



# PENOBSCOT EXPERIMENTAL FOREST

## Bradley and Eddington, Maine



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The 4,000 acre (1,618 ha) parcel of land that now comprises the Penobscot Experimental Forest was purchased by nine pulp, paper, and land holding companies in 1950 and leased to the Forest Service as a site for long-term forest management research in the northeastern spruce-fir forest. The Penobscot is recognized internationally for silvicultural research. Research initially focused on management of mixed conifer stands for timber. Over the past 20 years, the focus has broadened to include studies on tree growth and maturation, biodiversity, root structure and function, economics, and various growth and yield modeling efforts. Analyses of studies conducted on the Penobscot have influenced management decisions throughout the region. Technology transfer is a major undertaking with numerous tours annually for students and professionals.



### Assets:

**Scientists:** 2 Northern Research Station scientists are conducting research on the Penobscot.

**Scientific support:** 1 professional supports the work of these scientists.

**Cooperators:** University of Maine, other Northern Research Station units, University of New Hampshire, SUNY-ESF, Laval University, Maine Department of Conservation, Canadian Forest Service, V.N. Sukachev Institute of Forest, Russian Academy of Sciences, Northeastern Area, State & Private Forestry, Small Woodland Owners Association of Maine.

### Needs:

**Annual operating costs:** \$162,000

#### Critical needs:

- Upgrade GPS/GIS capabilities and improve expertise among staff
- Consolidate all long-term data and metadata into readily accessible and web-compatible formats

#### Long-term needs:

- Expand quarters and provide laboratory facilities
- Modernize data collection technology with electronic data-logging systems and wireless remote monitoring capability



**The Penobscot Experimental Forest is administered jointly by:**

University of Maine and

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## More About the Penobscot Experimental Forest

Location: Lat. 44°51' N, long. 68°37' W

The Penobscot Experimental Forest is located 9.3 miles (15 km) north of Bangor, ME.

**Vegetation:** The vegetation types on the Penobscot are typically more diverse than on the industrial spruce-fir forest farther north. The canopy is dominated by a mix of conifers, including hemlock, spruce (mostly red but some white and black), balsam fir, northern white-cedar, white pine, and occasional tamarack or red pine. Common hardwoods include red maple, paper and gray birch, and quaking and bigtooth aspen.

**Climate:** The climate of the Penobscot is cool and humid. Average annual temperature is 44 °F (6.6 °C), with February the coldest month and July the warmest. Normal precipitation is 42 inches (106 cm), with 48 percent falling during the growing season, which averages 156 days.

**Research—past and present:** Scientific studies on the Penobscot have traditionally focused on management of mixed conifer stands for timber. A long-term silvicultural experiment started in 1952 is the basis for most of the current research. The long-term study includes 10 replicated treatments representing a range of even-age and uneven-age prescriptions. It has the only examples of uneven-age management of conifers in the northeastern U.S. and eastern Canada where cutting cycles have been sustained over decades. Pioneering research on shelterwood removals, strip cutting, and pre-commercial thinning have also been part of the study. A companion study started by University of Maine researchers in 1994 examines the effects of expanding gap shelterwood on several attributes of ecosystem structure and function. Over the past 20 years, research was broadened to include fundamental studies of tree growth and maturation, spruce budworm predation, biodiversity, root structure and function, coarse woody material, economics, and growth-and-yield modeling.

**Research opportunities:** There are nearly unlimited research opportunities in all aspects of ecology and management of conifer dominated and mixed conifer-hardwood stands of the Acadian Forest. New research within the long-term silvicultural study is encouraged and facilitated by Forest Service scientists. Research in conjunction with Maine's Forest Ecosystem Research Program (FERP) is approved by the director of that program. All other research proposed must be presented to the university and Forest Service team that manages the research program.

**Facilities:** At the Penobscot Experimental Forest, there are quarters for up to 4 people, an office, shop, library, and storage space.

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

