

A Critique of Silviculture Managing for Complexity

Klaus J. Puettmann, K. David Coates and Christian Messier. 2008. ISBN 978-1-59726-146-3/Island Press, Chicago. \$ US 30.00 (cloth) + shipping. Contact: orders@islandpress.org

According to the authors of this new volume, silviculture currently “stands at a crossroads.” The discipline is bound by tradition and is no longer served well by concepts and practices that have evolved little since the 18th and 19th centuries. They feel that silviculture has focused on timber yield and production throughout most of its history, while the need to sustain the full function and dynamics of forested ecosystems has been largely ignored until recent times. A significant shift in both research and practice is now required to ensure the discipline maintains public trust and satisfies demands for higher standards in environmental conservation.

In advancing their thesis, the authors compare the development of silviculture with the closely related discipline of ecology. In line with 19th century philosophical and scientific understanding of nature, silviculture emerges as an extension of agriculture, with its emphasis on uniformity, efficiency, simplification of ecosystems and predictability of outcomes (Chapter 2). In contrast, ecology has evolved along a rather different trajectory, resulting in a set of theories that can be used to explain ecosystem processes and interactions (Chapter 3). Contrasting scientific methods are seen to underscore the differences between each discipline. Where silviculture has traditionally been concerned with minimizing variation within ecosystems, ecology has embraced complexity.

For silviculture to “regain its *lettres de noblesse*,” the authors contend that a greater interchange of ideas with ecology is required (Chapter 4) and that forests should be viewed as “complex adaptive systems” (Chapter 5). The traditional “command and control” approach, where forests are managed as wood fibre farms, must be abandoned in favour of strategies that incorporate wider ecological information. To achieve this end, they argue for a conceptual framework that includes: applying a diversity of silvicultural treatments at various spatial and temporal scales; monitoring a wider variety of ecosys-

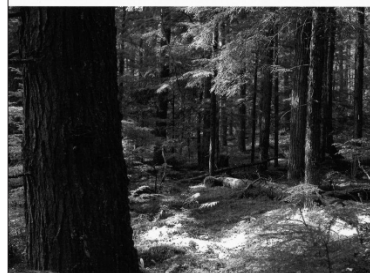
tem components and moving beyond the stand concept; incorporating more risk and uncertainty into management; and, developing more gradient- and process-based silvicultural research. Among the important implications of these proposals are the need to understand more fully the processes that drive productivity and ecological resilience, and acceptance of greater heterogeneity in future forest conditions.

In setting out an agenda for action, *A Critique of Silviculture* provides a historical review that complements many current texts in the discipline. It builds a case for looking at forests as highly complex systems and for incorporating elements of complexity theory in silvicultural science. Many readers will agree that a fresh approach is necessary and will welcome this carefully prepared and scholarly treatment of the subject. However, some will not be easily convinced by the dichotomy between silviculture and ecology. There has long been a close interplay between both disciplines, to the extent that many silviculturists have also been highly regarded ecologists. Professor M. L. Anderson FRSE (1895–1961) is one eminent silviculturist who actively promoted experiments in what the authors might term complex adaptive systems in the early 1950s. Furthermore, the challenge in silviculture is not always one of maintaining ecosystem integrity but the need to balance many other competing interests that impact forest management.

Throughout Europe and North America there is wide interest in managing woodlands according to close-to-nature principles. The ProSilva Europe organization and the Continuous Cover Forestry Group (UK) have been active since the late 1980s in promoting silvicultural practices that equate with many of the ideas contained in *A Critique of Silviculture*. A current preoccupation for many silviculturists is the process of transformation of forests from relatively simple to more complex structures. The community forest at Freudenstadt, in

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the Black Forest, (venue for the 2008 ProSilva Congress, attracting >300 silviculturists) is just one example where a variety of silvicultural treatments are being applied in response to a new ecological understanding and to maintain ecological resilience. As a result, I found myself looking for more detailed case studies of woodlands and discussion of transformation. Nevertheless, ideas about the role of process-based ecosystem models and the need to step back from strictly defined yield predictions are important contributions that many foresters will want to explore further.

In short, *A Critique of Silviculture* should stimulate discussion about new approaches to silviculture research and practice. It will provide a useful reference for advanced students in both silviculture and forest ecology, and will be of interest to many forest resource professionals. Whether one believes in evolution or revolution, this book projects a powerful case for change and deserves to be widely read.

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