in the Lakes States. The study is in its 20<sup>th</sup> year and is part of an international effort looking at the effects of biomass harvesting and soil compaction on long-term forest and soil productivity. Seasonal wetlands on Pike Bay have been studied extensively; this research has provided the first comprehensive examination of seasonal wetland structure and function in the Lake States.

## Science Delivery

Users of research findings from Pike Bay Experimental Forest include practitioners, researchers, students, landowners, policy makers, and the public. Research results are communicated through forest tours, demonstration areas, presentations, and publications. Visitors from all over the United States and Canada visit Pike Bay, particularly to see the LTSP installation.



The Long-Term Soil Productivity (LTSP) installation at Pike Bay.

## Outcomes

Trembling aspen research over the years has been important in helping develop and refine silvicultural prescriptions for management. Long-term research on soil productivity continues to influence National Forest policy for sustaining productivity. Work on thinning in white pine is the oldest research of its type in Minnesota and still guides this practice regionally. Research findings from comprehensive studies of seasonal wetlands has guided policy and management direction on Lake States National Forests, as well as the state of Wisconsin and several Canadian provinces.





Characteristic Pike Bay forest dominated by trembling aspen and hardwoods. Photo by John Zasada, U.S. Forest Service.

## Partners

Research collaborators include the Chippewa National Forest, the LTSP National Network, the University of Minnesota, the University of Georgia, and the Minnesota Department of Natural Resources.



A seasonal woodland pond at Pike Bay. Photo by Brian Palik, U.S. Forest Service.

## Facilities

There are no facilities associated with Pike Bay.

## **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 Pike Bay Experimental Forest**

### **Websites:**

<http://nrs.fs.fed.us/ef/locations/mn/pike-bay/>

### **Contacts:**

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On the cover: A control plot of the Long-Term Soil Productivity study. Photo by John Elioff, U.S. Forest Service, retired.