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A Special Issue of the *Journal of Forestry*—Wilderness Science and Its Role in Wilderness Stewardship

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This special issue of the *Journal of Forestry* provides an overview of America's National Wilderness Preservation System and highlights the important role that science serves in informing wilderness stewardship. The lead authors of the articles in this volume selected the *Journal* because it is highly respected and widely circulated among foresters and federal land managers in the various natural resource agencies that manage wilderness across the nation. But many in America value wilderness, and we know this issue will be appreciated by all who hold these lands dear. We applaud the generosity of the editors of the *Journal* in agreeing to focus an entire issue on wilderness since the *Journal* usually focuses on more traditional forestry issues.

Readers of the *Journal* will appreciate this issue for many reasons. Wilderness is a big deal. Of the 640 million acres of federal land in the United States, 110 million (17%) are designated as wilderness, but the challenges facing wilderness managers are often poorly understood. Many people believe that lands designated as wilderness require little to no management because of the "protected" status. But designation as wilderness does not necessarily protect these lands. Today these lands are threatened by many factors: air pollution, climate change, invasive species, and adjacent land use are damaging or threaten to damage many wildernesses. In addition, these lands can be negatively affected by uses authorized in The Wilderness Act, such as excessive and/or poorly controlled visitor use, legal mining and grazing claims, and dams. And wilderness management agencies often feel pressure to restrict natural disturbance agents, like fire, because of the potential of wildfire to escape wilderness boundaries. But limiting natural disturbances may violate The Wilderness Act, which mandates that the untrammeled qualities of wilderness be protected. Another challenge facing managers is that many species iconic to wilderness areas need habitat to roam either rapidly, like wildlife species, or more slowly, like plant species. But the small size of many wilderness areas does not provide enough land for the habitat needs of many species, making protecting those species a challenge.

There is an enormous need for science to provide the basis for effective wilderness management strategies. The discipline of wilderness science grew out of recreation research started in the late 1950s and expanded as the wilderness system grew to include many aspects of human behavior, ecology, biology, wildlife, and disturbance regimes. Over time, scientists have increased their efforts to translate the science into tools useful to managers.

For those readers unfamiliar with wilderness, we begin this issue with an overview of federal wilderness called America's National Wilderness Preservation System. We then provide a look at the challenges facing the wilderness agencies—Bureau of Land Management, National Park Service, Fish and Wildlife Service, and Forest Service. These two articles are followed by a review of the findings of the Wilderness Managers Survey released in 2014. It provides a comprehensive analysis of major challenges and perceived needs for science and training. This survey is especially important because it was used for strategic planning by the two bodies that oversee federal wilderness, the Wilderness Policy Council and the Wilderness Steering Committee. The fourth article describes the history of wilderness science in the agencies and makes the case for why a more comprehensive program is essential to protect wilderness and provide the information needed for effective stewardship.

The next eight articles provide a state-of-wilderness science that will be useful to managers and scientists. In the past, conference proceedings were the main outlet for such synopses but these were often not peer reviewed and had limited distribution. Our authors review what we know about social science, economics, recreation, soundscapes, wildlife, relevancy, and the balancing act managers seek between minimizing interventions while effectively managing these lands. We feature two case studies on wilderness—one that looks back to the past to show how science has helped managers at the Boundary Waters Canoe Area Wilderness deal with complicated wilderness stewardship issues and one that looks to future challenges that wilderness managers have only begun to address on the example of the King's Range National Conservation Area. And finally we describe how wilderness managers deal with paleontological finds and excavations using the example of the *Bistahieversor sealey* found in the Bisti De/Na da Zin Wilderness.

We hope this issue broadens the perspectives of readers about the challenges facing wilderness managers and the important role science plays in helping them. The authors featured in this issue are grateful to the editors and staff at the *Journal of Forestry* for presenting this comprehensive look at wilderness in America.

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