Wilderness Stewardship Division
Wilderness Stewardship Program

National Park Service
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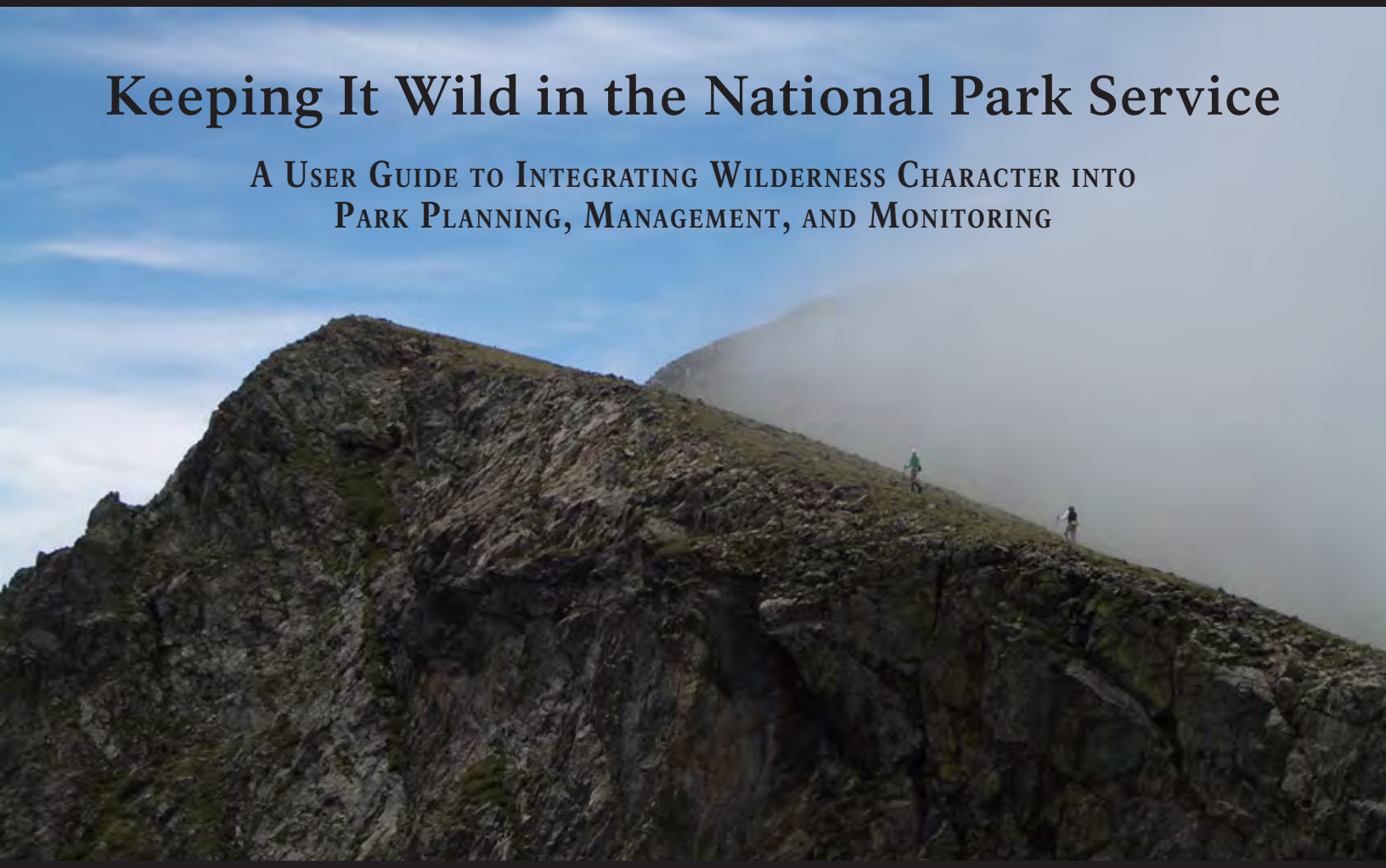
Keeping It Wild in the National Park Service

A User Guide to Integrating Wilderness Character into Park Planning, Management, and Monitoring



January 2014

Cover photos:
(Top) NPS/Suzy Stutzman, Great Sand Dunes Wilderness, Great Sand Dunes National Park
(Left) NPS/Peter Landres, recommended wilderness, Canyonlands National Park
(Right) NPS/Peter Landres, recommended wilderness, Cedar Breaks National Monument

Keeping It Wild in the National Park Service

A User Guide to Integrating Wilderness Character into Park Planning, Management, and Monitoring

Developed by the National Park Service Wilderness Character Integration Team with funding and support from the NPS Office of Park Planning and Special Studies and the Wilderness Stewardship Division

A Companion Document to the 2014
Wilderness Stewardship Plan Handbook:
Planning to Preserve Wilderness Character

WASO 909/121797; January 2014

Executive Summary

This *User Guide* was developed to help National Park Service (NPS) staff effectively and efficiently fulfill the mandate from the 1964 Wilderness Act and NPS policy to "preserve wilderness character" now and into the future. This mandate applies to all congressionally designated wilderness and other park lands that are, by policy, managed as wilderness, including eligible, potential, proposed, or recommended wilderness. This *User Guide* builds on the ideas in *Keeping It Wild: An Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System* (Landres and others 2008). The *User Guide* offers practical guidance and tools to integrate wilderness character into park planning, management, and monitoring, and is divided into six chapters and a companion document:

- *Chapter 1, Introduction to the User Guide and Wilderness Character*—Describes the context for why wilderness and wilderness character are important and the special role of the National Park Service in its preservation; defines the concept of wilderness character and the general benefits of its integration into planning, management, and monitoring.
- *Chapter 2, Building Blocks for Integrating Wilderness Character*—Describes the fundamental information needed to effectively integrate wilderness character into park planning, management, and monitoring.
- *Chapter 3, Integrating Wilderness Character into Planning*—Describes how to address wilderness character in a park foundation document and selected park planning products, which can serve as examples for other types of planning efforts.
- *Chapter 4, Integrating Wilderness Character into Management and Operations*—Describes how wilderness character relates to NPS Director's Order 41: *Wilderness Stewardship*, staff training, minimum requirements analysis, scientific activities, environmental compliance, emergency services, and natural and cultural resources.
- *Chapter 5, Monitoring Change in Wilderness Character*—Describes how to identify and prioritize measures to assess current conditions and track change in wilderness character over time in a park in a way that is nationally consistent and locally relevant.
- *Chapter 6, Emerging Tools to Integrate Wilderness Character*—Describes several new tools that are still being developed, including: wilderness character mapping, the wilderness character monitoring database, and evaluating the "extent necessary" for commercial services. Other tools will be added as they are developed.
- *Wilderness Stewardship Plan Handbook 2014*—Describes the development and components of a wilderness stewardship plan driven by the concept of wilderness character. The *Handbook* is a standalone document not included within the *User Guide*, but directly associated with it.

The *User Guide* is not prescriptive but instead offers a wide range of guidance and tools for incorporating wilderness character into park planning, management, and monitoring. Each chapter may be used in any order that makes the most sense. On page xii, the table "Where Can I Find What I Need?" enables quick reference to topics of interest. In addition, worksheets and examples are included in the *User Guide* and are also on the NPS Wilderness Character tab under the Wilderness Stewardship Program Sharepoint site at http://share.inside.nps.gov/sites/WASO/WSD/WC.

Acknowledgments

Developing *Keeping It Wild in the National Park Service: A User Guide to Integrating Wilderness Character into Park Planning, Management, and Monitoring* and the accompanying *Wilderness Stewardship Plan Handbook: Planning to Preserve Wilderness Character* would not have been possible without the vision, funding, and support of Patrick Gregerson, NPS Office of Park Planning and Special Studies, and Garry Oye, NPS Wilderness Stewardship Division.

The *User Guide* was developed by the Wilderness Character Integration Team. All the members of this Team generously gave their time and effort to openly and civilly discuss and debate, argue, consider other viewpoints, and finally reach consensus on literally hundreds of issues. All the members of this Team contributed their vision, passion, and 234 years of combined on-the-ground experience to write the *User Guide.* These team members, in alphabetical order, are Michael Bilecki, Carol Cook, Sarah Craighead, Jeremy Curtis, Tim Devine, Sandee Dingman, Michael Haynie, Chris Holbeck, Chip Jenkins, Peter Landres, Adrienne Lindholm, Melissa Memory, Christina Mills, Ray O'Neil, Ruth Scott, Miki Stuebe, Suzy Stutzman, Karen Trevino, Frank Turina, and Wade Vagias.

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The Team sincerely appreciates all the time and effort of the reviewers who provided comments on the April 2012 version of the *User Guide* and the *Handbook* that was released for comment on the Planning, Environment, and Public Comment (PEPC) planning tool: Kenneth Biddle, Susan Dolan, Michael Edwards, Mark Husbands, Michael Rees, Bruce Rogers, Danny Rosencrans, Sam Tamburo, Dave Trevino, Dave Vana-Miller. In addition to these individuals, the Intermountain Regional Wilderness Executive Committee and the Alaska Regional Cultural Resources Team provided many substantial and helpful review comments.

The Team also greatly appreciates all the comments from the staff at all the units that were formal pilot test sites for the *User Guide:* the Denver Service Center, Death Valley National Park, Fire Island National Seashore, Glacier Bay National Park and Preserve, Olympic National Park, Pinnacles National Park, Rocky Mountain National Park, Sequoia and Kings Canyon National Parks, and Mojave National Preserve.

Many of the ideas presented in the *User Guide* were informally piloted tested and honed by many parks that participated early-on in different workshops. The Team is extremely grateful to all of the superintendents and staff at these parks for their willingness to be early adopters and engage in a little experimentation to figure out what works and what doesn't. These parks, in rough chronological order, were: Haleakala National Park, Black Canyon of the Gunnison National Park, Everglades National Park, Guadalupe Mountains National Park, Buffalo National River, El Malpais National Monument, Fire Island National Seashore, Lassen Volcanic National Park, Death Valley National Park, Glacier Bay National Park and Preserve, Lake Clark National Park and Preserve, Gates of the Arctic National Park and Preserve, Sequoia and Kings Canyon National Parks, Zion National Park, Olympic National Park, North Cascades National Park, Dinosaur National Monument, Noatak National Preserve, Rocky Mountain National Park, Saguaro National Park, and Denali National Park and Preserve.

Russ Cash from Zion National Park graciously provided material for appendix 4.1 on the cabin restoration. Dave Craig was of crucial help in honing the writing of the *User Guide* and the *Handbook.* And Danette Paige was always in the background helping to keep track of budgets and travel for this large team.

