

A Critique of Silviculture: Managing for Complexity

By Klaus J. Puettmann, K. David Coates, and Christian Messier. 2009. Published by Island Press, Washington, D.C., 188 p., \$27.00 ISBN 978-1-59726-146-3 (Paperback)

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Klaus Puettmann, K. David Coates, and Christian Messier have written a timely book. One of a few books specifically about American silviculture outside of the standard textbooks by Daniel et al. (1979), Smith et al. (1997), and Nyland (2002), and going beyond the regional focus of many of the other silviculture books, *Critique of Silviculture: Managing for Complexity* looks at silviculture philosophy and examines the need to think and work outside of the traditional view of simple stand structures and species compositions. Coinciding with a new forest management paradigm that emulates natural disturbance regimes, the book proposes its larger view as a way to increase forest ecosystem resiliency from various damaging agents while meeting the needs of a growing and increasingly sophisticated society.

A Critique of Silviculture consists of five chapters, with side notes that define terms and explain concepts. Chapter 1, "Historical Context of Silviculture," offers a historical review of silviculture, dating from its earliest implementations, and how the evolution of silviculture practices coincided with the development of human society. The authors emphasize that human and society development are intrinsically tied to forest resources and that more affluent societies tend to better understand, appreciate, and use their forest resources. Chapter 1 also includes an overview of the historical development of our current silviculture practices, for example, tacking variations of the *Schirmschlag* (shelterwood) and development of silvicultural systems from their German roots. Of particular interest is how some of the simplicity in American silviculture practices resulted from English translation of silviculture practices previously written in German.

Chapter 2, "Silviculture: Challenging Traditions," focuses on recent developments in silviculture based on five core principles. Particular attention is given to the evolution of the "agrarian model" of silviculture with its top-down, command-and-control approach, including increasing simplicity and predictability of silviculture practice. The authors emphasize the weaknesses of this approach, including its application in silviculture research, while mentioning only briefly how this model aided in the restoration of millions of acres of deforested land following over-exploitation in the early and mid-1900s. In spite of its apparent drawbacks, the agrarian model of silviculture is still the dominant form of silviculture taught in some, if not most, forest resource programs.

Chapter 3, "Ecology: Acknowledging Complexity," pro-

vides a brief overview of past and current concepts in ecology, and provides background on ecosystem complexity, which is explored further in the last two chapters.

Chapter 4, "Silviculture and Ecology: Contrasting Views," studies the inherent differences in thinking between silviculturists and ecologists. Table 4-1 offers a clear overview. But the authors also point out similarities of expectations between the two type of professionals, illustrating how, over the past 10–20 years, silviculturists and ecologists have gradually grown closer in philosophical thought and working relationships.

Chapter 5, "Managing Forests as Complex Adaptive Systems," discusses how traditional silviculture blocks the kind of changes needed in silviculture thinking to meet present and future management objectives and constraints. The authors point out that silviculturists are at risk of becoming marginalized in broader forest management discussions and decisions. Indeed, we have already reached this point in specific areas where phrases like "restoration ecology" and "wildlife forestry" are becoming accepted descriptions of what really is silviculture. The premise of Chapter 5 is the importance of recognizing the complexity of forest ecosystems. With this recognition, the authors argue, silviculture can meet a wide variety of management objectives while also reducing the risks of simple stand structures and species compositions. In the authors' view, silviculture meets this challenge on a wide array of both natural and anthropogenetic disturbances, mostly by increasing forest ecosystem resiliency. The authors balance this view with a consideration to the tradeoffs of increased resiliency, including less predictability in outcomes, a trade-off, they argue, which may be too great for many forest resource professionals at this time.

An example, not in the book, where increased resiliency could benefit the southeastern United States was the lower amount of damage sustained by longleaf pine forests compared to loblolly pine plantations (planted on former longleaf pine sites) during Hurricane Katrina. According to the authors, forest resource managers must maintain the ability of forests to adapt to diverse and unexpected future disturbances without losing their ecological integrity. The authors consider best ways to manage for complexity, offering that a silviculturist who thinks "beyond the trees" will be better suited to contribute to a wider variety of natural resource management issues.

Another strength of *A Critique of Silviculture* is the presentation of German silviculture, much of which has been available only in its original German text and therefore largely inaccessible to English-speaking silviculturists. Another strength is the authors advocacy of needing to move beyond the current top-down, command-and-control approach of present silviculture. One place to start, the authors suggest, is in undergraduate education.

If there is a weakness to point out, it is the need for more examples outside of the Pacific Northwest (an area of expertise for the authors). For example, ongoing large-scale silviculture experimentation can include the shortleaf pine–bluestem restoration project in the Ouachita Mountains of Arkansas and Oklahoma, and the Missouri Ozark Forest Ecosystem Project.

A Critique of Silviculture: Managing for Complexity is a valuable contribution to the forestry profession, providing an abundance of examples taken from past and present silviculture philosophies and practices and ready for use in

current undergraduate silviculture courses. As a much-needed complement to current silviculture textbooks, the book would be an excellent source for advanced silviculture courses at the undergraduate and graduate level. It is a well-written, logical, easy read, and rewards the reader with the bonuses of a rich literature citation section of 407 citations and an index to specific terms and topics in the text. Reasonably priced (especially the paperback), expertly written, and packed with information, *A Critique of Silviculture* is a “must have” resource for all practicing professionals of silviculture.

Literature Cited

- DANIEL, T.W., J.A. HELMS, AND F.S. BAKER. 1979. *Principles of silviculture*. Second edition. McGraw-Hill, New York. 500 p.
- NYLAND, R.D. 2002. *Silviculture concepts and applications*. Second edition. McGraw-Hill, New York. 704 p.
- SMITH, D.M., B.C. LARSON, M.J. KELTY, AND P.M.S. ASHTON. 1997. *The practice of silviculture: Applied forest ecology*. Ninth edition. John Wiley & Sons, Inc., New York. 560 p.