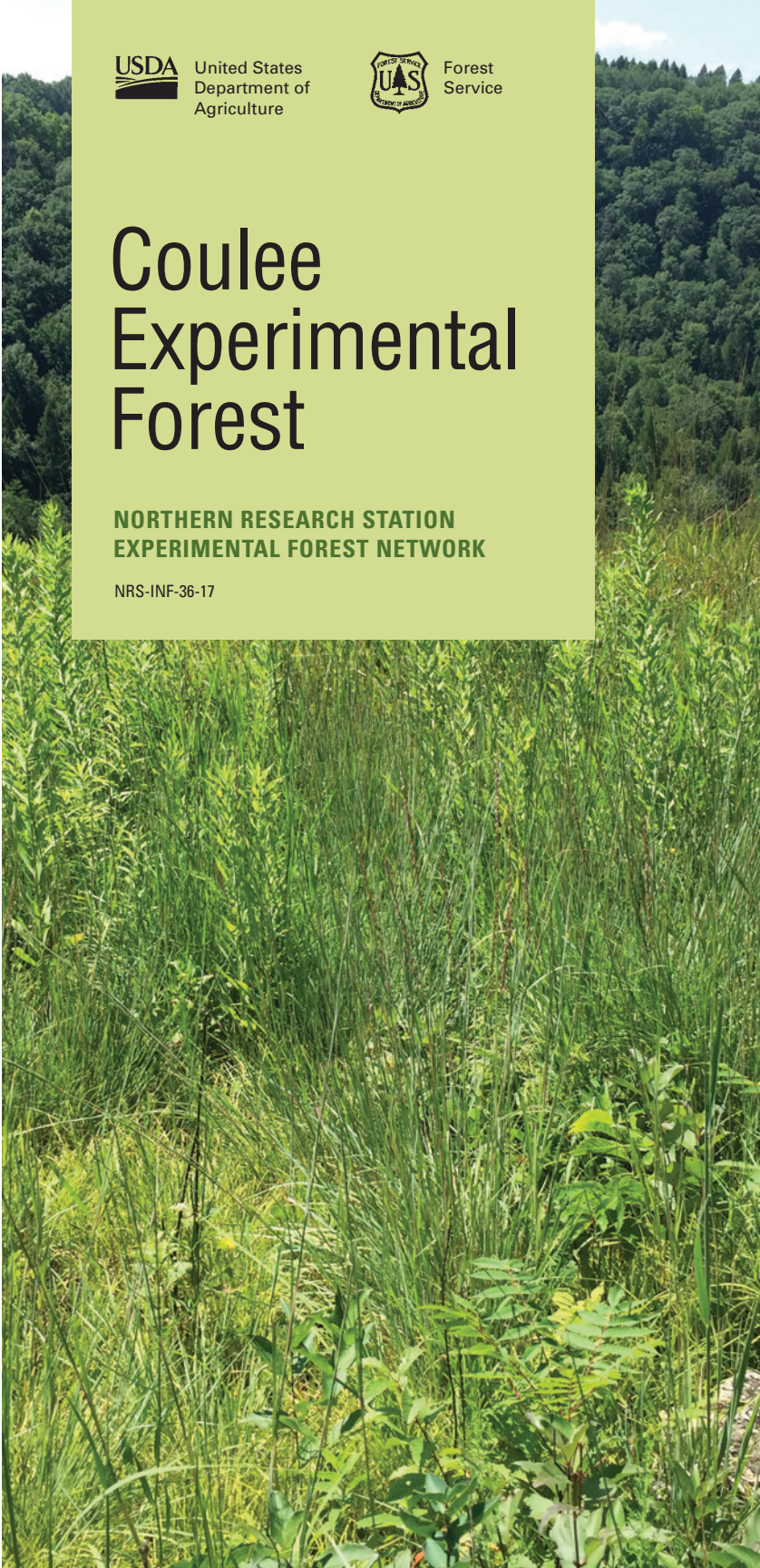
USDA United States Department of Agriculture