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List of Acronyms

Acronym	Definition
ANILCA	Alaska National Interest Lands Conservation Act
ASMIS	Archeological Sites Management and Information System
BAER	Burned Area Emergency Response
CIR	Case Incident Report
CLI	Cultural Landscape Inventory
CUA	Commercial Use Authorization
DO	NPS Director's Orders
EA	Environmental Assessment
EIS	Environmental Impact Assessment
EPMP	Exotic Plant Management Plan
FMP	Fire Management Plan
FMSS	Facility Management Software System
FRCC	Fire Regime Condition Class
GIS	Geographic Information System
GMP	General Management Plan
I&M	Inventory and Monitoring
IMP	Integrated Pest Management
IRMA	Integrated Resource Management Applications
LCS	List of Classified Structures
LRIP	Long Range Interpretive Plan
MIST	Minimum Impact Suppression Tactics
MRA	Minimum Requirements Analysis
MRDG	Minimum Requirements Decision Guide
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	National Park Service
NRSS	Natural Resource Stewardship and Science
NWPS	National Wilderness Preservation System
QAQC	Quality Assurance and Quality Control
RM	Reference Manual
RSS	Resource Stewardship Strategy
SOP	Standard Operating Procedure
SUP	Special Use Permit
WASO	Washington Support Office
WCIT	Wilderness Character Integration Team
WFDSS	Wildland Fire Decision Support System
WFMI	Wildland Fire Management Information
WSC	Wilderness Stewardship Committee
WSP	Wilderness Stewardship Plan

Where Can I Find What I Need?

The table below provides an alphabetical list of specific needs and where to look within this *User Guide*, and the *Handbook*.

Wilderness Character and:	User Guide	Wilderness Stewardship Plan Handbook 2014
Alternatives in planning, minimum requirements analysis, and compliance	Chapter 3 Chapter 4 Chapter 5	Part I
Baseline for monitoring trend	Chapter 5	Part I
Building blocks for integrating wilderness character	Chapter 2	Introduction
Civic engagement and consultation		Part I
Climbing management	Chapter 3	Appendix 4.2
Climate change	Chapter 3	Appendix 4.1
Commercial services	Chapter 6	Appendix 4.3
Cultural resources	Chapter 1 Chapter 4	Appendix 4.1
Data collection for wilderness character monitoring	Chapter 5	Part I
Emergency services, law enforcement, and wildland fire	Chapter 4	Appendix 4.3
Facility management and maintenance	Chapter 4	Appendix 4.3
Fire management plans	Chapter 3	
Foundation document	Chapter 3	Introduction
General management plans	Chapter 3	Part I
Interpretation and education	Chapter 4	Appendix 4.3
Invasive / exotic species management plans	Chapter 3	
Long range interpretive plans	Chapter 3	
Mapping wilderness character	Chapter 6	Appendix 3.1
Measures – identifying and prioritizing for wilderness character monitoring	Chapter 5	Part I
Minimum Requirements Decision Guide (MRDG), minimum requirements analysis (MRA)	Chapter 4	Part I
National Environmental Policy Act (NEPA) compliance	Chapter 4	Part II
Park foundations	Chapter 2 Chapter 3	Introduction
Planning framework		Part I
Reporting trends in wilderness character	Chapter 5	
Resource stewardship strategy (RSS)	Chapter 3	
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Standards – identifying and selecting		Part I
Training on wilderness character	Chapter 4	
Visitor use management and capacity		Part I
Wilderness character narratives	Chapter 2	Introduction

1

Introduction

The richest values of wilderness lie not in the days of Daniel Boone, nor even in the present, but rather in the future.
—Aldo Leopold

Photo: NPS/Colin Cook, recommended wilderness, Sleeping Bear Dunes National Lakeshore

Photo: NPS/Patrick Gregerson,
Phillip Burton Wilderness, Point Reyes National Seashore

Chapter 1—Introduction to the User Guide and Wilderness Character

The 1964 Wilderness Act directs federal agencies to manage wilderness so as to preserve its wilderness character. The intent of this *User Guide* is to help ensure that wilderness character is preserved now and into the future throughout the National Park Service (NPS). The *User Guide* is a "how-to" manual that provides guidance, tools, templates, and examples to help NPS staff—from a park to the Washington Office (WASO)—integrate the concept of wilderness character into park planning, management, and monitoring. NPS Director's Order 41: Wilderness Stewardship, section 6.2, directs each wilderness park to integrate the concept of wilderness character into park planning, management, and monitoring. The *User Guide* is a component of NPS *Reference Manual* RM *41: Wilderness Stewardship*, and is designed for flexibility to use with established park procedures and protocols. The *User Guide* will improve NPS staff understanding of wilderness character, how to effectively integrate it into internal and external communication about wilderness and its stewardship, and how to make decisions that more effectively preserve wilderness character.

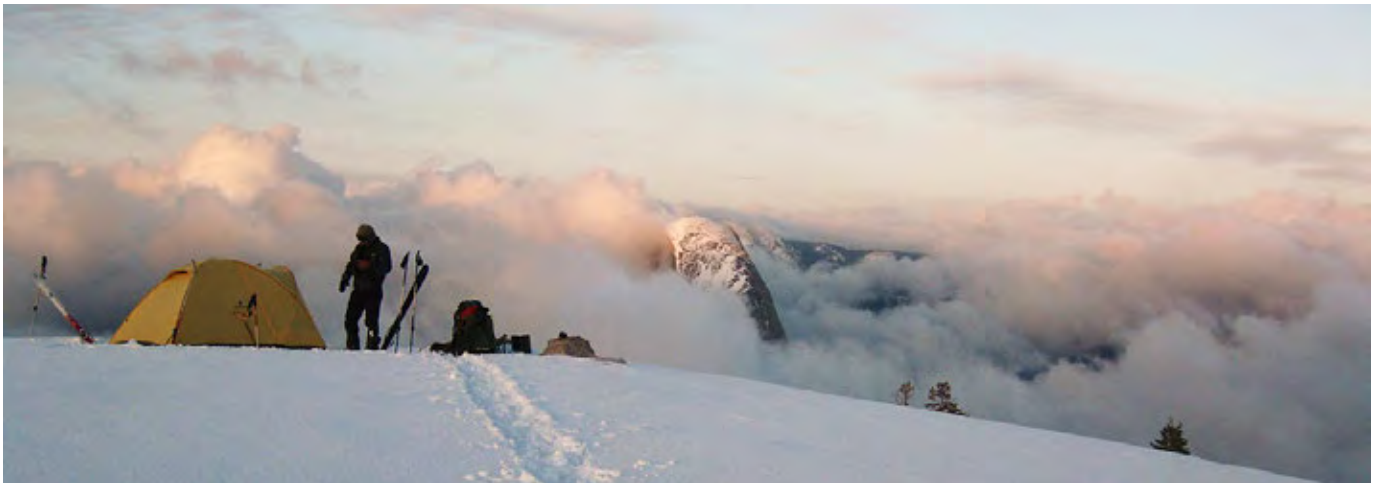
The *User Guide* was developed by the NPS Wilderness Character Integration Team to help NPS staff effectively manage designated wilderness and other park lands that are, by policy, managed as wilderness, including eligible, potential, proposed, or recommended wilderness. This team was co-chartered by the NPS Park Planning and Special Studies Division and the Wilderness Stewardship Division in 2010 to build on the ideas in *Keeping It Wild: An Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System* (Landres and others 2008). This team was chartered to develop practical guidance and tools to integrate wilderness character into park planning, management, and monitoring. Details about this team and the process used to develop this *User Guide* are in appendix 1.1.

Organization and Content

This *User Guide* is divided into six chapters, a set of appendixes, and a companion document:

- *Chapter 1—Introduction to the User Guide and Wilderness Character*—Describes the context for why wilderness and wilderness character are important and the special role of the National Park Service in its preservation; defines the concept of wilderness character and the general benefits of its integration into planning, management, and monitoring.
- *Chapter 2—Building Blocks for Integrating Wilderness Character*—Describes the fundamental information needed to effectively integrate wilderness character into park planning, management, and monitoring, and how wilderness character is built into the *Handbook.*
- *Chapter 3—Integrating Wilderness Character into Planning*—Describes how to address wilderness character in a park foundation document and selected park planning products, which can serve as examples for other types of planning efforts.
- *Chapter 4—Integrating Wilderness Character into Management and Operations*—Describes how wilderness character relates to NPS Director's Order 41: *Wilderness Stewardship*, staff training, minimum requirements analysis, scientific activities, environmental compliance, emergency services, and natural and cultural resources.
- *Chapter 5—Monitoring Change in Wilderness Character*—Describes how to identify and prioritize measures to assess current conditions and track change in wilderness character over time in a park in a way that is nationally consistent and locally relevant.
- *Chapter 6—Emerging Tools to Integrate Wilderness Character*—Describes several new tools that are still being developed, including: wilderness character mapping, the wilderness character monitoring database, and evaluating the "extent necessary" for commercial services. Other tools will be added as they are developed.
- *Wilderness Stewardship Plan Handbook 2014*—Describes the development and components of a wilderness stewardship plan driven by the concept of wilderness character. The *Handbook* is a standalone document not included within the *User Guide*, but directly associated with it. The *Handbook* can be found online on the Wilderness Character Sharepoint site at http://share.inside.nps.gov/sites/WASO/WSD/WC.

Photo: NPS/Haley Bercot, Yosemite Wilderness, Yosemite National Park



How to Use the User Guide

The *User Guide* is not prescriptive in the sense that users are provided a list of steps to follow. Instead, the *User Guide* breaks the idea of wilderness character into practical sections of planning, management, and monitoring, and then offers a set of tools and guidance for incorporating wilderness character into each section. Each chapter of the *User Guide* and any of the tools may be used in any order that makes the most sense. The table "Where Can I Find What I Need?" at the beginning of the *User Guide* enables quick access to topics of interest. In addition, many of the documents, worksheets, and examples referenced in this *User Guide* can be found on the NPS Wilderness Character tab under the Wilderness Stewardship Program Sharepoint site at http://share.inside.nps.gov/sites/WASO/WSD/WC.

The *User Guide* is intended to be a dynamic document that is refined over time as experience is gained integrating wilderness character into park planning, management, and monitoring. Furthermore, additional examples will be added to the appendices of the *User Guide* and the NPS Wilderness Character Sharepoint site to provide "one-stop-shopping" for guidance and tools on integrating wilderness character.

"The wilderness trims our bravado and puts us in our place. Particularly in traumatic times like these, nature challenges us, revitalizes us, humbles us, exhilarates us and restores our souls. It reminds us that we are part of a larger universe, stewards rather than masters of our world."

Nicholas Kristof, 2011, The New York Times

The Relevance of Wilderness Today

Wilderness is a unique, vital, and irreplaceable source for a wide range of ecological, cultural, social, economic, ethical, and other values (Cordell, Bergstrom, and Bowker 2005; Harmon and Putney 2003). With the rapid environmental and social changes our world faces, wilderness is more relevant today than in times past. For example, wilderness provides one of the best baseline reference areas for assessing and learning about the effects of climate change; one of the best places for youth to engage and connect with nature; one of the best places to protect native peoples' cultural heritage; one of the best sources of clean water and other ecosystem services; and one of the areas where we can learn how to foster greater efficiency and cooperation between government agencies, with four different federal agencies managing wilderness. With its strong philosophical foundation of humility and restraint, wilderness is especially important in this time of increasing development and change. NPS Director Jon Jarvis recently wrote "In a changing world, these unique places [national parks and wilderness] remain more valuable than ever" (Tweed 2010).

