

wilderness is to compromise the fundamental values legitimizing any possible demand for preference satisfaction at all. No demand is entitled to satisfaction, after all, unless it is true that all things begin equally with the *natural right* to freely become what they are destined to be on their own terms, and this includes wilderness.

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Chapter 13 The Multiple Values of Wilderness and the Future of the National Wilderness Preservation System

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American society and its landscapes are changing dramatically. Then again, this country has always been a place of change. Both its population and landscapes are very different now than they were in the past, particularly when compared to the distant past. In that more distant past, even as early European settlement was occurring, there was an abundance of natural land—it seemed limitless. In more recent times, however, as there was greater realization that this country's natural resources have a limit, and as the abundance of undeveloped land diminished, some lands were put into state and federal land systems for conservation or reserve purposes (Carstensen, 1962). Some of the federal land systems established were quite remote and viewed as too far from human settlements to ever face development and raw material extraction pressures. By the dawn of the 20th century, however, it was becoming clear that no land was remote enough to escape human pressures and resource exploitation (see Chapter 2). By the middle years of the 20th century, a different vision was forming in some people's minds about the future of federal lands (see Chapter 3).

Toward the middle of the 20th century a number of visionary people had stepped up to push for a special status for some of this country's wildest federal lands. They saw to it that a National Wilderness Preservation System was created. This was truly a paradigm shift for America. In prior decades and centuries, wilderness had been viewed as the land beyond the frontier—land to be conquered and used to support livelihoods and amass wealth. With passage of the Wilderness Act, a new era for federal lands had emerged with ecological, scientific, and other nonconsumptive values taking on more importance than consumptive values derived from raw material extraction.

Being the dynamic country it is, change is still the most prominent characteristic of the United States. Significant change has occurred in just a few short years since passage of the 1964 Wilderness Act. For example, as of April 1, 1990, the country's population was just under 249 million. The latest Census indicated that total population had grown to over 281 million by 2000. By 2005, population has grown to nearly 295 million, a growth rate since 1990 of 1.3 percent annually (U.S. Census Bureau, 2004). As population has grown, it has spread over the nation's landscape. This growth has occurred not only in the already heavily populated Northeast and lower New England states but also in the Lower Great Lakes, South Atlantic, Florida, and Gulf Coast areas. As well, rapid population growth has occurred in east Texas, along the Front Range of Colorado, and in coastal California (Cordell, Bergstrom, Betz & Green, 2004). In many cases, rapid growth has extended up to the borders of public lands, including Wilderness.

But population growth is only part of the ongoing change story of the United States. While population growth has more direct impacts on the land, there is little doubt that racial, ethnic, and cultural changes within the population also are important, particularly to the future of Wilderness. Research has clearly

shown that people of different cultural backgrounds view the natural environment and public lands differently (see Chapter 7). In 1900, 87.9 percent of the U.S. population was White, mostly non-Hispanic White. Blacks (mostly non-Hispanic) made up 11.6 percent of the population. The remaining 0.5 percent of the population was mostly either American Indian or Asian-Pacific Islander. By 1950, Whites composed almost 89.5 percent of the population and Blacks 10 percent. Very few among the population then were of other races or ethnicity. By 1980, however, as a result of major changes in the immigration laws, this racial mix had begun to change. The proportion of Whites had fallen to 83.1 percent, Blacks had risen to 11.7 percent, and others composed the remaining 5.1 percent. In 1990 a much smaller 75.6 percent of the population was non-Hispanic White, while the remaining 24.4 percent was of other races or ethnicity, including 9 percent who were Hispanic. By 2000, non-Hispanic Whites were just 69.1 percent, a dramatically smaller proportion than in the 1960s when the Wilderness Act was passed. Hispanics comprised 12.5 percent of the U.S. population in 2000, slightly exceeding for the first time in this country's history the percentage of the population who were Blacks. Asians were 3.6 percent and American Indians were just 0.9 percent in 2000. Recent [August 2004] population estimates from the 2000 Census showed the proportion of Hispanics in the United States continued to grow to 14.1 percent, with Whites dipping slightly to 67.3 percent (Cordell, Bergstrom, Betz & Green, 2004).

