

Wilderness as a Place for Scientific Inquiry

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One of the most fundamental rationales advanced for protection of areas as wilderness is their immense potential value as baselines and places for comparing the effects of ever-advancing human development and impact (Brower 1960). In contrast to more developed areas, wilderness is characterized by lack of human development and related disturbances. By protecting large landscapes from development and impact, scientists may be able to uncover, and come to understand, natural processes that would be hidden in more developed settings. By preserving relatively undeveloped areas, changes in biophysical and ecological conditions wrought by civilization can be better measured, assessed, and evaluated. Through management regimes that allow natural processes to occur in a relatively unfettered manner, we will better comprehend their extent and variability. Through this understanding, the number, type, and frequency of ecological surprises may be reduced.

Wilderness is fundamental to understanding the natural capital with which humans have been blessed. Wilderness that serves as a baseline for monitoring allows us to detect processes and conditions that may be adverse to human life, or the plants and animals upon which it depends. A good example is the current threat to whitebark pine ecosystems, much of which occurs in designated wilderness. Fire suppression and the introduction of the exotic disease whitepine blister rust are largely to blame for significant reductions in the population and spatial extent of whitebark pine. Wilderness allows scientists to isolate the effects of these two exogenous influences and separate them from other human-induced processes and effects. By so doing, we come to a higher level of understanding of how natural processes operate, and the surprises that occur when those processes themselves are disturbed or experience interventions by people.

Of course, there are no absolutely pristine places on earth—but the over 100 million acres of wilderness designated in the United States does provide a substantial benchmark, one that could be improved primarily by achieving greater representativeness in landscape types and through more expeditious scientific use of those areas.

Wilderness also provides distinctive and unique benefits to people, other than the clean air and pure water upon which many people depend. Wilderness is a place to escape

the hazards, stresses, and challenges of an increasingly urbanized world. It may be one of the few places left where one is not continually disoriented by the ring of cellular phones, the stress of urban congestion, and the anxiety created by growing violence. Understanding what social-psychological values wilderness provides is as important as assessing their benefits for investigating natural processes. The therapeutic, inspirational, and personal enhancement values of wilderness, while only poorly understood currently, may ultimately be responsible for a greater awareness and sensitivity of human impact on the global environment, for without these places, the room to experience, to contemplate, and to understand is lost.

Thus, wilderness is established, in part, to encourage science, and the above sampling of how science can benefit from wilderness is suggestive of the types of opportunities for research and scholarly activity that wilderness provides. However, the science that occurs must also be consistent with the cornerstones of wilderness ideals—naturalness, untrammelled character, solitude, and unconfined recreation. Thus, management of science itself becomes a major question, for in seeking understanding in these places, we cannot violate the values for which they were established. This makes the conduct of science in wilderness difficult. It makes a consistent science policy for wilderness mandatory. It suggests the need for an ethical foundation. And, it suggests that conflicts with other legislation (such as the Threatened and Endangered Species Act) are inevitable.

The conference devoted attention to discussion of many of these values and issues, and in this volume, we present papers submitted for these topics. The volume is divided into five major sections. The first section consists of overviews and assessments of knowledge generated in wilderness concerning specific science questions. In this section, Alan Ewert and Leo McAvoy identify the knowledge scientists have developed when wilderness is used in a structured, therapeutic manner for those in times of crisis and difficulty. Their assessment suggests that there is great opportunity in this arena that is provided by wilderness. Joe Roggenbuck and Bev Driver similarly review the research dealing with the specific benefits that wilderness provides to people that experience it. Jerry Wright and Lisa Garrett summarize the extensive amount of research on wildlife that has occurred in wilderness, indicating that it has become an important source of knowledge for understanding how natural processes affect one type of biota. Norm Christensen reviews what science has learned about ecosystems from wilderness, particularly about such processes as disturbance and change, landscape dynamics, and community. The role of wilderness in “disentangling” change as a result of natural and anthropogenic influences is reviewed in Lisa Graumlich’s paper.

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Section two includes a number of papers that examine wilderness from an ecosystem perspective, including those that use wilderness as a baseline to compare with other areas. Three papers dealing with research in wilderness about aspects of the past are included in section three. The use of wilderness as a laboratory to study interactions of people and their environment is the subject of papers included in section four. Management of science in wilderness is a particularly perplexing topic as indicated earlier, and several papers submitted to the conference are included here as section five.

The final section of this volume involves dialogue sessions dealing primarily with the topics of management of science and monitoring of ecological trends—issues for which there are a variety of opinions and options.

The coverage here does not include at least two of the major issues often discussed as principal values of wilderness: its utility as a gene pool and its value as, in Dave Foreman's words, a "cauldron of evolution." Mapping and assessing those values are critical to developing the wide-ranging purposes of wilderness. Perhaps a future conference will more specifically address this fundamental value.

References

Brower, D. R. 1960. Meaning of wilderness for science—Proceedings Sixth Biennial Wilderness Conference. Sierra Club, San Francisco, CA. 129 p.

1. Overviews