Wilderness character lies at the core of wilderness and its stewardship. Understanding the concept of wilderness character and how it can be effectively and efficiently integrated into park planning, management, and monitoring is crucial to preserving the enduring benefits and values of wilderness for future generations.

Photo: NPS/Jacob Frank, Denali Wilderness, Denali National Park & Preserve

The Special Role of the National Park Service in Preserving Wilderness Character

The National Park Service plays a vital and critical role in preserving wilderness character. First, 40% (43,890,590 acres) of the National Wilderness Preservation System (NWPS) is currently administered by the National Park Service, a greater proportion than any other federal agency. Second, about 83% of NPS acreage is either designated wilderness, or formally eligible, potential, proposed, or recommended as wilderness, a far greater proportion than in any of the other federal wilderness management agencies. Third, NPS *Management Policies 2006,* chapter 6, "Wilderness Preservation and Management," section 6.3.7, states that, "The principle of nondegradation will be applied to wilderness management, and each wilderness area's condition will be measured and assessed against its own unimpaired standard." Based on these facts, the National Park Service is clearly a leading wilderness federal agency, and preserving wilderness character is the core of this leadership. Furthermore, the guidance and tools presented in this *User Guide* align with and support new NPS efforts, such as the NPS Director's 2012 *A Call to Action* that will guide NPS goals and operations in the coming years.

Will NPS management jurisdiction automatically preserve wilderness character? Wilderness designation is a legal overlay on NPS backcountry lands, and there are important distinctions between how wilderness and backcountry are managed. To clarify long-standing confusion about the management of wilderness in contrast with backcountry, the NPS National Wilderness Steering Committee (now the Wilderness Leadership Council) issued *Guidance Paper #4: Embracing the Distinction Between Wilderness and Backcountry in the National Park System,* in 2005. This paper stated that, "While there are similarities between backcountry and wilderness, backcountry has more management discretion than the unparalleled level of legal protection of wilderness" and that wilderness has "a higher standard of protection than backcountry." This paper also stated that, "the Wilderness Act charges agencies managing wilderness, in this case the National Park Service, to preserve wilderness character." In other words, there are important differences in how wilderness and backcountry lands are managed, and wilderness requires a higher management standard to preserve its wilderness character. One of the purposes of this *User Guide* is to provide the understanding and tools to manage wilderness to this higher standard.

The Cost to Preserve Wilderness Character

Will it cost more to fulfill this NPS leadership role to preserve wilderness character? The guidance and tools in this *User Guide* need not require additional cost. They were deliberately designed to integrate wilderness character concepts into established procedures, guidelines, tools, and protocols. They do not suggest that parks invent new ways to write planning documents, develop new protocols for collecting monitoring data, or develop new cumbersome review processes for permitting activities in wilderness. Rather, the *User Guide* was developed to help staff do their very best to preserve wilderness character through efficient use of effort, time, and money. Preserving wilderness character simply becomes part of the fabric of a wilderness park's daily operations.

Why Preserve Wilderness Character

The 1964 Wilderness Act established the NWPS "for the protection of these areas, the preservation of their wilderness character" (Section 2(a)). Congress (United States Congress 1983) and legal scholars (McCloskey 1999; Rohlf and Honnold 1988) confirmed that the primary affirmative legal mandate is to preserve the wilderness character of all areas designated as wilderness. Zahniser (1962), principal author of the Wilderness Act, emphasized this when he wrote, "The purpose of the Wilderness Act is to preserve the wilderness character of the areas to be included in the wilderness system, not to establish any particular use." Likewise, NPS *Management Policies 2006,* chapter 6, "Wilderness Preservation and Management," states that, "The purpose of wilderness in the national parks includes the preservation of wilderness character."

Despite a clear legal mandate and NPS policy, in the nearly five decades since passage of the Wilderness Act there has been no formal definition of wilderness character (Scott 2002), and no guidelines to help agency staff integrate wilderness character into park stewardship or assess how wilderness character is changing over time. Compounding these deficiencies is the complexity of wilderness itself, with its diversity of associated values and meanings often leading to misunderstandings about wilderness stewardship, and miscommunication among NPS staff and between the National Park Service and the public. This lack of definition and consistent guidelines for improving on-the-ground stewardship are contributing to legal challenges over the management of wilderness (Appel 2010).

Photo: NPS/Mark Kinzer, Majory Stoneman Douglas Wilderness, Everglades National Park

Defining Wilderness Character

The interagency publication *Keeping It Wild* defined wilderness character as "the combination of biophysical, experiential, and symbolic ideals that distinguishes wilderness from other lands." Furthermore, this publication identified distinct and necessary "qualities" of wilderness character. These qualities are tangible, link conditions in the wilderness and its management directly to the statutory language of the Wilderness Act, and apply to every wilderness regardless of size, location, agency administration, or other attribute. Building on *Keeping It Wild* and several years of agency experience applying these ideas, this *User Guide* is based on the use of five qualities of wilderness character, all equally important in understanding and describing wilderness character and all based on the Wilderness Act's section 2(c), "Definition of Wilderness":

- *Natural*—Wilderness ecological systems are substantially free from the *effects* of modern civilization. This quality is preserved or improved, for example, by controlling or removing nonindigenous species or restoring ecological processes. This quality is degraded by the loss of indigenous species, occurrence of nonindigenous species, alteration of ecological processes such as water flow or fire regimes, effects of climate change, and many others.
- *Untrammeled*—Wilderness is essentially unhindered and free from the intentional actions of modern human control or manipulation. This quality is influenced by any activity or action that intentionally controls or manipulates the components or processes of ecological systems inside wilderness. It is supported or preserved when such management actions are not taken. It is degraded when such management actions are taken, even when these actions are intended to protect resources, such as spraying herbicides to eradicate or control nonindigenous species, or reducing fuels accumulated from decades of fire exclusion.

Photo: NPS/Peter Landres, Death Valley Wilderness, Death Valley National Park

- *Solitude or a Primitive and Unconfined Type of Recreation*—Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation. This quality is primarily about the opportunity for people to experience wilderness, and is influenced by settings that affect these opportunities. This quality is preserved or improved by management actions that reduce visitor encounters, signs of modern civilization inside wilderness, agency-provided recreation facilities, and management restrictions on visitor behavior. In contrast, this quality is degraded by management actions that increase these.
- *Undeveloped*—Wilderness retains its primeval character and influence, and is essentially without permanent improvement or modern human occupation. This quality is influenced by what are commonly called the "section 4(c) prohibited uses" or "nonconforming" uses, which are the presence of modern structures, installations, habitations, and the use of motor vehicles, motorized equipment, or mechanical transport. This quality is preserved by the absence of structures and installations, and refraining from these prohibited uses. It is degraded by the presence of structures and by prohibited uses, whether by the agency for administrative purposes, by others authorized by the agency, or unauthorized uses. (Note that structures and installations related to visitor use and recreation are included in the solitude quality rather than the undeveloped quality.)
- *Other Features of Value*—Wilderness preserves other tangible features that are of scientific, educational, scenic, or historical value. This quality is based on the last clause of section 2(c) of the Wilderness Act which states that a wilderness "may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value." This quality captures important elements of the wilderness that may not be covered in the other four qualities, such as cultural or paleontological resources. This quality is preserved or improved when these resources are preserved and their loss or impacts to such features degrade this quality of wilderness character.

Photo: NPS/Al Smith, Gates of the Arctic Wilderness, Gates of The Arctic National Park & Preserve

Together, these five qualities comprise the tangible or physical setting of the wilderness and its wilderness character. The first four qualities (natural, untrammeled, solitude or primitive and unconfined recreation, undeveloped) are only summarized above and described in detail in the *Keeping It Wild* publication. The other features of value quality is different from the others in two ways. First, from the wording in the Wilderness Act this quality may or may not be present in a wilderness, whereas the other four qualities apply to every single wilderness. When present, this quality is of equal stature and importance to understanding wilderness character as all the other qualities. Second, from the wording in the Wilderness Act this quality focuses on "features" and features typically occur in specific locations, whereas the other four qualities apply throughout an entire wilderness. Such features could include cultural resources, paleontological resources, or any features not covered under the other four qualities that have scientific, educational, scenic, or historical value. In some cases it may be difficult to assign a feature to one quality or another. For example, National Natural Landmark sites may be assigned to either the natural quality or the other features of value quality and park staffs will need to determine which is most appropriate for the park. Features mentioned in park or wilderness enabling legislation, such as the historic sites in Death Valley Wilderness and the volcanoes in Katmai Wilderness, would be likely candidates for the other features of value quality. While many different types of features could be included, the intent is to include those that significantly contribute to the setting of the wilderness and understanding its wilderness character.

Photo: NPS/Lauren LaRocca, Glacier Bay Wilderness, Glacier Bay National Park & Preserve

These five qualities interact in direct and subtle ways that may complement or conflict with the others. For example, allowing a natural fire ignition to burn preserves both the natural and untrammeled qualities of a wilderness. In contrast, suppressing a natural ignition degrades the untrammeled quality, the use of helicopters or other motorized equipment degrades the undeveloped and solitude qualities, and the long-term effects of suppression may degrade the natural quality. A decision to protect or improve one quality of wilderness character may directly degrade another quality. For example, designated campsites may be necessary to protect solitude or prevent vegetation trampling, but degrades other elements of the solitude quality by requiring visitors to camp only in designated sites. In all cases, using the framework of wilderness character does not drive a particular decision or management action—it is a tool to help staff be comprehensive, systematic, and consistent in evaluating potential benefits and impacts to make an informed and transparent decision.

Like a violin composed of separate pieces that interact to form something greater than the sum of its parts (music and the feeling this music evokes), these five qualities together form a complex set of relationships between the land, its stewardship, its users, and the values and benefits that society derives from wilderness. These five qualities form both the physical and stewardship setting of a wilderness. This setting in turn provides tangible scientific, cultural, educational, and economic values to society (Cordell, Bergstrom, and Bowker 2005). For example, this setting allows the scientific value of wilderness as a reference baseline to assess and understand the effects of climate change. The setting of cultural resources in a wilderness provides a connection to the place by the artifact and relics that a visitor can "discover," insight into the history of the area, and enhance connection to past generations and ancestors. Spiritual (Ashley 2007; Moore 2007), ethical (Cafaro 2001), and other intangible values and benefits to society also derive from this wilderness setting.