As population and cultural backgrounds have changed, other changes as well have been evident. Economic growth is one of them. Growth in economic activity as it creates demand for raw materials, land, and other resources has led to greater pressures on public and private rural land and is driving urban expansion. The lower 48 states include a total of over 1.9 billion acres of land and water (USDA Natural Resources Conservation Service, 2004). The majority of this area (74% or 1.4 billion acres) is nonfederal and rural. Between 1982 and 2002, an estimated 34.5 million acres of nonfederal rural lands were developed, a rate of more than 1.7 million acres per year nationally. Between 1997 and 2002, in just five years, the estimated annual rate of development of nonfederal rural land was almost 2 million acres. While the area of nonfederal rural land has been shrinking, the urban land base has been growing. Growing also, and massively so, are the numbers of people who live and work in urban areas. Living in urban areas, many today seem to have little direct connection with or knowledge of the natural environment. This built, urban orientation likely applies as much today to government employees and politicians who make decisions affecting Wilderness as it does to the general public at large. With such rapid growth of population and the economy, new immigration, rising diversity and urbanization, one has to wonder what Wilderness means to people today, especially to those who have the most "say" or influence over its future. The champions of the 1940s, 1950s, and 1960s are no longer with

us. So, it is with this concern over bringing greater clarity to the question of what the meaning and value of Wilderness is to contemporary America that we devote this book.

The overall purpose of this book, then, has been to explore what is known about values contemporary Americans hold toward the National Wilderness Preservation System. We have attempted to clarify the meaning of different types of Wilderness values and to present replicable, science-based evidence of these values. Our intended audience is everyone and anyone of any persuasion who can and will have power over the future of the U.S. National Wilderness Preservation System—including ordinary citizens. We hope this book might also be a valuable resource for teachers, students, and all other curious and inquisitive people involved in either formal or informal learning institutions and research programs. It is our view that the values American citizens broadly hold are most important in determining the future of Wilderness. It is the value-laden and diverse voices of our country's public, individually and collectively, that are featured in this book. The fundamental question motivating this book is: "To what degrees and in what ways does the National Wilderness Preservation System add value in 21st century America?" Value perspectives inventoried and discussed in this book include social, economic, ecological, and ethical ones.

Summary of Chapters

Chapters 2 and 3 describe the origins and creation of the National Wilderness Preservation System. The discussions in these chapters highlight a deep commitment that existed in the United States in the 1960s to the idea of preserving wildlands. This commitment was based on the feelings people had about wilderness as both a noble idea and as unique and special places. As discussed in Chapter 4, the multiple values of Wilderness are derived from Wilderness attributes, functions, and services. In this book, we are concerned specifically with the multiple values of statutory Wilderness, that is, federal lands designated by Congress as areas within the National Wilderness Preservation System. Various attributes of the current National Wilderness Preservation System are presented in Chapters 5 and 6.

We organized the descriptions of the multiple values of Wilderness into four major categories or perspectives—social, economic, ecologic, and ethical. These categories originate from different scientific disciplines, each of which has developed its own perspectives and approaches for examining Wilderness values. Social perspectives on Wilderness values, as developed by psychologists, sociologists, social psychologists, and anthropologists, are discussed in Chapters 7 and 8. Chapter 7 discusses two general approaches for defining and

assessing the social values of Wilderness: the social construction approach and the goal-directed approach. Both approaches have a relatively holistic perspective of values, and how people form those values. In the social construction approach, shared social meanings and values for Wilderness are created through historical, cultural, and political experiences over time. For example, shared Wilderness experiences, including taking Wilderness trips or working to protect Wilderness with neighbors, may improve the ability of people in a community to better organize and cooperate as a group to address common needs and problems. In the goal-directed approach, social values are formed through benefits from Wilderness that contribute to more utilitarian goals related to individual preferences. For example, Wilderness experiences, such as a challenging and inspirational trip into a wild and pristine area, may help a person develop and achieve individual physical, mental, and spiritual goals.

The discussion in Chapter 8 provides additional insight, primarily from a sociological perspective, into the views that peripheral groups (e.g., immigrants, ethnic/racial minorities, low-income groups) have on the meanings and values of Wilderness. Some social critics of the National Wilderness Preservation System charge that Wilderness is important mainly to an elite segment of American society, primarily middle-to-upper income, educated Whites. Research results discussed in Chapter 8 support this assertion to a degree, especially with regard to on-site use of Wilderness areas. Examples of on-site use would be Wilderness camping or hiking trips. However, research results indicate that native-born Americans and immigrants appear to have very similar preferences and priorities with regard to the broader, off-site, and passive-use benefits of Wilderness, such as support of the benefits of clean air and water from Wilderness. Additionally, U.S.-born Whites and ethnic/racial minorities, females and males, and people across different income groups appear to have similar preferences and priorities with respect to the broader off-site and passive-use benefits of Wilderness.

