

silviculture

Selective Cutting, Rehabilitation, and Alternatives for Forests of Northeastern North America and Elsewhere

Laura S. Kenefic

In the 1928 *Journal of Forestry*, Marinus Westveld commented that logging in the Northeast dating to the mid-1800s had been selective cutting that removed desirable species of large sizes. Later, commercial clearcuts removed progressively smaller trees of merchantable quality and desirable species. Indiscriminate logging damaged young growing stock and regeneration, and residual stands were poorly stocked with low-quality trees of undesirable species (Westveld 1928).

Today, selective cutting remains widespread throughout many of the natural forests of northeastern North America (e.g., Fajvan et al. 1998, McGill et al. 2004, Stringer 2008, Munsell et al. 2009). The term is often incorrectly used to suggest some form of uneven-aged management. However, the Society of American Foresters (SAF) defines selective cutting as partial cutting and specifies that it “should not be confused with cutting done in accordance with the selection method” of silviculture (Helms 1998). An earlier SAF dictionary (Ford-Robertson 1971) uses less salutatory language, describing selective cutting as: “a type of exploitative cutting that removes only certain species (a) above a certain size, (b) of high value, known silvicultural requirements, and/or sustained yields being wholly or largely ignored or found impossible to fulfill”. Yet forestry and silviculture have the central purpose of providing landowners the means to make sustainable management possible, while providing values of interest.

Most commonly, selective cutting occurs as diameter-limit cutting, defined as removal of all merchantable trees above or below as specified dbh . . . with or without cutting of cull trees (Ford-Robertson 1971, Helms 1998). Generally, such harvesting removes only the larger trees, opportunistically capitalizing on the volume and value a landowner can extract from a forest without concern for the future, and leaving the small trees as residuals. It does not control stocking or regeneration, adjust spacing among residual trees, or deliberately upgrade the growing stock quality. Long-term effects differ between even- and uneven-aged stands, but remain largely unpredictable.

Westveld (1928) noted the extremely varied condition of cutover lands and cautioned that foresters could not likely develop silvicultural treatments to apply uniformly across a region or forest type. He did not explicitly address within-stand variability but emphasized the importance of making investments in cultural treatments only where warranted by local conditions. Though not directly called rehabilitation, he advocated cleaning, weeding, and other release treatments to accelerate growth, reduce mortality, and increase stocking of desirable species.

Since the 1920s, silvicultural experimentation has opened opportunities for scientific forest management. Yet only within the last decade has that research begun to assess the consequences of diameter-limit

cutting on long-term volume production, to judge whether programs of selective cutting will sustain important ecologic and economic values, and to consider ways for rehabilitating stands to reverse the negative outcomes. This issue of *Journal of Forestry* addresses that gap of knowledge by publishing a series of four papers that establish a context for understanding the implications of selective cutting in northeastern North America, articulate some of the effects, and suggest options for rehabilitating cutover stands. They evolved through dialogue among silviculturists and ecologists from the State University of New York, College of Environmental Science and Forestry in Syracuse, New York; USDA Forest Service, Northern Research Station in Bradley, Maine; University of Maine, School of Forest Resources in Orono, Maine; Ministère des Ressources naturelles du Québec, Direction de la recherche forestière in Québec, QC; Service canadien des forêts, Centre canadien sur la fiber de bois, Ressources naturelles Canada in Québec, QC; and the consulting firm Mason, Bruce & Girard, Inc. in Stockton Springs, Maine. The papers provide a foundation for continued dialogue about exploitative cutting and sustainable forestry wherever landowners have come to use selective harvesting as an alternative to forestry, defined as “. . . creating, managing, using, and conserving forests and associated resources for human benefit and in a sustainable manner . . .” (Helms 1998).

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Affiliations: Laura S. Kenefic (lkenefic@fs.fed.us), USDA Forest Service, Northern Research Station, Orono, ME.

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Literature Cited

- FAJVAN, M.A., S.T. GRUSHECKYA, AND C.C. HASLER. 1998. The effects of harvesting practices on West Virginia's wood supply. *J. For.* 96(5): 33–39.
- FORD-ROBERTSON, F.C. 1971. Terminology of forest science, technology, practice and products. *Multi-lingual forestry terminology series No. 1*. Society of American Foresters, Washington, DC. 349 p.
- HELMS, J.A. 1998. *The dictionary of forestry*. Society of American Foresters, Bethesda, MD. 201 p.
- MCGILL, D.W., M.A. WESTFALL, S.A. GARTIN, K.S. O'DELL, AND H.N. BOONE. 2004. Identifying priority forest management issues in West Virginia—A survey of state service foresters at various administrative levels. P. 282–286 in *Proceedings of the 14th Central Hardwood Forest Conference, March 16–19; Wooster, OH*, Yaussy, D.A., D.M. Hix, R.P. Long, and P.C. Goebel (eds.). USDA For. Serv., Gen. Tech. Rep. NE-316, Northeastern Research Station, Newtown Square, PA (CD-ROM).
- MUNSELL, J.F., R.H. GERMAIN, V.A. LUZADIS, AND E. BEVILACQUA. 2009. Owner intentions, previous harvests, and future timber yield on fifty working nonindustrial private forestlands in New York State. *North. J. Appl. For.* 26(2): 45–51.
- STRINGER, J. 2008. Selective harvesting. Part one: Sustainable management or high-grading? *Kentucky Woodl. Mag.* 3(2):1–2.
- WESTVELD, M. 1928. Observations on cutover pulpwood lands in the Northeast. *J. For.* 26(5):649–664.