Photo: NPS/Mike Bilecki, Otis Pike Fire Island High Dune Wilderness, Fire Island National Seashore

Terminology of Wilderness Character

One of the intended outcomes of this *User Guide* is for park staff nationwide to use consistent nomenclature when integrating wilderness character. Because the explicit description of wilderness character is less than a decade old, it is still a relatively new concept but there has been sufficient time for several different terms and phrases to be used by different people, in turn resulting in confusion among different users, agencies, and with the public. Based on law and policy, table 1 provides a guide to the terminology that is used and not used in the *User Guide*.

Table 1. Terminology of wilderness character that is used and not used in the *User Guide*.

Term or Phrase	Used?	Definition and Comments
Wilderness character	Yes	This phrase comes from the 1964 Wilderness Act and is defined in *Keeping It Wild* as "the combination of biophysical, experiential, and symbolic ideals that distinguishes wilderness from other lands."
Wild character	No	A phrase sometimes used as shorthand for "wilderness character" but the term "wild" is used in many different ways so the meaning of this phrase is uncertain and should not be used.
Wilderness qualities	Yes	Refers to one or more of the qualities of wilderness character. Qualities are major attributes of all wildernesses as described in section 2(c) of the 1964 Wilderness Act. Qualities are further described in *Keeping It Wild* in terms that are tangible, link conditions in the wilderness and its management directly to the statutory language of the Wilderness Act, and apply to every wilderness regardless of size, location, agency administration, or other attribute.
Wilderness characters	No	A phrase sometimes used for "wilderness qualities." This phrase typically causes confusion because it's not clear if it is being used to describe "wilderness character" or the "wilderness qualities." This phrase should not be used.
Wilderness characteristics	No	Comes from Bureau of Land Management law and policy direction for managing wilderness study areas. This phrase is sometimes mistakenly used for "wilderness qualities" and should be used only when referring to Bureau of Land Management lands.
Qualities	Yes	Refers to the qualities of wilderness character.
Characters	No	Shorthand reference to "wilderness characters" and should not be used.
Wilderness resources	Yes	A general phrase referring to any of the particular resources (natural or cultural) inside a wilderness.
Wilderness values	Yes	A general phrase referring to any of the meanings, benefits, or values people or society derive from wilderness.

Indicators Associated with Each Quality of Wilderness Character

Each quality of wilderness character has associated indicators that describe different major elements or components of that quality. Indicators for the qualities that apply nationwide and throughout a wilderness are derived from *Keeping It Wild;* these indicators are intended to apply to every wilderness (table 2). In contrast, indicators for the other features of value quality must be identified locally because they are unique to each park, although an indicator for cultural resources is provided in this table because these occur in every NPS wilderness.

Table 2. The qualities of wilderness character and their associated indicators.

Quality	Indicator
Natural	Plant and animal species and communities
	Physical resources
	Biophysical processes
Untrammeled	Actions authorized by the federal land manager that manipulate the biophysical environment
	Actions not authorized by the federal land manager that manipulate the biophysical environment
Solitude or primitive and unconfined recreation	Remoteness from sights and sounds of people inside the wilderness
	Remoteness from occupied and modified areas outside the wilderness
	Facilities that decrease self-reliant recreation
	Management restrictions on visitor behavior
Undeveloped	Nonrecreational structures, installations, and developments
	Inholdings
	Use of motor vehicles, motorized equipment, or mechanical transport
Other features of value	Deterioration or loss of cultural resources integral to wilderness character
	Other locally identified indicators

Photo: NPS/James Tricker, Buffalo National River Wilderness, Buffalo National River

Benefits of Defining and Using Wilderness Character

One of the primary benefits of defining wilderness character is that it helps focus discussion of wilderness from diverse personal and cultural meanings to a common understanding based on the language of the Wilderness Act. Defining wilderness character provides a standard nomenclature based on the Wilderness Act to help staff and the public understand wilderness and assess stewardship tradeoffs. At the national level, the qualities of wilderness character provide a foundation and framework for consistent stewardship across all wilderness areas. At the local level, understanding these qualities improves internal and external communication and helps staff make more informed decisions:

- *Better communication among park staff*—Internally, staff will realize that wilderness character is the responsibility of all divisions and programs within a park by understanding how their work directly contributes to wilderness stewardship. For example, a wildlife biologist would understand how data on mammal populations directly contributes to tracking change in the natural quality of wilderness character and how collaring animals degrades the untrammeled quality. Trail crews would understand the reasons why nonmotorized equipment and nonmechanical transport preserve the undeveloped quality of wilderness character even though their use may not be as convenient.
- *Better communication with the public*—Externally, standardized nomenclature provides a clearer basis for discussions with the public about a park's wilderness and its stewardship. Wilderness issues are often value-laden and public discussions can quickly bog down in words and ideas that have different meanings to different people. The qualities of wilderness character offer a tangible and consistent framework for park staff to discuss wilderness and its stewardship with the public, in turn fostering better communication and dialogue. Using the concept of wilderness character can also help interpretive and educational staff design programs to help the public better understand the values and meanings of wilderness and its stewardship.
- *Better decisions*—Understanding wilderness character can help all staff see how various management pieces fit together to affect wilderness, and how individual decisions and actions work toward degrading or preserving wilderness character. Discussing how proposed actions may affect the five qualities helps staff evaluate the impacts of potential decisions more comprehensively, systematically, and efficiently. For example, a proposal to install a toilet in a heavily used area to reduce resource damage can be evaluated in terms of the positive and negative effects of the toilet on the natural, undeveloped, and solitude or primitive and unconfined qualities. Using these five qualities of wilderness character, cumulative impacts can also be evaluated in a consistent and systematic manner to aid decision making. Such transparency and accountability may also improve the likelihood that decisions will stand the test of a court challenge.

Photo: NPS/James Tricker, Gates of the Arctic Wilderness, Gates of the Arctic National Park & Preserve

In addition to improving communication and decision making, the concept of wilderness character benefits park wilderness stewardship by:

- *Clarifying how stewardship decisions and actions influence trends in wilderness character*—There are tradeoffs in almost all aspects of wilderness stewardship, and evaluating what is gained and what is lost in terms of the five qualities of wilderness character helps staff determine priorities for what should be done, and where.
- *Providing a set of key wilderness stewardship goals*—Wilderness stewardship has traditionally been fraught with uncertainty and personal opinions about what should or should not be done. The five qualities of wilderness character help link the legislative direction of the Wilderness Act and other enabling legislation to management action, or lack thereof.
- *Providing a comprehensive and systematic approach to evaluating and describing impacts in project planning and compliance documents*—A standardized approach improves accountability, transparency, and defensibility.
- *Creating a legacy of staff experience and knowledge about a wilderness using the framework of wilderness character*—Such a legacy may be the most meaningful way to document and understand the changes in wilderness character that are occurring in a wilderness and its stewardship over time. This legacy is especially important with staff turnover and the increasing pace of environmental and social change.

How Wilderness Character Intersects with Other Laws and Allowed Uses

The *User Guide* is not intended to reconcile nuances of policy and law in individual wilderness units, and it is not meant to be a manual for addressing specific provisions in a wilderness unit's enabling legislation. Instead, the *User Guide* is intended to help park staff look at wilderness stewardship through the larger concept of wilderness character to help them make more informed decisions in implementing all laws and policy; park staff may discover that even allowable and legal uses may have negative impacts on wilderness character. For example, provisions in the Alaska National Interest Lands Conservation Act (ANILCA) allow use of snowmobiles, motorboats, and other means of surface transportation traditionally employed by local residents for subsistence purposes in Alaska's wilderness units. These uses are legal but still degrade the undeveloped quality of wilderness character. Acknowledging impacts to wilderness character even from legally allowed activities is simply information and is not a determination about whether the activity is acceptable or not.

For example, a wilderness manager in Alaska may receive a request by a member of the public to construct a new tent platform in wilderness to support hunting activities. New temporary facilities related to the taking of fish and wildlife is allowed under ANILCA stipulations, though a request may be denied if the new facility would be detrimental to wilderness character. Implementing tools in the *User Guide* can help the manager make a more informed decision about such requests. A wilderness character narrative (chapter 2) helps the manager define the elements of wilderness character that are unique and special in that particular park unit. Incorporating wilderness character into park planning (chapter 3) helps the manager make decisions about siting new facilities and the level of development that is appropriate in certain parts of the park, and how to manage this in a way that minimizes impacts to wilderness character (chapter 4). Tracking change in wilderness character and establishing a baseline (chapter 5) will help the manager understand the degree to which wilderness character is already being impacted and help determine if the new tent platform would be detrimental to wilderness character or not. In fact, documenting all installations and facilities in a wilderness unit is the only way to know whether wilderness stewardship is improving, or degrading, the undeveloped quality of wilderness character. Data collected for tracking change in wilderness character may help the manager direct the permit holder to the best place to locate the new tent platform and may help the manager develop appropriate use stipulations that will help preserve wilderness character.

2

Building Blocks for Integrating Wilderness Character

Thousands of tired, nerve-shaken, over-civilized people are beginning to find out that going to the mountatins is going home; that wilderness is a necessity; that mountain parks and reservations are useful not only as fountains of timber and irrigating rivers, but as fountains of life.
—John Muir

Photo: NPS/Jane Cipra, Death Valley Wilderness, Death Valley National Park

Photo: NPS/Haley Bercot, Yosemite Wilderness, Yosemite National Park

Chapter 2—Building Blocks for Integrating Wilderness Character

Building blocks provide the foundation for effectively integrating wilderness character into planning, management, and monitoring. They break down the components of outstanding wilderness stewardship into achievable and meaningful steps. Building blocks establish a shared understanding of what is most important about each wilderness area and articulate those values for inclusion in a wilderness character framework. Each park containing wilderness is probably at a different stage in developing wilderness-related plans, monitoring programs, and operational guidelines. This approach provides maximum flexibility for staff to begin building this foundation in the order that works best for them, resulting in greater efficiency and effectiveness of wilderness stewardship. The building blocks and their content are illustrated below:

Figure 1. Building blocks for integrating wilderness character into wilderness stewardship.

Wilderness Basics

- Gather Background Wilderness Information
- Develop a Wilderness Character Narrative
- Identify Issues for Future Wilderness Stewardship Planning

Wilderness Character Assessment

- Select Measures
- Collect Baseline Data
- Conduct Monitoring

Integrate Wilderness Character into Management and Operations

- Use Minimum Requirements Analysis
- Consider Wilderness Character in Operations

Photo: NPS/ Peter Landres, Gates of the Arctic Wilderness, Gates of the Arctic National Park & Preserve

Building Blocks for Wilderness Stewardship:

- Are key elements of wilderness stewardship and planning
- Give parks the flexibility to begin to integrate wilderness character where it makes the most sense to them

Wilderness Basics

The product of this building block is a concise document summarizing fundamental information about a wilderness, including maps, which can be shared with staff and the public. This document can be adapted and incorporated into sections of a park foundation document, and can inform other types of plans. It can also provide the substance of the first chapter of a wilderness stewardship plan.