Chapters 7 and 8 both point out that Wilderness meanings and values are influenced by the important distinction between benefits derived from on-site active-use benefits of areas (e.g., Wilderness camping and hiking trips) and off-site passive benefits (e.g., contributions of Wilderness to air and water quality). As indicated in Chapter 9, economists also recognize the importance of these different use benefits. From an economist's perspective, Wilderness contributes to both national and regional economic development. The willingness-to-pay or net economic benefits for both on-site and passive uses as summarized in Chapter 9 indicate contribution to national economic development. National economic development is concerned with economic efficiency and the overall policy question of, "Which use or management of Wilderness will generate the highest net benefits to the nation as a whole?" Regional economic development is concerned with the distribution of economic benefits across communities

and addresses the overall policy question of, "What are the effects on local and regional economies of the use and management of Wilderness?" These regional effects, measured in terms of community-wide income, population, and employment levels, are discussed in Chapter 10.

As indicated previously, measures of net economic value or willingness-to-pay, as reported in Chapter 9, are broadly divided into benefits from on-site recreation visits and the more passive-use benefits contributing broadly to quality of life. Based on published literature, average individual consumer surplus or willingness-to-pay for visiting a Wilderness area for recreation (i.e., on-site benefits) was estimated at about \$20 for a single-day visit and about \$68 for a visit lasting several days. For passive use, average annual consumer surplus or willingness-to-pay per household was estimated at about \$67. Aggregation of these three values over appropriate numbers of visitors and population resulted in an estimated annual net economic value for the National Wilderness Preservation System of approximately \$4 billion, or about \$40 per acre per year.

As discussed in Chapter 10, research has shown that the presence of land in a county protected as part of the National Wilderness Preservation System positively contributes to the county's economy through recreation-and-tourism-related expenditures by Wilderness visitors. Research to date suggests that total numbers of nonlocal visitors to Wilderness areas across different regions of the country are not sufficient by themselves to sustain a significant local recreation and tourism industry. Local community citizens sometimes worry that "locking up" public land as Wilderness will negatively impact economic growth. However, research reviewed in Chapter 10 suggests that Wilderness does not, in aggregate, negatively affect employment trends in either the eastern or western United States. Moreover, evidence indicates that natural amenities, including designated Wilderness areas, attract new residents to rural areas who place a high priority on environmental quality, scenic beauty, and nearby recreational opportunities. Local communities can then benefit from increased business and jobs that tend to follow the new residents into these natural, amenity-rich rural areas.

The social and economic benefits of direct, on-site use of Wilderness, discussed in Chapters 7, 8, 9 and 10, including recreational, therapeutic and spiritual uses, are apparently substantial at all levels, including individual, small group, and selected community scales. However, because total numbers of Wilderness users are few, the total social and economic benefits of on-site use across the United States are small in comparison to the off-site and passive use benefits of Wilderness which spread across the population. Because of this difference in magnitude, debates in the future over Wilderness preservation are likely to focus more on broad, off-site environmental and passive-use benefits, such as provision of clean air and water, biodiversity, and continued

existence of plants and animals. Continued provision of these broad off-site environmental and passive-use benefits depends on healthy ecosystems.

The degree to which designated lands under the National Wilderness Preservation System represent healthy ecosystems and high ecological value is discussed in Chapter 11. In that chapter, the ecological value of Wilderness is defined as the capacity of Wilderness to support endemic life. In general, research shows a positive relationship between the naturalness of land, ecological health and natural life-support capacity. Thus, as naturalness of the land increases, so should its ecological health and value. In Chapter 11, four surrogate measures of naturalness, including fragmentation, natural land cover, distance from roads, and ecosystem representation were used to assess the naturalness of designated Wilderness compared to other lands. The results of this assessment indicate designated Wilderness is less fragmented, has greater natural cover, and has greater proportions that are remote from roads as compared to lands outside of designated Wilderness. By protecting different broad-scale ecosystem types from coastal wetlands to alpine tundra, designated Wilderness is also an important contributor to the regional, national, and global stocks or pools of natural biodiversity.

An overall conclusion of Chapter 11 is that designated Wilderness areas preserve naturalness and wildness, thus they better support healthy ecosystems and the living and nonliving elements of these ecosystems relative to other lands. Chapters 7, 8, 9, and 10 provide social and economic perspectives primarily on what philosophers term the instrumental value of plants, animals, and nonliving physical attributes of designated lands under the National Wilderness Preservation System described in Chapters 5 and 6. As indicated by the philosophical discussion of wilderness values in Chapter 12, instrumental value (generally across all wildlands) refers broadly to its value as an input into or instrument of human preferences. For example, the instrumental value of Wilderness includes its value as a setting for enjoying recreational experiences and improving human physical, mental, and spiritual health.

