

Silviculture Research: The Intersection of Science and Art Across Generations

BY THERESA B. JAIN

A research silviculturist's work is firmly grounded in the scientific method to acquire knowledge on forest dynamics. They also integrate information from numerous sources to produce new knowledge not readily identified by single studies. Results and interpretation subsequently provide the scientific foundation for developing management decisions and strategies. The results from scientific investigations are documented in manuscripts, monographs, and reports. The art of silviculture is developed through talent, curiosity, and personal experience, and from a cross-generational connection between scientists; but it also contains a vision and passion toward understanding how forests grow and how to manage them to meet human needs. In the northern Rocky Mountains, the legacy of many generations guided the advancement of silviculture research, beginning with John Leiberg in 1899.

The ability to use experience gained from one generation passed on to the next drives silvicultural innovation. Similar to the way a doctor practices medicine, a silviculturist's artistic talent comes from years of practice. But practice alone does not train the artist.



Skills honed over time lead to developing a robust philosophy and appreciation of nuances. Skilled silviculturists must also foresee future applications and develop, create, and evaluate management strategies to address today's and tomorrow's management needs. To excel, it requires considerable creativity, leadership, and at times, a thick skin.

The skilled research silviculturist is persistently trying new things; testing strategies that at first appear out of context and at times seem out of place. The irregular selection system, adapted by me and Russ Graham for moist forests, has been shortsightedly called "touchy and feely" forestry; lacking quantitative underpinnings; being too difficult to implement; or not fitting within the accepted silvicultural terms. The irregular selection system, however, was the result of many attempts to practice regulated unevenaged silviculture in moist forests that continually failed to meet management objectives. Although I did not have the experience of implementing regulated

unevenaged systems, it was through Dr. Graham's experience (i.e., practice) combined with my research on western white pine growth across various openings that led to the innovative irregular selection system. This innovation would have been impossible without a generational connection between past and present.

In silviculture, the place where artistic knowledge is passed from generation to generation is in the forest. Russ Graham has often told the story of getting up at 4 a.m. on a rainy day to spend the morning with Chuck Wellner (research silviculturist, 1933-2001). As Chuck always said, "It's time to go out and watch the white pine grow." It was during these times that the experienced taught the novice. Chuck provided a vision and passion passed from John Leiberg, Julius Larson, Irvine Haig, Ken Davis, and Robert Weidman of silviculture that aided in Russ' own development and growth as a silviculturist. Russ learned to appreciate the complexity and the nuances of forest dynamics. These moments with Chuck gave Russ a unique connection that otherwise would have been missed or taken several more decades to attain.

My favorite and most valuable learning experiences were also in the forest. Many times Russ and I would sit and try to describe the circumstances that created the place where we sat; these discussions would last for hours. From these sessions, I learned the most critical time in forests is the regeneration and establishment phase (he who gets there first captures the site). I learned about the role of disturbance and how a series of small events at particular points in time influences a forest's ability to become established and develop. Through cross generational learning, I discovered the key forest attributes a silviculturist can manipulate to alter the trajectory of vegetation composition and growth. What Chuck passed on to Russ, Russ gave to me—the appreciation of what a forest is and all the complexity and incidental nuances it has to offer. The



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A moment of mentoring Russ Graham at Deception Creek Experimental Forest by fellow scientists and leadership from the Intermountain Research Station. Left to right: Russ Graham, Thad Harington (assistant director), Marv Foiles (research silviculturist), Carter Gibbs (deputy director), and Roger Bay (director).

transfer of skills and practice from one generation to the next comes through direct interaction among the experienced and the novice in a forest setting. It cannot come from books, manuscripts, or symposia alone.

Currently, I am the last in the series

of Forest Service Research silviculturists in the northern Rocky Mountains, but I contain the knowledge of several generations carried from scientist to scientist. So often, research results focus on one dimension, but what makes research silviculture unique is

thinking multi-dimensional to infer beyond just from numbers alone, adding management relevance to the research (i.e., the “so what?”). The art of silviculture adds this multi-dimensional holistic view that enables me to learn so much more from a single study. My ability to integrate knowledge from the past—from Irvine Haig, Chuck Wellner, Russ Graham, and others—gives me the ability to build upon foundational knowledge so that I can contribute to the science and expand the relevance of silviculture. I would not have been able to advance my own research so significantly if it were not for these cross-generational interactions so important to the forestry profession. I only hope that I will have the opportunity to pass the art of this science to the next generation. ♦

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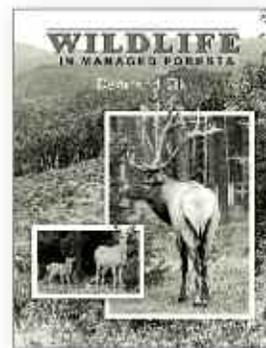
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