This building block groups together three elements that serve both wilderness stewardship and development of a park foundation document: (1) background wilderness information; (2) wilderness character narrative; and (3) issue identification for future wilderness stewardship planning. Over the next several years, the NPS Park Planning Program will be implementing an initiative to produce foundation documents for all parks by the year 2016. If a park with wilderness resources is developing a foundation document, the elements in this building block should be developed concurrently with the document, resulting in greater efficiency and better products. Refer to chapter 3 of the *User Guide* for more information regarding the connection of wilderness character and park foundation documents.

Gather Background Wilderness Information

It is critical to document a common understanding of park wilderness status and boundaries. For many parks, this information is scattered among divisions or between regional and the Washington offices. It is important to locate basic information, summarize its content, and reference where the information resides. For designated wilderness, there should be an official boundary map and legal description on file at the park and with the Washington Wilderness Stewardship Division Office. The wilderness boundary should be an integral part of the park's geographic information system (GIS) database. Parks with designated wilderness may also have eligible, proposed, recommended, or potential wilderness which should be monitored for any nonconforming uses or updated information. The legislative history of a wilderness is also important to locate and summarize, and includes congressional testimony, reports, bills, and laws (see the Law and Policy section at http://www.wilderness.net/index.cfm?fuse=NWPS&sec=legislativeHistory for the legislative history of all designated wildernesses).

Photo: NPS/John Marino, Rocky Mountain National Park Wilderness, Rocky Mountain National Park

Many parks have areas that have not been formally designated by Congress as wilderness, but these areas have been through some level of study or recommendation for wilderness. Per NPS policy, these lands are also managed as wilderness. Each park with undesignated wilderness should also research, document, and summarize basic wilderness information. For these areas and for eligible, potential, proposed, or recommended wilderness, the park should use the most "official" boundary for planning and management. This boundary is the one that is farthest along in the study process receiving appropriate public involvement (see NPS *Management Policies 2006*, chapter 6.2, "Identification and Designation of the Wilderness Resource"). For example, a wilderness study with public involvement was completed for Grand Teton National Park in the mid 1970s, and the last formal recommendation that went to Congress was May 11, 1978. Although staff has identified more recent possible changes to that map, there has not been any further public involvement (compliant with the National Environmental Policy Act) on wilderness boundaries since 1978. Hence, the official map for recommended wilderness for this park remains the 1978 version that went to Congress. The wilderness status and boundary map should be current, accurate, and an integral layer of the park's GIS database.

Statements of park purpose, significance, and fundamental resources and values should reflect the wilderness character of park wilderness. A park probably has existing purpose and significance statements in a general management plan or a statement for management, and may have identified fundamental resources and values. Park staff may be updating statements of purpose, significance, and fundamental resources and values in a new park foundation document. Regardless, these foundational elements are common to many types of plans, and should adequately address the wilderness character of a park. Refer to chapter 3 for more information regarding these foundational elements in plans.

It is also important to identify the relationship of wilderness stewardship to other plans (existing and future) and to such efforts as programmatic agreements with the state historic preservation officer for the preservation, maintenance, or treatment of cultural resources in accordance with section 106 of the National Historic Preservation Act, and similar efforts. For example, a recently completed general management plan may set general direction for the wilderness stewardship plan, or the wilderness stewardship plan may precede and inform a future update to the fire management plan.

Background Wilderness Information

- Park-specific wilderness legislation and legislative history, or if not designated, history of wilderness study and current status.
- An accurate GIS map of the wilderness.
- Park purpose, significance, and fundamental resources and values should embrace the wilderness character of this wilderness in the park foundation document.
- The relationship of wilderness planning to the general management plan and other plans.

Photo: NPS, recommended wilderness, Grand Teton National Park

Wilderness Character Narrative

The narrative is a qualitative description of what is unique and special about the wilderness, organized by each quality of wilderness character.

Develop a Wilderness Character Narrative

A wilderness character narrative describes what is unique and special about a specific wilderness, organized by each of the qualities of wilderness character. This narrative is a positive, affirming description of a wilderness now and into the foreseeable future, and includes a description of major influences on wilderness character. A narrative may be used in several ways:

- By providing considerable detail, it complements the park foundation document and serves as a framework for a wilderness stewardship plan.
- By addressing multiple resources (including natural, cultural, and visitor experience), it fosters integration among different staff and program areas that need to function together to effectively preserve wilderness character.
- By clarifying what the key elements are of wilderness character and the primary forces that affect these, a narrative provides a solid basis for identifying appropriate measures to assess trends in wilderness character.
- By explaining what is unique and special about a wilderness, it informs interpretive themes and serves as a starting point for discussion with the public about the current and future state of a wilderness.
- By making the concept of wilderness character tangible and specific, it provides a robust way to frame and articulate management decisions, including decisions about minimum requirements, scientific activities, and environmental impact analyses.

Photo: NPS/Matt Helmeid, recommended wilderness, Grand Canyon National Park

Wilderness character narratives should be developed by an interdisciplinary group representing a broad cross section of park staff and when relevant, can include other stakeholders and tribes during the process or in review. These narratives can be developed in several ways. The optimal method is for a lead to conduct a wilderness character workshop with an identified group (appendix 2.1). Another method is to conduct a remote facilitated process (appendix 2.2). A third method is to conduct individual interviews in person with each identified group (appendix 2.3). More information about developing a wilderness character narrative through interviews or in a workshop setting, including worksheets and examples of wilderness character narratives, are contained in appendices 2.1–2.5.

Wilderness character narratives have a close relationship to park foundation documents. A wilderness character narrative can be informed by, or if developed first, can inform park purpose and significance statements, and also help identify fundamental resources, values, and interpretive themes for a park foundation document and why these are so important to the park. For a park with wilderness resources developing a foundation document, it is highly recommended to develop a wilderness character narrative three to six months ahead of the foundation workshop. This could be done with a separate wilderness character narrative workshop at the park or a remotely facilitated wilderness character narrative process (as described in appendices 2.1–2.2). Pilot testing has demonstrated that park foundations informed by wilderness character narratives had more precise and relevant representation of wilderness in their foundations.

The wilderness character narrative can also be the place to describe the intangible aspects of wilderness character that are important to a wilderness. These intangible aspects, such as tribal ethnographic resources or the spiritual values of a particular location within the wilderness, are difficult if not impossible to address in park planning and management processes. Yet, these still may be important for understanding the wilderness character of the area. Describing these intangible resources in the wilderness character narrative allows their importance to be acknowledged and respected.

Identify Issues for Future Wilderness Stewardship Planning

The last piece of this building block is to identify issues for future wilderness stewardship planning efforts. Identify issues using wilderness character narratives and discussions with staff and other relevant stakeholders. This effort is similar to internal scoping for a plan, and will help inform the type and level of additional planning that may be needed for adequate wilderness stewardship. The effort may also identify areas in which more data are required to competently develop specific planning alternatives. For example, the team may identify that a key issue for the plan will be addressing high levels of day-use visitation, initiating data collection on current day use levels.

Identify Issues for Future Wilderness Stewardship Planning

Preliminary identification of wilderness issues informs the scope of additional data and planning needs.

Wilderness Character Assessment

- Select measures.
- Collect baseline data.
- Conduct monitoring.

Wilderness Character Assessment

The key to effective wilderness stewardship, as envisioned and embraced in *Keeping It Wild*, is tracking change in wilderness character over time. Wilderness character assessment involves selecting relevant measures, establishing baseline conditions, entering baseline information into a wilderness character database, and regularly monitoring each measure at specified intervals to identify trends. Every park with wilderness resources is encouraged to do this as soon as possible to identify any immediate concerns in wilderness, and to inform managers and the public about the current status of wilderness character. Selecting measures and establishing a baseline can be done ahead of a more complete planning process, and later adopted into a plan and adjusted if necessary. Refer to chapter 5 for detailed discussion on this topic. The basic steps are to:

- *Select measures*—At least one measure is selected for each indicator of wilderness quality to describe its current condition. Some measures may be evaluated based on data that are already being collected, although new measures are encouraged if existing ones are not adequate or appropriate. Measures may be revisited and revised during a planning effort.
- *Collect baseline data*—Once collected, data should be entered into the wilderness character database, which will allow trends in wilderness character to be tracked over time. For more information on this database, refer to chapter 6.
- *Conduct monitoring*—Data for each selected measure should be collected at least once every five years for reporting at park, regional, and national levels.

Integrate Wilderness Character into Management and Operations

- Establish park procedures for minimum requirements analysis.
- Establish park guidance for using wilderness character in routine decisions and actions, including issuing permits for special uses, commercial services, and scientific activities.
- Create a park interdisciplinary wilderness committee.

Integrate Wilderness Character into Management and Operations

Park operations can have many diverse effects on wilderness character, and management actions should be based on careful planning. NPS policy mandates a minimum requirements analysis (MRA) of all activities occurring in any category of wilderness that have the potential to degrade wilderness character. Each park should have an explicitly documented MRA process that first determines if an action is necessary in wilderness, and if so, the appropriate minimum activity to accomplish the action. Historically, this minimum requirement analysis was triggered by any of the section 4(c) prohibited uses; however, this analysis should be used for all proposed actions in wilderness per NPS *Management Policies 2006*, section 6.3.5: "All management decisions affecting wilderness must be consistent with the minimum requirement concept."

Other ways to guide wilderness management may include adopting a framework for evaluating scientific activities, developing standard operating procedures for administrative activities in wilderness (for example, search and rescue and trail maintenance), establishing an interdisciplinary wilderness committee, issuing permits for special park uses and/or commercial services, and other actions specific to the park. See chapter 4 for greater detail on all of these topics.

Photo: NPS/Garry Oye, Gates of the Arctic Wilderness, Gates of the Arctic National Park & Preserve

The Next Step: Wilderness Stewardship Planning

Park planning focuses on achieving a desired condition, rather than on merely reacting to current conditions. By policy, all parks with wilderness resources should have a wilderness stewardship plan that guides wilderness character preservation now and into the future. A wilderness stewardship plan will incorporate most or all of the three building blocks above. Developing a plan also requires engaging the public, setting goals, developing strategies, analyzing alternative courses of action, and making decisions. A participatory approach to planning makes wilderness stewardship more effective and accountable. The resulting plan provides a foundation for stewardship based on the preservation of the wilderness character of each unique wilderness. Guidance for completing a wilderness stewardship plan can be found in the the *Handbook* that is available on the NPS Wilderness Character Sharepoint site http://share.inside.nps.gov/sites/WASO/WSD/WC.

Photo: NPS/Peter Landres, Death Valley Wilderness, Death Valley National Park

Where Should a Park Start?