The philosophical discussion in Chapter 12 also indicates that wilderness may have intrinsic value. Intrinsic wilderness value is defined as the value of its existence even in the absence of people and their on-site and off-site passive uses. The viewpoint that wilderness has value beyond instrumental ones can come from diverse personal beliefs and values including one's environmental ethics and religious beliefs. The topic of intrinsic value, however, takes discussion of the multiple values of Wilderness to the edge and beyond what can be defined from a human-centered perspective. Ultimately, recognition of the pure intrinsic value of Wilderness means taking a "step or leap of faith" over that edge to accept that there are values beyond what humans want or need. This includes recognition of the inherent rights of Wilderness lands to their own continued natural existence. In a book aimed at providing practical information,

it is important to note that recognition, appreciation, and protection of both the instrumental and intrinsic values of Wilderness, and all that is found there, are not mutually exclusive policy goals and management perspectives.

Data and Research Gaps

Throughout the course of this book, we have presented what is known about the multiple values of Wilderness using the perspectives from four different fields of science—social, economic, ecologic, and philosophic. The goal was to contribute this basic knowledge of Wilderness values to forums for social choice and natural resources policy. The question remains, “What more do we need to know about these values?” The values framework and philosophical chapters (Chapters 4 and 12) provide a foundation for organizing and better understanding what has been written thus far about Wilderness values. They provide an important basis for exploring the other chapters of the book. However, what we don’t know about Wilderness values will most likely be affected by the advances in factual information emanating from ecological sciences and how this information about the benefits, products, or results of Wilderness affect and inform individual and collective social values, and ultimately social choice.

The ecological values chapter (Chapter 11) provides the beginning of a foundation for assessing biophysical and ecological differences between lands inside and outside of the National Wilderness Preservation System. The chapter presents us with a few initial objective measures that allow for systematic and scientifically informed comparisons—both statistically and intertemporally. There is little doubt that much more ecological research is needed to understand and quantify the differences between ecosystems in Wilderness and the various levels of managed ecosystems outside Wilderness. Moreover, it will be essential for science to continue to inform us about the ecological consequences associated with the loss of “naturalness” from conversion of lands from unmanaged to managed uses. Maintaining ecosystems or parts thereof through Wilderness designation will afford us the living laboratories that provide society with objective measures by which to gauge the fruits as well as consequences of our increased attempts to manage nature. The idea of Wilderness as an ecological preserve serves as a hedge against unknown risks associated with ecological transformation induced by human activities. However, as with all hedges, their value is dynamic and emanates from our ability and willingness to forego one stream of benefits and their inherent risks for another.

The social science brought to bear in Chapters 7 through 10 provides us with frameworks, methods, and results by which an informed public and their elected representatives can assess the tradeoffs to current and future generations

associated with Wilderness policy and management. For example, framing and evaluating information about the benefits and costs of Wilderness (including things many would consider outside the purview of conventional economics) helps to determine how much Wilderness is the “right” amount at a given point in time. Dollar values accorded to on-site recreation and off-site passive benefits from Wilderness, as reported in Chapter 9, are a crude estimated snapshot in time. Moreover, they are unlikely to accurately reflect all of the economic values of ecological services from Wilderness discussed in Chapter 11. The answers to relative scarcity questions will depend heavily on technological change and the ability of substitutes to compensate for services—environmentally and personally—that Wilderness provides. Scientists will need not only to provide decisionmakers with information to help determine the “right amount” of Wilderness but also, as these lands are not homogeneous, the “right composition.” Indeed the economic benefits of Wilderness “services” are but one side of the equation. Information about the opportunity costs of keeping land in the Wilderness system must also be considered. For example, some lands may add more Wilderness benefits than others; however, various economic and social opportunity costs may dictate the political or bureaucratic selection of lands for designation that are less desirable strictly from the Wilderness benefits or values side.

