

DOCUMENTING THE ECOLOGICAL EFFECTS OF NEW SILVICULTURAL SYSTEMS IN MAINE'S ACADIAN FOREST

**Mike Saunders¹, Robert Wagner¹, Malcolm Hunter, Jr.², Steve Woods³,
Darci Schofield, Carol Strojny², Kristopher Abell³, and Shelly Thomas²**

¹Department of Forest Ecosystem Sciences, 5755 Nutting Hall, University of Maine, Orono, ME 04469. mike_saunders@umenfa.maine.edu

²Department of Wildlife Ecology, University of Maine, Orono, ME

³Department of Biological Sciences, University of Maine, Orono, ME

The Forest Ecosystem Research Program (FERP) was initiated in 1993 on the Penobscot Experiment Forest in Bradley, ME. Using current information about natural disturbance regimes in the Acadian Ecoregion, an expanding-gap silvicultural system with permanent reserve trees was developed. Based loosely on the German “Femelschlag” system, the treatment prescriptions include: a) 20% canopy removal on a 10-year cutting cycle (creating 0.2 ha openings) with 10% of the basal area remaining in permanent reserve trees, and b) 10% canopy removal level on a 10-year cutting cycle (creating 0.1 ha openings) with 30% of the basal area remaining in permanent reserve trees. Changes in baseline data, including measurements of overstory trees, tree regeneration, understory vegetation, snags and downed woody material, are being monitored on a periodic basis. The large size of FERP plots has been designed to facilitate interdisciplinary investigations and include projects: 1) establishing the relationship between light intensity and the diversity of herbaceous vegetation in harvest and natural gaps; 2) determining the influence of natural and harvest gaps on forest amphibians; 3) describing the influence of both gaps and DWD distribution on forest insects, specifically parasitic wasps and click beetles; 4) quantifying the nutrient content of DWD; and 5) modeling the effects of harvesting on vertical and horizontal forest structure.