There are many avenues for developing these building blocks, and park staff should determine the path that best fits with their interests, talents, ongoing activities, and future priorities. Here are a few things to consider:

- Some parks may need to establish stronger internal wilderness awareness and commitment to wilderness stewardship. In such cases, a positive first step is to revitalize (or establish) a park wilderness committee with leadership from the superintendent and wilderness coordinator. An effective wilderness committee requires membership that represents all divisions of the park, a clearly defined role for the wilderness coordinator, a mission and charter or agreement identifying responsibilities, and a process for decision making. The committee should include representatives from natural and cultural resource management, visitor and resource protection, fire management, facilities, interpretation and education, planning, and other perspectives. The committee should have a solid understanding of the concept of wilderness character and chart a path to completing the building blocks. The wilderness committee would probably be responsible for developing and implementing standard operating procedures (SOP) and other internal guidance developed for the "Integrate Wilderness Character into Management and Operations" building block.
- Training may be very helpful to park staff. Options include general wilderness training (e.g., unit courses, regional courses, on-line modules) and more specific training in wilderness character planning, management, and monitoring (e.g., new on-line modules, future webinars). The primary source of wilderness training is the Arthur Carhart National Wilderness Training Center. Their current offerings are at http://www.wilderness.net/index.cfm?fuse=NWPS&sec=training. Additional information about wilderness character training can be found in chapter 4.
- If a park cannot begin all building blocks concurrently, one place to start would be selecting measures and establishing a baseline under the "Wilderness Character Assessment" block. While gathering basic wilderness information is important, it is most critical for parks to begin monitoring trends in wilderness character to more quickly identify and mitigate adverse impacts. Other agencies that manage wilderness are also emphasizing the selection of measures and establishing a baseline to track future change. A park may have an opportunity to accomplish this work together with neighboring agencies (see "Wilderness Fellows" below). Though measures selected without the benefit of fully reviewing legislative history or developing a wilderness character narrative may not fully capture wilderness character, an initial baseline begins the process of identifying indicators and measures most relevant to current park management. Measures are strongest when tied to planning, and can be adjusted as more data about the quality of wilderness character is collected or when staff identifies new desired conditions.

Photo: NPS, Congaree Swamp National Monument Wilderness, Congaree National Park

- Wilderness Fellows are a great catalyst for assisting a park in adopting a wilderness character framework. This program, which began in 2010, places highly qualified and motivated students in parks to accomplish many of the building block tasks. Exemplary wilderness character assessments for Guadalupe Mountains, Everglades, Buffalo National River, and Lassen Volcanic were led by Wilderness Fellows. The U.S. Fish and Wildlife Service is currently using Wilderness Fellow for baseline wilderness character assessments. There is no single ongoing funding source, but interested parks can work with WASO, regions, cooperative ecosystem study units, and other agencies to replicate this model.
- Some parks may be ready and willing to begin a wilderness stewardship plan. In such a case, the building blocks would be folded into the wilderness stewardship planning effort. Refer to the *Handbook* that is available on the NPS Wilderness Character Sharepoint site at http://share.inside.nps.gov/sites/WASO/WSD/WC. A park-specific wilderness character training session combined with some preliminary internal scoping for the plan is a great way to initiate a wilderness stewardship planning effort.
- There are regional wilderness coordinators and planners at the Denver Service Center who are knowledgeable about the building blocks and wilderness stewardship plans, and can provide advice, facilitate park staff workshops, and help in other ways particularly if a park is about to start work on a wilderness stewardship plan.

Examples of Completed Building Blocks and Wilderness Stewardship Plans

Several parks have completed initial building blocks for wilderness stewardship, but have yet to develop a plan. (Note that while the Wilderness Character Integration Team was developing and testing these ideas, it used other names for the building blocks, including core elements and wilderness foundations.) Examples of building blocks from Guadalupe Mountains, Everglades, Buffalo National River, and Lassen Volcanic are all available on the NPS Wilderness Character Sharepoint site at http://share.inside.nps.gov/sites/WASO/WSD/WC. Examples of completed wilderness stewardship plans that have incorporated wilderness character are listed in appendix 2.6

Photo: NPS, Lassen Volcanic Wilderness,
Lassen Volcanic National Park

3

Integrating Wilderness Character into Planning

"If future generations are to remember us with gratitude rather than contempt, we must leave them something more than the miracles of technology. We must leave them a glimpse of the world as it was in the beginning, not just after we got through with it." –President Lyndon B. Johnson

Photo:
NPS/Alicia Burtner,
recommended wilderness,
Grand Canyon National Park

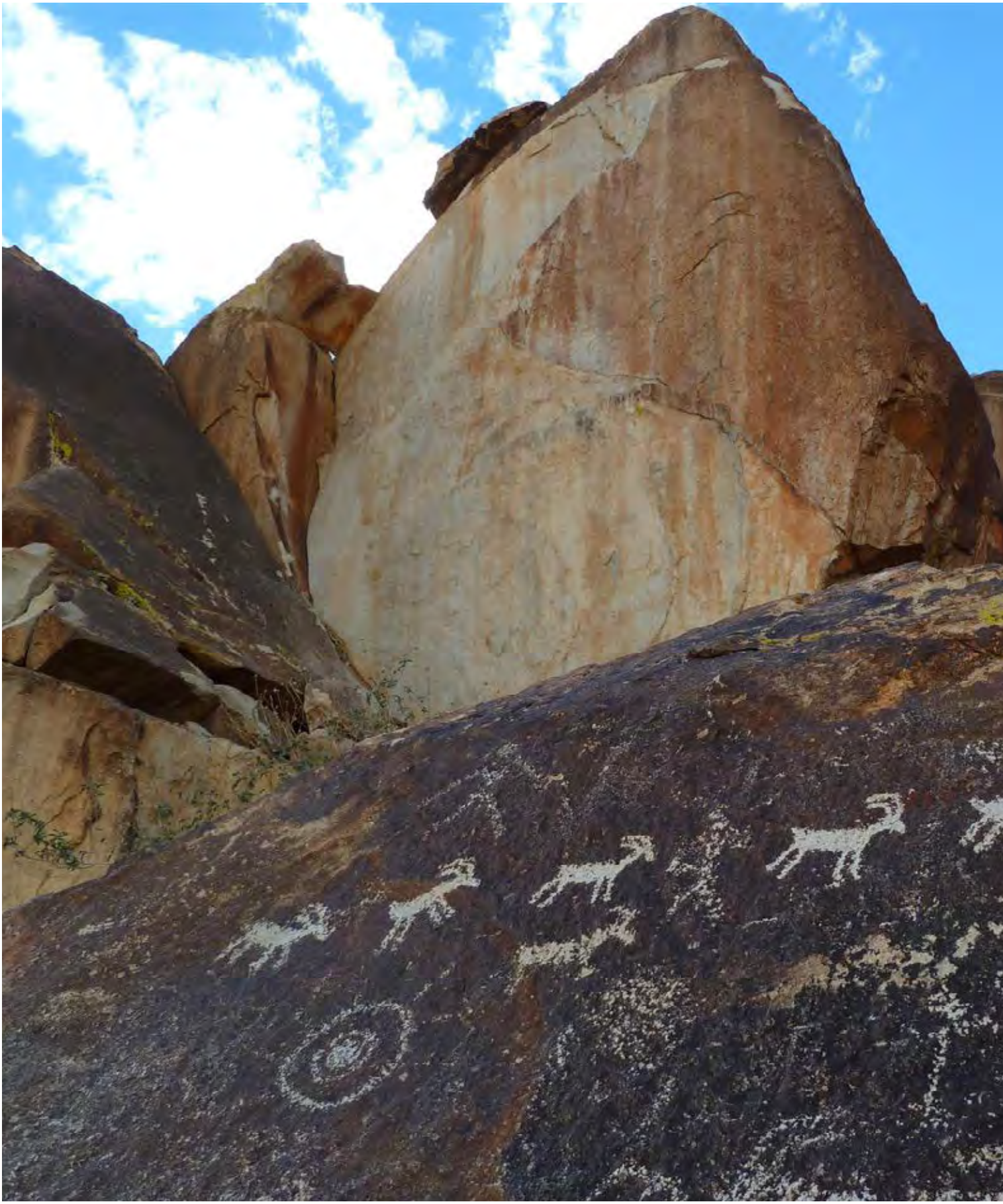


Photo: NPS/Peter Landres,
Bridge Canyon Wilderness, Lake Mead National Recreation Area

Chapter 3—Integrating Wilderness Character Into Planning

The National Park Service uses a wide variety of plans to achieve its mandate of preserving resources unimpaired for future generations. For parks with wilderness resources, wilderness character should be addressed not only in a wilderness stewardship plan (see accompanying *Handbook)*, but also fully integrated into other plans for the park. Planning teams and park management need to ensure that wilderness character is addressed across the spectrum of park planning. This chapter of the *User Guide* provides guidance on how wilderness character can be addressed in park foundation documents and several types of plans. The plan types are meant to serve as examples with the goal of inspiring planners to apply the ideas throughout the full spectrum of NPS planning.

The representative plan types included in this chapter are:

- park foundation document
- general management plan
- resource stewardship strategy
- long range interpretive plan
- exotic plant management plan
- climbing management plan
- fire management plan
- planning for climate change

Descriptions of each plan type include a general background on the planning product and overview of the relationship between the product and wilderness character. Plan descriptions include relevant qualities, indicators, and measures from *Keeping It Wild.* It is important to understand how the outcome of a park management plan may affect wilderness character, and how considerations of wilderness character affect the development of a plan. It is anticipated that the information from these sections can be applied to a variety of planning products.

Several of these plan types could be parkwide in scope, addressing areas of the park outside of wilderness. This chapter does not provide detailed guidance on the issue, but planners should recognize in doing plans that encompass both wilderness and nonwilderness areas, that some components will differ by area. Issues to be addressed might vary by location to some extent, and within wilderness, qualities of wilderness character would be added to the set of resources and values selected for impact analysis and described in the affected environment section. Some management proposals would probably be distinct for wilderness areas, touching on (for example) minimum requirements analyses, specific operating procedures for certain activities, or the issuance of permits. A tiered approach that incorporates parkwide and area-specific content is recommended for the planning process and document.

Park planning should strive to maintain yearly consistency in using particular measures to monitor the status of wilderness character. There are likely to be cases where a measure needs to be modified to best serve monitoring objectives and the purposes of a specific plan, or staff may identify a need for different or additional measures. This is often particularly true of measures that relate to visitor experience. A process for modifying measures is described in chapter 5.

Wilderness stewardship planning is addressed in its own document: *Wilderness Stewardship Plan Handbook 2014*. The *Handbook* updates the *2004 Wilderness Stewardship Plan Handbook* by incorporating wilderness character. The updated *Handbook* can be found on the NPS Wilderness Character Sharepoint site at http://share.inside.nps.gov/sites/WASO/WSD/WC. The purpose and scope of a wilderness stewardship plan is described in chapter 2. Environmental compliance activities under the National Environmental Policy Act (NEPA) are also part of planning activities and are addressed in chapter 4.

