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# Proceedings of the Red Pine SAF Region V Technical Conference

**Editors**  
Daniel W. Gilmore and  
Louise S. Yount

March 26-27, 2002  
Cloquet Forestry Center  
Cloquet, MN

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Department of Forest Resources  
College of Natural Resources  
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# Introduction to the Red Pine SAF Region V Technical Conference, March 26-27, 2002

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Research on managing red pine has been ongoing for some time and management guides that incorporate information resulting from this research such as Buckman's (1962) *Growth and Yield of Red Pine in Minnesota* and Benzie's (1977) *Manager's Handbook for Red Pine* have been widely applied. Despite this extensive knowledge base, critical information needs remain. Additional information about growth and yield, especially under managed conditions, is needed. Alternatives to single species and even-aged management are needed in which red pine is a component in forests consisting of multiple species and multiple cohorts. Red pine management needs to be considered within the broader spatial context of the landscape, and even at regional and global scales. And finally, much remains to be learned about the natural regeneration of red pine.

The need for new information results from the changing social and economic conditions in which we manage the forest. For example, the global demand for wood, especially softwood, continues to increase at a rate that exceeds population growth. There is increased global competition among forest industries, resulting in increased emphasis on cost efficiency in order to remain competitive in the marketplace. Loggers find it increasingly difficult to stay in business. Social and economic forces from outside of the region greatly affect the health of the forest economy within the Lake States (Hagenstein 1997). Without question, there are increased demands for a wider spectrum of outputs, benefits, and values from the forest in the Lake States and so forest managers need to be more strategic about where they are going to grow wood on the landscape and managers will need to do it in a more integrated way so that multiple benefits are achieved. Including a more explicit spatial element in the business of forestry will help address questions regarding where, when, and how wood should be grown (Crow and Gustafson 1997). A spatial perspective will help to deal also with landscape issues such as forest fragmentation and ownership parcelization. Owners of smallholdings, for example, face significant challenges related to the economies of scale (Kingsley 1997).

These and other "new realities" suggested that it is timely to review what we know about managing our Lake States forest. Red pine is an important part of this regional forest. Today red pine occupies nearly 2 million acres, about 4% of the commercial forest land in Wisconsin, Michigan, and Minnesota. Much of the red pine occurs in plantations. For example, nearly

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80% of the red pine in Wisconsin has been planted (Roussopoulos and Leatherberry 1992). Compared to almost all other species common to the Lake States forest, red pine has an advantage in growth rate. Growing red pine offers an opportunity to increase the productivity of the regional forest.

Our goal at this Society of American Foresters Region Conference was to offer a high quality, comprehensive, technical conference that covers both basic knowledge and new findings about the management of red pine in the Lake States. Speakers at the Conference presented the current status of the resource, gave us a sense of where we have been and where we are likely to go with red pine management, revisited the subjects of growth and yield as well as regeneration, talked about ecological classification and its application in red pine management, expanded our vision about the possibilities of managing red pine in stands of mixed species and multiple cohorts, reviewed important disease and insect problems, and considered utilization, markets, and price trends. The Conference was organized as a first step toward revising the management guide for red pine. The North Central Research Station published the current guide in 1977. The revision will be a collaborative effort among researchers from several organizations. The guide will be a "how to" document; the technical information that forms the basis for the revised management guide can be found, in large part, among the pages of this proceeding.

### Literature Cited

- Benzie, J. W. 1977. Manager's handbook for red pine in the north central states. USDA Forest Service, North Central Forest Experiment Station, General Technical Report NC-33. 22 p.
- Buckman, R. E. 1962. Growth and yield of red pine in Minnesota. USDA Tech. Bull. 1272. 50 p.
- Crow, T. R., and E. J. Gustafson. 1997. Ecosystem management: managing natural resources in time and space. In *Creating a Forestry for the 21<sup>st</sup> Century, The Science of Ecosystem Management*, eds., Kohm, K. A., and J. F. Franklin, 215-228. Washington, D.C.: Island Press.
- Hagenstein, P. R. 1997. Interregional competition and the Lake States forest resources. In *Lake States Regional Forest Resources Assessment: Technical Papers*, eds. Vasievich, J. M., and H. H. Webster, 270-289. Technical Report NC-189. St. Paul, MN: USDA Forest Service, North Central Forest Experiment Station.
- Kingsley, N. P. 1997. Resource availability from nonindustrial private forest land in the Lake States. In *Lake States Regional Forest Resources Assessment: Technical Papers*, eds. Vasievich, J. M., and H. H. Webster, 72-76. Technical Report NC-189. St. Paul, MN: USDA Forest Service, North Central Forest Experiment Station.
- Roussopoulos, S. M., and E. C. Leatherberry. 1992. Wisconsin's timberland plantations, 1983. Resource Bull. NC-137. St. Paul, MN: USDA Forest Service, North Central Forest Experiment Station, 24 p.