



# CUTFOOT EXPERIMENTAL FOREST

## Grand Rapids, Minnesota



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The 3,100 acre (1,255 ha) Cutfoot Experimental Forest was established in 1932 in northeastern Minnesota, but has research dating back to 1923. Roughly 75 percent, of the Cutfoot Experimental Forest is red pine (*Pinus resinosa*). The Cutfoot EF has been home to over a hundred studies on thinning, cutting, growth, and reforestation in pine forests. Results of the studies conducted here have been influential in shaping today's red pine management practices across the Lake States. As with other experimental forests, silvicultural studies initiated for other reasons decades ago have great relevance for addressing today's important forest management questions such as carbon sequestration and soil productivity. The Cutfoot Experimental Forest also has the unique distinction of being the final resting place of Raphael Zon, the father of Forest Service research.



### Assets:

**Scientists:** 3 Northern Research Station scientists are currently doing research on the Cutfoot.

**Scientific support:** 2 technicians and/or professionals support the work of these scientists.

**Cooperators:** University of Minnesota, Michigan Technological University, Chippewa National Forest

### Needs:

**Annual operating costs:** \$38,979

**Critical needs:** updated ecosystem classification and stand inventory maps

**Long-term needs:**

- Field lab (dry) with living quarters. (This facility would be shared with Pike Bay EF (MN) and the Chippewa National Forest) - \$800,000

**The Cutfoot Experimental Forest is administered by:**

U.S. Forest Service, Northern Research Station

1831 Highway 169 E, Grand Rapids, MN 55744

Key Contact:

Brian Palik, 218-326-7116, email [bpalik@fs.fed.us](mailto:bpalik@fs.fed.us)

## More About the Cutfoot Experimental Forest

Location: Lat. 47°40' N, long. 94°5' W

The Cutfoot Experimental Forest is located about a 45-minute drive southeast of Grand Rapids, Minnesota.

**Vegetation:** Roughly 75 percent of the Cutfoot is red pine with varying amounts of jack pine (*P. banksiana*) and eastern white pine (*P. strobus*) also present. Paper birch and quaking aspen are common components of the pine-dominated stands and in some places are the most dominant species. The majority of the red pine stands in the forest are of natural origin. There have been 7 major fires on the Cutfoot Experimental Forest, but most red pine originated after a major fire in 1870. There are scattered red pines that are more than 200 years old. Plantations occupy a small percentage of the Cutfoot. A major feature of the red pine in the forest is the understory composed mostly of beaked hazel.

**Climate:** The climate at the Cutfoot is continental. Maximum summer temperatures can be greater than 90°F (32 °C) with high humidity (80 percent) and minimum winter temperatures may plunge to -31°F (-35 °C). Growing season length is 100 to 120 days. Average annual precipitation is 20 to 26 inches (50 to 64 cm). In winter snow depths average 3.3 to 6.5 feet (1 to 2 m). Although prolonged summer droughts occur, there is usually adequate rainfall during the growing season.

**Research—past and present:** Research on the Cutfoot Sioux began in the mid-1920s, before the area was officially designated as an experimental forest. Research to date has focused almost exclusively on silviculture of the red pine type, with emphasis on methods of thinning and intermediate cutting. For example, in the growing stock levels study of red pine, research has established that culmination of mean annual increment for red pine can extend well beyond the traditional rotation age of 50 to 70 years. In fact, mean annual volume increment curves show no strong indication of culmination at 140 years of age, due at least in part to periodic growth increases after thinnings, which did not begin until the trees were 85 years old. This study is now being used to look at carbon allocation and soil productivity impacts after 55 years of management.

**Research opportunities:** The Cutfoot EF is home to the oldest extended rotation thinning study on red pine in the Great Lakes region. Opportunities to do additional work on the Cutfoot include research to describe the understory or study individual tree growth in the long-term study areas.

**Facilities:** There is no on-site housing on the Cutfoot Experimental Forest, but resorts in the area—Squaw Lake to the north and Deer River to the south—provide opportunities for short-term rentals. There are numerous woods roads in the forest, making most of the area readily accessible.

More information can be found at: <http://www.nrs.fs.fed.us/ef/locations/mn/cutfoot/>