Forest Service

Coulee Experimental Forest

NORTHERN RESEARCH STATION EXPERIMENTAL FOREST NETWORK

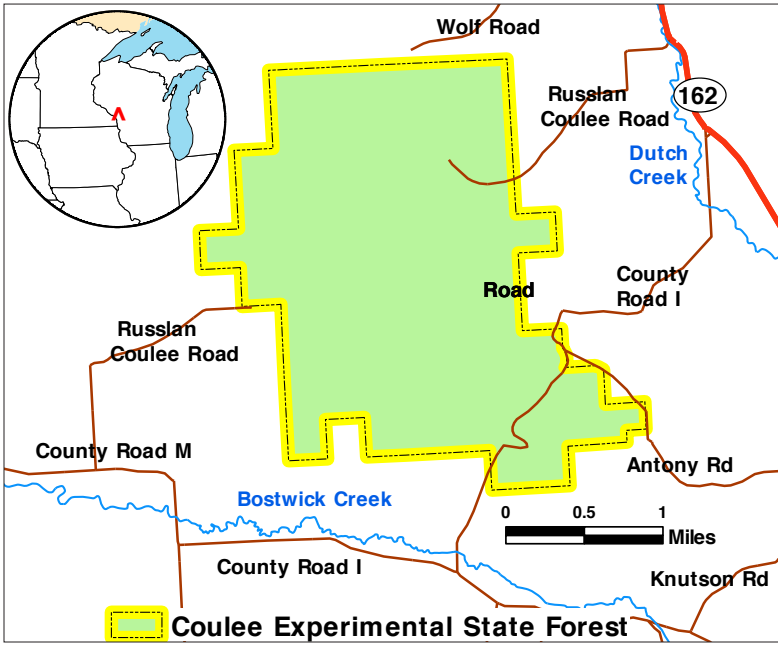
NRS-INF-36-17



Coulee Experimental Forest

The 3,000 acre (1,214 ha) Coulee Experimental Forest is located on land owned by the state of Wisconsin and was formally dedicated in 1960. The CEF is located about 12 miles east of La Crosse. Studies at the CEF have focused on reducing watershed problems and improving forest yield in the forest-agriculture interface of the ridge and coulee topography typical of the region. Information from these studies has been used to develop best management practices for oak and central hardwood forests in the Driftless region of Wisconsin, Minnesota, and Iowa. In 2009, two state natural areas were established within the CEF to represent old-growth oak, dry cliff, and dry-prairie communities. In addition, the CEF has a 12-mile trail used for cross-country skiing and other recreational activities. Although the experimental forest is owned and administered by the Wisconsin Department of Natural Resources, it is leased to the Northern Research Station for forest research and related scientific purposes through a lease agreement.

Map by U.S. Forest Service.



Old oak forest adjacent to farmland on CEF. Photo by Stephen Sebestyn, USDA Forest Service.

Features

The CEF is typical of unglaciated portions of Wisconsin, Minnesota, and Iowa ("Driftless Area") with a ridge and coulee toporgraphy containing a mix of aspects, slopes, land use, and forested areas. At the time of European settlement (circa 1855), the forests were cleared for agriculture. Farms were later abandoned and slopes of the region were reported as forested by 1915. The CEF now consists of forested areas dominated by oak and central hardwoods with lesser amounts of aspen and experimental conifer plantings. The CEF includes 137 acres of non-forest lands including old fields, native grassland prairies, and agricultural lands. These areas are maintained with mowing, cutting, herbicides, prescribed fire, and agricultural crops (corn and alfalfa).