Photo: NPS/Matt Melcher, Yosemite Wilderness, Yosemite National Park

Park Foundation Document

Every unit of the national park system is to have a foundation statement that will provide basic guidance for planning and management decisions. The park foundation fosters a shared understanding among all stakeholders, including NPS managers and staff, of what is most important about the park through the identification of core components: park purpose, significance, fundamental and important resources and values, and interpretive themes. This shared understanding helps to ensure that these components can be adequately considered and protected in subsequent planning and management activities. The foundation also describes special mandates and administrative commitments, which provide context for park management. The final component of the foundation is the assessment of planning and data needs that, along with the core components, provides a focus for planning at the park. A park atlas, a series of maps compiled from available GIS data about the park and its setting, is also a part of the foundation document.

A park foundation document provides overarching guidance to other plans, including general management plans and wilderness stewardship plans. As discussed in chapter 2, wilderness character can be more successfully incorporated into a foundation document if a wilderness character narrative has been developed first.

Along with the qualities of wilderness character, a wilderness area designation is related to the park's foundational components. Accordingly, this section has a broader scope than others in this chapter because it covers not only wilderness character but all categories (designated, potential, recommended, proposed, and eligible) of the wilderness resource.

The following components of a park foundation document are most relevant in the consideration of the wilderness resource.

- *Purpose*—A purpose statement describes the specific reason(s) for establishing a particular park. It is grounded in an analysis of park enabling and any subsequent legislation, goes beyond a restatement of the law, and may be changed over time as new legislation (such as designating wilderness) is adopted. The purpose statement for a park with designated wilderness should reference the wilderness resource. The category of potential wilderness, if associated with a congressional designation, should also be considered. Wilderness areas in the categories of eligible, proposed, or recommended would not be addressed in park purpose because they have not been designated by Congress. The purpose statement is both sweeping and brief, and as such, should not get into much detail about wilderness character.
- *Significance*—Significance statements describe why the park is important within a global, national, regional, and systemwide context. They reaffirm how a park's natural and cultural resources contribute to our national heritage. With few exceptions, designated and potential wilderness contributes to a park's importance and should be reflected in some way in the set of significance statements. In some cases, wilderness has been incorporated into a single significance statement. In others, references to wilderness (or the qualities of wilderness character) are woven throughout the statements. The effort should be to try to capture what is special or distinctive (e.g., designated wilderness at Rocky Mountain National Park is within close access to a major metropolitan area).

Photo: NPS/Everglades National Park

- *Fundamental resources and values*—These resources and values are considered critical to achieving a park's purpose and maintaining its significance. For parks with designated and potential wilderness, wilderness should be included in fundamental resources and values, typically by referring to one or more wilderness character qualities, or by identifying related values such as unobstructed views or dark night skies. Fundamental resources and values statements can incorporate more information about wilderness character than significance statements. Wilderness character narratives are especially helpful in identifying fundamental resources and values related to wilderness. For parks with eligible wilderness, consider referencing specific qualities of wilderness character in the "Other Important Resources and Values" section of the park foundation document.
- *Other important resources and values*—These resources and values warrant special consideration in planning and management but are not fundamental to the purpose of the park and may be unrelated to its significance. For parks with recommended, proposed, or eligible wilderness, consider referencing specific qualities of wilderness character in the "Other Important Resources and Values" section of the park foundation document.
- *Interpretive themes*—These themes are necessary to provide people a perspective from which to understand and appreciate park purpose and significance. If wilderness or wilderness character has been identified as part of a park's purpose or significance, the set of interpretive themes should recognize one or more qualities of wilderness character, as relevant to that particular park. See the section "Long Range Interpretive Plan" for additional supporting information.
- *Special mandates and administrative commitments*—Reference designated, potential, recommended, proposed, and eligible wilderness areas; describe their status; and briefly address the management implications for the categories of wilderness (see pages 79–81 in NPS *Management Policies 2006).*

The wilderness connection to park foundation documents is presented in table 3 below. Specific examples from park foundation documents are provided in appendix 3.1.

Table 3. The wilderness connection in a park foundation document.

Park Foundation Document	Wilderness Connection
Data gathering and preparation for foundation workshop	Collect the following (as relevant to the park): wilderness legislation and associated congressional subcommittee reports and hearings, wilderness map, wilderness study, wilderness eligibility assessment. Confirm that the foundation workbook includes prompts/instructions for addressing wilderness character. If completed, the wilderness character narrative should be made available.
Park atlas	Include a current GIS map identifying each category of wilderness in the park (designated, potential, recommended, proposed, and if possible, eligible wilderness).
Park purpose	For parks with designated and potential wilderness, include a reference to wilderness in the park purpose statement.
Park significance	For parks with designated and potential wilderness, strongly consider capturing what is *special* or *distinctive* about wilderness resources in the set of significance statements.
Interpretive themes	If wilderness or wilderness character has been identified as part of a park's purpose or significance, the set of interpretive themes should recognize one or more qualities of wilderness character.
Fundamental resources and values	For parks with designated and potential wilderness, summarize the key relevant wilderness character qualities in the set of fundamental resources and values.
Other important resources and values	For parks with areas in the categories of recommended, proposed, and eligible wilderness, consider referencing specific qualities of wilderness character.
Special mandates and administrative commitments	Reference designated, potential, recommended, proposed, and eligible wilderness areas; describe their status; and briefly address the management implications for the categories of wilderness.
Analysis of fundamental and other important resources and values	Identify the current conditions, trends, potential threats, issues, and opportunities related to wilderness character and existing key relevant data.
Assessment of planning and data needs	Identify needs for wilderness-related plans and products, which may include gathering data; conducting surveys; and undertaking a wilderness stewardship plan, study, or eligibility assessment. Indicate the priority for these. Describe wilderness planning issues. Indicate the relationship of wilderness planning to other plans to ensure that wilderness character is addressed in future updates and new planning efforts.
Appendix	Include "Wilderness Basics" (wilderness background information, including wilderness legislation and associated congressional subcommittee reports and hearings, current land status, wilderness character narrative, and issues for future wilderness stewardship planning) in a foundation document appendix, if at all possible.

Other Consideration for Foundation Planning: Wild and Scenic Rivers Values

The NPS Wild and Scenic Rivers Program is currently developing guidelines for treating river values (water quality, free-flowing condition, and outstandingly remarkable values) in park foundation documents. These values have a foundational function for the river unit, similar to fundamental and important resources and values in a park foundation, although the process for identifying them is specific to the Wild and Scenic Rivers Act. There is a reciprocal relationship among these distinct foundational elements. Wild and scenic rivers values can inform the development of wilderness character narratives and selection of measures for wilderness qualities where wilderness and wild and scenic rivers overlap. For example, ecological integrity and water quality could inform natural qualities of wilderness, and river recreation could inform opportunities for solitude and primitive and unconfined recreation in wilderness. River classification, whether wild, scenic, or recreational, can inform the wilderness character narratives and selection of measures (in particular, the undeveloped quality). Similarly, fundamental and other important resources and values related to wilderness character can inform the development of wild and scenic rivers values.

Photo: NPS/Nyssa Landres, Gates of the Arctic Wilderness, Gates of the Arctic National Park & Preserve

General Management Plan

A general management plan (GMP) is a comprehensive plan, comprising the broadest level of decision-making for parks. As stated in the NPS Park *Planning Program Standards 2004* the purpose of a general management plan is "to ensure that park managers and stakeholders share a clearly defined understanding of resource conditions, opportunities for visitor experiences, and general kinds of management, access, and development that will best achieve the park's purpose and conserve its resources unimpaired for the enjoyment of future generations." A park with wilderness resources must include wilderness character as part of this long-range and comprehensive vision.

Connections between wilderness character and general management plans are relevant to other plans, in particular a wilderness stewardship plan (WSP). There is some similarity in how the following topics are addressed in these two types of plans; however, the general management plan has parkwide relevance while the wilderness stewardship plan is specific to wilderness areas and is considered an implementation plan. In parks where wilderness constitutes a major portion of park lands, there is the potential for combining a general management plan with a wilderness stewardship plan, as was done for *Apostle Islands National Lakeshore Final General Management Plan / Wilderness Management Plan* and Gates of the Arctic National Park and Preserve General Management Plan Amendment / Wilderness Study (Internal Draft EA 2012).

Below are some of the key areas where wilderness character can be integrated into a general management plan:

- *Parkwide desired conditions*—Parks with wilderness resources identified in their purpose and significance statements should incorporate wilderness character and values into parkwide desired conditions, or goals and objectives. An example is found in the goals and objectives statement for the Apostle Islands National Seashore document (see appendix 3.2). It is noteworthy because it goes beyond a simple statement about preserving wilderness character, and begins to express wilderness qualities, even though it was developed before *Keeping It Wild* was published.
- *Visitor use management*—Visitor use management is defined as the dynamic process of planning for and managing both the characteristics of visitor use and the setting in which that use takes place. This is accomplished through a diverse range of strategies and tools used to sustain desired resource conditions and visitor experiences, including visitor capacity. Indicators and standards will be used to ensure desired conditions for visitor experience and resource conditions without exceeding visitor capacity. The term "standards" in the visitor use management framework is equivalent to "measures" in *Keeping It Wild*, and "standards" used in the visitor use management framework can be drawn from identifying measures for wilderness character. Visitor use management is often dealt with in a separate section in the planning document, although it is an inherent aspect of *management zoning*.

- *Management zones*—Management zones in a general management plan identify desired conditions for different geographic areas of the park. Zones are used to manage visitor experience, resource conditions, and allowable management actions. GMP zoning for a park with wilderness resources can be enhanced by including consideration of wilderness character. Some GMP zones may apply to both wilderness and nonwilderness, which may not adequately address the high standards of wilderness stewardship. It is preferable to develop one or more zones that are specific to wilderness. A wilderness area will probably have more than one management zone because of the diversity of wilderness character and management needs; make sure that each zone containing wilderness is designed to preserve wilderness character. Further refinement and subdivision of GMP management zones may be necessary during wilderness stewardship planning (see *Handbook).*

  Several ways to support the integration of wilderness character in a management zoning scheme are shown in the table 4.

Table 4. Components of GMP management zones for parks with wilderness resources.

Component	Means of Addressing Wilderness Character
Visitor experience	Desired condition for opportunities for solitude or primitive and unconfined recreation quality.
Resource conditions	Desired condition for natural quality and other features of value quality, such as a cultural resource.
Management actions	Desired condition for undeveloped and untrammeled qualities.
Visitor use management	Measures for the natural quality of wilderness (related to resource condition) and the quality of opportunities for solitude or primitive and unconfined recreation (related to visitor experience).

- Alternatives—General management plans contain different alternatives for management actions. Alternatives are typically developed around a central concept to achieve a different balance of actions and outcomes. They often allocate management zoning in different combinations over the landscape. Wilderness character could inform one of the underlying concepts for each alternative, as appropriate. The theme or concept could be articulated with different emphases on the qualities of wilderness character. As discussed in zoning, management emphasis across the five qualities of wilderness character may vary as long as the whole of wilderness character is preserved or improved.

