

DIGGING OUT THE DATA: USDA FOREST SERVICE RESEARCH ON THE PENOBSCOT EXPERIMENTAL FOREST

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In 1950 a number of pulp and paper and land-holding companies purchased land in the towns of Bradley and Eddington, Maine. This land was leased to the USDA Forest Service, Northeastern Research Station to be used for a long-term experiment in silviculture of northern conifers. Frequently occurring conifers include balsam fir, red spruce, eastern hemlock, northern white-cedar, and eastern white pine, in mixedwood stands with maple, birch, and aspen species. Since the 1950s, a dozen silvicultural treatments have been applied in a 560-acre study. Each treatment is replicated at the stand level, with an extensive network of permanent sample plots. Growth and regeneration data have been collected before and after every harvest and at 5-year intervals between harvests since the study began, providing more than 50 years of data.

The Forest Service experiment on the PEF encompasses even-, two-, and uneven-aged silvicultural systems. Regeneration methods include selection cutting on 5-, 10-, and 20-year cutting cycles, shelterwood with two- and three-stage overstory removals, and shelterwood with retention. Common removal-driven harvesting practices, such as diameter-limit cutting and unregulated harvesting are also included in the study. Cooperators, mostly faculty and graduate students from the University of Maine, have conducted many short-term studies of ecosystem function and wildlife-habitat relationships within the long-term research area.

Forest Service research on the PEF has been an important source of information about advance regeneration, seed viability, feasibility of regeneration methods, leaf area relationships, effects of removal-driven harvests, sustainability of stand structure and composition, habitat suitability, and precommercial thinning. The most recent comprehensive evaluation of treatment effects established differences between treatments in stand-level gross growth, composition, quality, and structure (Sendak et al. 2003).

The experiment is approximately half way through an even-aged rotation for the dominant conifer species. Research Work Unit NE-4155 (Ecology and Management of Northern Forests) is revising the study plan based on analysis of stand structural and compositional changes and growth and yield over the first 45 years of the study. The existing uneven-aged systems will be continued with prescription modifications, and new treatments will be prescribed for the even- and two-aged stands. The Forest Service is committed to maintaining the research and anticipates that its value as a source of long-term data will continue to increase in the future.

Literature Cited

Sendak, P.E.; Brissette, J.C.; Frank, R.M. 2003. **Silviculture affects composition, growth, and yield in mixed northern conifers: 40-year results from the Penobscot Experimental Forest.** Canadian Journal of Forest Research. 33: 2116-2128.