Demands and preferences by society are likely to change over time as competing uses for land and relative scarcity of resources change. Additionally, as Chapter 8 points out, society is changing and with it, so too is the mix of preferences and ultimately benefits the American public ascribes to Wilderness. For now, the growing minority (heading someday to become the majority) and immigrant populations in the United States indicate less desire to visit Wilderness to experience the type of on-site recreational and spiritual benefits discussed in Chapters 7, 8, and 9. However, it appears that this population segment’s preferences for the off-site environmental services and benefits of Wilderness, such as provision of clean air and water, are similar to the rest of the U.S. population. This convergence of preferences may signal that the dominant source of support for Wilderness in the future across the U.S. population will be off-site rather than on-site benefits and beneficiaries Wilderness. Yet, a related and somewhat sobering piece of information comes from a recent public opinion survey, which serves as a source for much of the social analysis reported in this book. Currently, less than half of the U.S. adult public (48%) is currently aware that the National Wilderness Preservation System formally exists (Cordell, Tarrant & Green, 2003). And it is likely that even fewer are aware of the history, physical aspects, and multiple values of Wilderness discussed in this book. Considering that more than half of the public is unaware of the National Wilderness Preservation System, much less the benefits, values,

and opportunity costs thereof, a greater controversy could come as more people become aware of the system.

Ultimately, Wilderness is a social and political construct. As such, the survival of Wilderness will continue to be determined in social and political arenas, fed by information from the biological, physical, and social sciences, and from other less formal sources. Designation of federal land as Wilderness, although not guaranteed permanency, locks in the defining criteria with a level of certainty unsurpassed by private and most forms of government land ownership. However, as a recent article in the *New York Times* indicates, loss of designation is possible if the opposing values are sufficiently convincing to sway Congress (Barringer, 2005). In a recent case, pressure from interests concerned with historical area tourism on Cumberland Island National Seashore precipitated a contest between the National Historic Preservation Act and the Wilderness Act. Local tourism interests and their elected government representatives tended in this case to favor a different balance between historical preservation and Wilderness protection on the island. The result was a loss of designation for a part of the island. Hence, to the extent that the social, economic, ecological, and ethical values of Wilderness and competing land uses drive the political process and bureaucratic decisions, the allocation and distribution of Wilderness will depend on, or at least be heavily influenced by, information feeding this process, including knowledge and appreciation of the multiple values of Wilderness.

Closing Thoughts

Throughout human history and the existence of any and all living and nonliving beings, those closest to or most intertwined with a place, idea, or issue have had the greatest influence on that place, idea, or issue. However, creation of the National Wilderness Preservation System, and indeed of our entire system of public lands, has been somehow different. In creating these systems, the greatest force or influence seemed to have been a broad collective concern. Certainly the concerns of Aldo Leopold, John Muir, Arthur Carhart, Howard Zahniser, Bob Marshall, and other champions of Wilderness in earlier decades were not primarily local. Their concerns were national and they had to do with the welfare of both the land and the people. Their concerns had to do with future generations as well as with current generations.

Wilderness within the federal land system is a national entity. It is of national interest. It is owned by all citizens of the United States. Local interests without doubt are a part of that citizenry, or public, but only one part. Generally, the public can be viewed as three categories of interest—local interests of the people who live nearby, special interests (e.g., commercial, tourism, grazing,

environmental, others who may or may not live nearby) and general population-wide interests (i.e., all citizenry). Every Wilderness Bill that has added new areas or expanded existing areas has had some level of local or special-interest provision. Typically these are not the main driving interests represented in the language of Wilderness Bills or in the original Wilderness Act. The primary interest has been protecting the naturalness of the land for the broader good of all—present and future.

This book represents for the most part society-wide interests in Wilderness. The values described through the lenses of the various disciplines in Chapters 7 through 12 address citizenry values in the broadest sense. Local and special interests in public lands and Wilderness are usually well-represented at the “table” when the status and use of such lands are under consideration. Usually not at the table are the collective concerns and values of the Nation’s general public. This is not said out of any disrespect for local and special land interests. All of us in one way or another have our own personal local and special interests in public lands. But in all things balance is needed. We feel that by presenting what research we could find about the public values of Wilderness, we have moved one step further toward providing the decisionmakers at whatever “table” there may be, an avenue to achieve balance in hearing all the voices of interest—narrow to broad. As summarized here, the chapters of this book indicate there is a very broad array of benefits that the public gains from Wilderness. Among these benefits, some are valued more so than others. Perhaps our summaries of Wilderness values research from different disciplinary perspectives will serve to inform those charged with making decisions about those aspects and benefits of Wilderness that the general citizenry finds most alluring. As social and political pendulums swing, it will be important to keep this information fresh and visible. We or others will need to update our understanding and assessments of the multiple values of Wilderness based on new research that will surely be forthcoming in the future.

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Appendix Maps

The Multiple Values of Wilderness

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