- **Soils: On the ridgetops, soils have up to 3 feet of loess over clayey pedisediment. The bedrock is generally more than 6 feet deep on these summits and shoulders. The soils are formed in silty slope alluvium over loamy skeletal materials with some bedrock at 3 to 6 feet. The footslope soils are formed in silty slope alluvium with occasional rock fragments but no bedrock within 6 feet.**

- **Precipitation: Average annual precipitation is 34 inches, with the highest rainfall usually occurring during the growing season. Average annual snowfall is 44 inches.**

- **Temperature: The average annual temperature at Coulee is 44 °F, with summer maximum temperatures occasionally exceeding 100 °F and winter minimums as low as -40 °F.**

- **Growing season: Average length of the growing season is 138 days.**

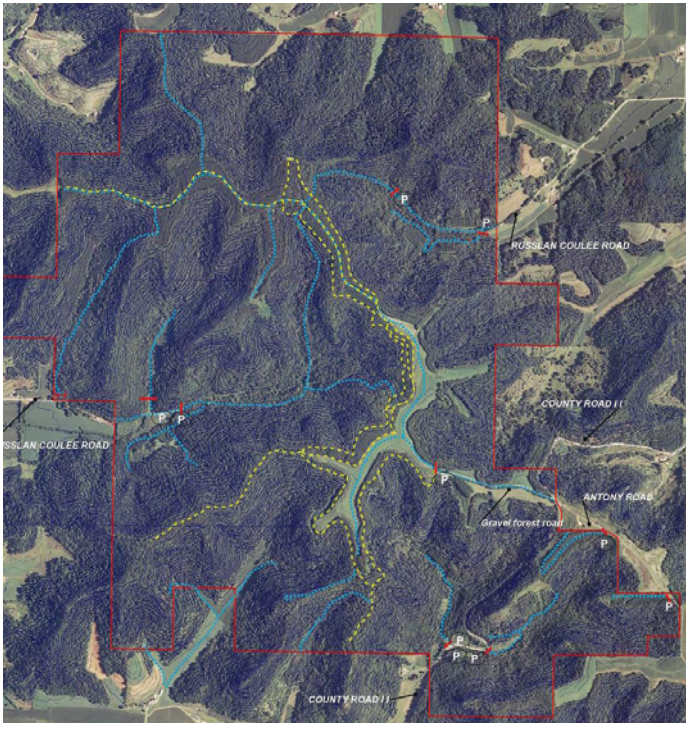
Research

Much of the research initiated on the CEF looked at the effect of land use and steep land management on floods, soil erosion, stream sedimentation, and land disposal of sewage effluent. Other studies examined the adaptability of various tree species and classes of planting stock to different sites to guide landowners in their reforestation programs. Recent studies have examined oak regeneration and tree diseases.

Science Delivery

Research results have helped to guide land managers in the region and educate generations of resource professionals. Many signs of the historical experiments are visible on the landscape today for demonstration and educational tours. Research results are also communicated through publications (available through Treesearch [http://treesearch.fs.fed.us]).

Aerial photograph of coulee and ridge topography in the CEF. Photo by Wisconsin Department of Natural Resources.



Entrance sign for the Coulee Experimental Forest. Photo by Wisconsin Department of Natural Resources.

Outcomes

Research results from the CEF influenced best management practices in the rugged landscape of the Driftless Area, where contrasting land uses are intermixed. For example, results from the "ditch-saver" study demonstrated a method to stabilize forest gully erosion. Other specific outcomes have been noted in a history and annotated bibliography publication (GTR-NC-44) in the following subject areas:

- Land use and effects on soil properties, runoff, and erosion
- Soil freezing
- Spring flow and groundwater
- Evapotranspiration
- Climate
- Reforestation
- Research instruments and techniques

Partners

Partnerships with the Wisconsin Department of Natural Resources, universities, forest products industry and others have fostered a rich tradition of forestry and watershed research on the property.

Facilities

There are no facilities on the CEF.

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

Contacts:

Christel Kern
USDA Forest Service
Northern Research Station
5985 Highway K
Rhinelander, WI 54501
Phone: 715-362-1123
Email: cckern@fs.fed.us

Websites:

http://www.nrs.fs.fed.us/ef/locations/wi/coulee/

http://dnr.wi.gov/topic/stateforests/coulee/

Cover photo: Photo by Christel Kern, U.S. Forest Service.