INTRODUCTION

A Special Issue of the Journal of Forestry—Proceedings of the 2015 National Silviculture Workshop

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This Special Issue of the Journal of Forestry presents the Proceedings of the 2015 National Silviculture Workshop (NSW), which was held as one of the concurrent sessions of the 2015 National Society of American Foresters (SAF) Convention in Baton Rouge, Louisiana. Sponsors for the session included the D-2 Silviculture Working Group and two US Department of Agriculture Forest Service Washington Office deputy areas—Research and Development, and the National Forest System. This marks the second time the NSW has been held in conjunction with the National Convention of the Society; the first time was at the 2013 National Convention in Charleston, South Carolina. The proceedings of that Workshop were also highlighted in a Special Issue of the Journal of Forestry, which included a short introduction by Guldin and Buford (2014), who described in detail the history and significance of the NSW.

In 2015, the Workshop was built on the theme, “Silviculture and Changing Climate: Strategies, Tactics, and Practical Prescriptions.” Climate change is a hot issue, so to speak, not only in the current political discourse of the Nation and among nations but also within the scientific community generally and the forestry research community as well (Vose et al. 2012). The practical implications for the Nation’s forests are that climatic conditions 100 years from now will be different from what they are today, and the effects most likely to be observed in forested systems in the short term are altered disturbance regimes involving wildfire, damage from intense wind events, insect outbreaks, ice storms, and changing patterns of precipitation leading to drought-related tree mortality.

Anticipating, responding to, and capitalizing on disturbance events in managed and unmanaged stands have been in the wheelhouse of the silviculturist for decades. Silvicultural prescriptions are pathways that carry a stand from an existing condition to a desired future condition, ideally supported by timber sales from trees that are superfluous to that future condition. Disturbance events can alter the existing stand condition either in part or in total. In anticipation of or in response to that, the silviculturist intervenes to establish a silvicultural prescription that will respond to the new stand condition or effectively anticipate and reduce the risk of loss. Actions are hopefully accomplished through a commercial sale of trees that have been damaged or proactively removed and carry the stand toward the original or a revision of the desired future condition. This is technical work with which silviculturists are clearly familiar and experienced.

The short-term implications of changing climatic conditions for the practice of silviculture are numerous. First, interventions after disturbance might become more common, or the magnitude of disturbance might be at such a scale that markets for salvaged timber are overwhelmed. These challenges will redirect the ongoing work of the silviculturist. Again, this is nothing new in the forester’s job description, but the frequency or scale might be different as the effects of climate change occur locally. Another implication is tied to the fact that the desired future condition on public or private lands might change as a result of changing climatic conditions. The goal in that event is to figure out what that future climate might be and how forest stands might respond, and then to revise the ongoing silvicultural prescription in the stand as needed to achieve the newly defined conditions. Finally, the effects of changing climatic conditions might replace the existing forest types with new or novel forested ecosystems. In that event, the existing silvicultural prescriptions or even the underlying ownership objectives and management plans might need to be redrawn completely. But again, this is work with which silviculturists are familiar—a major timberland acquisition in the private sector often requires a similar approach.

So the challenge for the practicing silviculturist or research forester remains as fun as it always has been. In one sense, our silvicultural tools aren’t changing all that much—we’ll continue to plant trees, use natural regeneration, invest in site preparation and release treatments as necessary, use thinning and controlled burning, harvest stands with clearcutting, seed-tree, and shelterwood methods, or manage complex structures using uneven-aged and multiaged methods. In another sense, silvicultural research will continue to push the envelope in terms of understanding and anticipating the impacts of climate change. New research will be needed to develop new and novel forest Research.

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systems adapted to changing climate, and the systems and practices needed to manage them. And, as before, field foresters and researchers both will help landowners and the public understand practices and policy options for achieving desired outcomes in a changing future. We will continue to build, refine, adapt, and use tools in the toolbox, insofar as we can determine what practices are needed to meet the desired future condition within the context of the changing climatic condition that is anticipated at the local and regional scale.

In other words, we’ll practice good old-fashioned silviculture in application to a new context, and we will continue to develop and refine our silvicultural understanding and the tools that will be useful in the new context. The profession responded in the 1960s when we learned how to plant genetically improved southern yellow pines on southern timberlands. We responded in the 1990s on federal lands in a paradigm shift to ecosystem management and restoration initiated by former Forest Service Chief Dale Robertson. And we will continue to respond, especially in those regions of the country where the ecological and economic effects resulting from changing climatic conditions are becoming evident or are anticipated.

Climate change assessments can be informed by our best models about regional patterns of future climate. For example, in this Special Issue, Janowiak et al. (2017) report on a climate change risk metric developed for the Climate Change Tree Atlas that can be used to refine the development of desired future stand conditions in forests of the eastern United States. Brandt et al. (2017) describe a collaborative process for predicting the vulnerability of ecosystems in the midwestern and eastern United States under a changing climate. Similarly, Kabrick et al. (2017) study several forest types of mixed pines and hardwoods in eastern North America to ask whether species mixtures might be more compatible with projected future climate changes than pure softwood types.

Specific examples of stands that are resistant, resilient, or transitional in the context of desired future conditions will be useful for research and demonstration in the future. To that end, Nagel et al. (2017) report on the development and implementation of the Adaptive Silviculture for Climate Change (ASCC) project, a collaborative multiregion network of replicated operational-scale research sites on public and private lands that demonstrate ecosystem-specific climate change adaptation treatments in common forest types.

This Special Issue also highlights stand-level silviculture research. Miller et al. (2017) report on a classic oak advance growth study in Pennsylvania mixed hardwoods, in which different preparatory treatments were applied to develop oak advance growth before harvest. Brose and Rebbeck (2017) report results for growth of four different oak species established under a three-stage shelterwood system, again in Pennsylvania, and report different growth rates for the different oak species. Both of these studies lead one to suspect that in oak stands, changing climatic conditions may have as much of an effect on oak advance growth as on mature oaks.

Finally, field foresters contributed two articles to this issue. Hinchee and Garcia (2017) describe the long record of success in the silviculture of sand pine (Pinus clausa) in Florida and the value that a fairly intensive approach to management of a forest ecosystem that is underrepresented on the landscape can provide for critical habitat for a threatened wildlife species—in this case the Florida scrub jay (Aphelocoma coerulescens). And Weick et al. (2017) describe a cone collection effort in Texas to take advantage of the bumper seed crop that occurred in loblolly pine (Pinus palustris) during the fall 2014; the effort produced enough loblolly pine seed to meet their planting needs for the immediate future.

These articles are examples of the work that scientists and managers are doing to lay the groundwork for silvicultural adaptations to changing climatic conditions at different spatial scales. We thank the Society of American Foresters (SAF) for once again highlighting the 2015 NSW with this Special Issue of the Proceedings. Kudos are due to Richard Guldin, SAF Senior Policy Analyst, who stepped in as Acting Director of Publications at SAF to get the Special Issue off the ground; kudos are also due to the new permanent SAF Director of Publications, Jennifer Kuhn, who pulled it together. We also thank Marilyn Buford, the Special Issue Guest Editor, and Don Bragg, Editor of the Journal, for supporting this Special Issue as well.

Literature Cited


