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Introduction to Proceedings of a Workshop on Science Considerations in Functional Restoration

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There has been a great deal of discussion in the scientific literature and in traditional forest management literature about forest restoration, ecological restoration, adaptive and active management for restoring forest ecosystems, and a variety of linked topics. The USDA Forest Service manages 193 million acres of forest and grasslands for a variety of uses, and conducts restoration work on many of these lands. In addition, the Research and Development branch of the Forest Service works to develop knowledge to help in managing the Nation's forests and grass lands. In the context of changing environmental conditions, it is critical to develop science and technology to improve systems' capability and functionality to provide needed goods and services such as water, habitat, wood products, and recreation opportunities in a dynamic future. Such an approach is called functional restoration.

As Associate Deputy Chief for Forest Service Research and Development, I requested a synthesis of science considerations in functional restoration with an analysis of the current science underpinning the concept of functional restoration and what should be considered when proposing or evaluating a potential restoration effort. As a complement to this effort, a workshop was convened to bring selected experts in the area of functional restoration together to discuss these issues and provide input to the authors of a science synthesis paper currently being prepared by the Forest Service as a General Technical Report. The workshop was held February 4 and 5, 2013, in Pittsburgh, PA, USA. During the course of the workshop, 25 experts in various areas of restoration ecology met to discuss the science considerations

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and background on functional restoration, to discuss definitions, endpoints, scale considerations, adaptation strategies, social contexts, approaches, timing, and definitions of success. This supplemental issue of the *Journal of Sustainable Forestry* is an outcome of that workshop.

The issue is organized in much the same manner as the workshop progressed. The first 4 articles consider the concepts and terminology of functional restoration (Crow, Puettman, Dey and Schweitzer, Millar). The following three articles describe particular considerations in applying functional restoration for specific ecosystems and purposes (Welsh, Jones, Liang and Zhou). In the next two articles, Oliver and Burton reflect on monitoring and evaluating forest restoration. Finally, Stanturf and coauthors provide a capstone summary and paradigms for moving forward with functional restoration.

The hard work of the organizing committee in putting together this successful workshop and the excellent collaboration with the Division of Forestry and Natural Resources at West Virginia University are gratefully acknowledged. Mary Beth Adams and Marilyn A. Buford served as Guest Editors for this supplemental issue and Devin Routh provided excellent assistance as the editorial liaison from the *Journal of Sustainable Forestry*. Finally, the time and effort the workshop participants shared in order to advance our thinking and understanding about functional restoration are greatly appreciated.