As an example, Great Sand Dunes National Park and Preserve identifies a fundamental visitor opportunity as climbing and descending the high dunes, which are located within wilderness. A "Dunes Play Zone" was developed as a way to emphasize primitive and unconfined recreation, recognizing that opportunities for solitude may be simultaneously reduced. At Isle Royale National Park one alternative emphasized opportunities for solitude at the expense of primitive and unconfined recreation by maintaining campsite quotas and requiring a predetermined itinerary. Another alternative at Isle Royale that allowed backcountry visitors to move about at will emphasized primitive and unconfined recreation at the potential expense of opportunities for solitude. Additional examples of general management plans for parks with wilderness are provided in appendix 3.2.

Photo: NPS/Haley Bercot, Great Sand Dunes Wilderness, Great Sand Dunes National Park & Preserve

Resource Stewardship Strategy

Guided by management direction expressed in NPS policy statements, a resource stewardship strategy (RSS) is essentially a comparison of "where we are versus where we want to be" for the park's high-priority natural and cultural resources, and a set of strategies for how to achieve the desired conditions. The resource stewardship strategy is a document designed to:

1. provide an objective (i.e., quantitative) basis for assessing the condition of natural and cultural resources relative to reference conditions that correspond to the qualitative desired conditions established in NPS policy-level condition statements; and
2. document the science- and scholarship-based comprehensive strategies to achieve and maintain those reference conditions. These strategies, which are reviewed by subject matter experts and provide the primary focus of the resource stewardship strategy, provide a logical, integrated and sequential planning framework to help guide park investment decisions in resource stewardship, and improve accountability for a park's multiyear, cumulative monetary investment in resource stewardship.

A resource stewardship strategy is an internal administrative document that does not undergo public review under the National Environmental Policy Act. Requirements of resource stewardship planning are described in Draft NPS Director's Order 2-1: *Resource Stewardship Planning.*

The outcomes from resource stewardship strategies and associated actions may directly relate to wilderness character monitoring and wilderness stewardship planning. These outcomes may help fill data needs for wilderness character monitoring, although this data may or may not be spatially restricted to the wilderness area. If a wilderness stewardship plan has been produced prior to a resource stewardship strategy, wilderness character measures and standards from the plan would be incorporated into the resource stewardship strategy. If a resource stewardship strategy predates a wilderness stewardship plan, measures and reference conditions relevant to wilderness character monitoring are incorporated into the wilderness stewardship plan where they can be further refined and vetted through a public participatory process.

Photo: NPS/Alicia Burtner, Petrified Forest National Wilderness, Petrified Forest National Park

In addition, each of the five major sections of a resource stewardship strategy provides opportunities to address wilderness character:

- *Section 1: Park significance and fundamental resources and values*—Ideally, the resource stewardship strategy draws from existing statements of park significance and the list of fundamental and other important resources and values formulated in a park foundation document. Aspects of wilderness character reflected in a park foundation document (see section above) should be incorporated into the resource stewardship strategy.
- *Section 2: Status of knowledge about these resources*—The current condition of wilderness character should be included in the resource stewardship strategy. While evaluating existing data and knowledge about park resources, focus on the status of knowledge and data regarding wilderness character. Although biological, historical, or ecological data are often readily available, information on solitude, the number of management actions taken within wilderness, or the number of acres affected by management actions or external disturbances usually is not. However, completing the resource stewardship strategy following implementation of wilderness character monitoring would probably result in a significant amount of data that can be incorporated into this section.
- *Section 3: Identification of indicators and measures*—In both the wilderness character and RSS frameworks, identify measurable parameters for resource conditions. As indicators and measures are identified for the resource stewardship strategy, those established in the wilderness stewardship plan should be adopted if applicable to better integrate the preservation of wilderness character into the resource stewardship strategy. In some cases, a measure may be applied parkwide in the resource stewardship strategy, but a spatially explicit subset of that measure may be used in wilderness character monitoring. For example, the "acres infested" as identified in a database of nonnative plant populations in the park may be a good RSS measure, but a more specific GIS analysis of where acres infested occur in wilderness may be used in wilderness character monitoring. Other measures are collected at only one location within the park (e.g., air quality data) and must be inferred to apply parkwide, including in the wilderness. Still other measures will only be meaningful within the wilderness, such as those associated with untrammeled indicators, and thus may not be identified as RSS measures. In such cases, it still might be useful to identify such measures within the RSS process because many of the strategies identified in the resource stewardship strategy will have the potential to degrade this quality. The RSS indicators and measures related to wilderness character can be interwoven into the categories already used in the resource stewardship strategy by simply adding a symbol to identify those that apply to wilderness character (and perhaps elaborate in more detail in an appendix), or wilderness character may be its own category.

- *Section 4: Identification of reference conditions*—Reference conditions represent acceptable resource conditions based on scientific and scholarly consensus. These values are similar to "standards" in the wilderness character framework but do not directly correspond to them. Wilderness character standards identify the limits of the acceptable condition, while reference conditions indicate a goal or standard to achieve and maintain. If a park has completed a wilderness character narrative or baseline assessment, and identified an aspect of wilderness character that could be improved, that goal could be reflected as a reference condition. Otherwise the reference condition for wilderness character measures should be the estimated value at the time of designation (because the NPS charge under the Wilderness Act is to preserve or improve wilderness character). Wilderness character standards would probably be determined in a wilderness stewardship plan and so may or may not be available to inform the RSS process.
- *Section 5: Comprehensive strategies*—Comprehensive strategies are a sequence of activities or actions that indicate how the park would achieve or maintain reference conditions for priority resources. The resource stewardship strategy also includes recommendations for assessing and updating these strategies as new information becomes available and the results of completed activities are known. Some comprehensive strategies are focused on specific locations, others apply throughout the park. Comprehensive strategies could be developed to address specific impacts in specific places that degrade wilderness character, thus serving to improve wilderness character at that location (e.g., restoring normal hydrologic function to a river). They could also focus on preserving wilderness character throughout the wilderness area (e.g., continue protecting dark night skies from NPS light sources). In other cases, the strategy might be focused on a widespread value within the park (for example, maintaining native plant communities by reducing invasive nonnative plants) that also serves to protect wilderness character. The extent to which strategies are wilderness specific will be variable based on the geography of the park and virtually any strategy that serves to preserve and improve wilderness character is acceptable.

Photo: NPS/Peter Landres, recommended wilderness, Cedar Breaks National Monument

Trend data on wilderness character, if available, can contribute to the development of management directions in the resource stewardship strategy and can also be applied in assessments and updates. Proposed activities or actions that affect wilderness character should be carefully evaluated through a minimum requirements analysis process, as described in chapter 4. Typically the minimum requirements analysis is completed just prior to implementation of the activity, not necessarily as part of the resource stewardship strategy.

Photo: NPS/Michael Haynie, Guadalupe Mountains Wilderness, Guadalupe Mountains National Park

Applying RSS and Wilderness Character Measures

In applying RSS indicators and measures to wilderness character, a general assumption is that there are more indicators and measures in a resource stewardship strategy than are needed in a wilderness character framework, and that not all measures of wilderness character are necessary in a resource stewardship strategy (particularly some of the undeveloped, untrammeled, and solitude measures). Two examples for wilderness character in a resource stewardship strategy follow:

- One approach is to ascribe aspects of wilderness character within a single indicator category. For example, Guadalupe Mountains National Park organized RSS indicators into "Geologic Resources," "Scenic Resources," "Natural Resources" (biotic), and "Cultural Resources." Wilderness as a resource was placed under Natural Resources, even though some indicators under all four broad categories apply to wilderness character. A variation to this approach is to create a category of RSS indicators called "Wilderness Character" and put all the relevant measures into that section.
- A second approach is to integrate wilderness character measures into the resource stewardship strategy such that there are some measures in several RSS indicator categories. In this case, it may be useful to include an annotation for those measures that are wilderness related and, if necessary, elaborate on them in more detail in an appendix or separate section of the resource stewardship strategy. This would facilitate the extraction of those indicators and measures that are wilderness related so that they can be used to inform wilderness stewardship planning, population of the wilderness character monitoring database, or other wilderness focused efforts beyond the resource stewardship strategy.

In either scenario, it may be a challenge to include measures appropriate to tracking the untrammeled quality (e.g., actions taken to manipulate the biophysical environment), as these types of measures haven't typically been included in the resource stewardship strategy or most other NPS planning or monitoring processes. To the extent that it is reasonable to include them in the resource stewardship strategy based on the geography of the park and the focus of the resource stewardship strategy, they should be included in the indicators and measures. To facilitate identifying measures that can be used in the resource stewardship strategy that are relevant to wilderness character, table 5 provides a crosswalk between RSS and wilderness character terms.

Table 5. Comparison of terms in the wilderness character framework and resource stewardship strategies.

Term	Wilderness Character Framework	Resource Stewardship Strategies
Desired conditions	• Untrammeled • Natural • Undeveloped • Opportunities for solitude or primitive and unconfined recreation • Other features of value (e.g., cultural resources)	A qualitative description of the integrity and character for a set of resources and values, including visitor experiences, that park management has committed to achieve and maintain. These desired conditions are tied to NPS policy-level condition statements.
Reference condition	Not used, but is similar to wilderness character standards.	A quantifiable or otherwise objective value or range of values for an indicator or specific measure of condition that is intended to provide context for comparison with the current condition values. The reference condition is intended to represent an acceptable resource condition, with appropriate information and scientific or scholarly consensus. The reference condition might be based on a regulatory or program standard, historical data, data from relatively undisturbed sites, predictive models, or expert opinion.
Indicators	Distinct and important elements within each monitoring question associated with a quality of wilderness character. In nearly all cases there is more than one indicator under a monitoring question. These serve as categories in which to organize measures.	A selected subset of components or elements of a priority resource (i.e., the fundamental or other important resources or values for a park) that are particularly "information rich" and that represent or "indicate" the overall condition of the priority resource.
Measures	Specific aspect of wilderness on which data are collected to assess trends.	One or more specific measurements used to quantify or qualitatively evaluate the condition of an indicator at a particular place and time.
Standards	Minimum acceptable condition for each measure, or a threshold that measures should not exceed. They serve as triggers for management action.	Not used, but is similar to "reference condition" as used in a resource stewardship strategy.
Actions	Management actions are implemented after a problem analysis to maintain or restore desired conditions.	Not used, but may be similar to RSS strategies.
Strategies	Not used, but may be similar to wilderness character actions.	Sequence of activities or actions that are intended to move the condition of resources towards the reference condition.
Monitoring	Common to both: Repeated measure over time to determine trend in resource condition.	

Long Range Interpretive Plan

The long range interpretive plan (LRIP) is a component of the comprehensive interpretive plan (CIP), as outlined in NPS Director's Order 6: *Interpretation and Education* (DO 6). The long range interpretive plan articulates a vision for the park's interpretive future and recommends the media, facilities, and programs best suited for meeting visitor needs, achieving management goals, and connecting visitors to park stories. Planning documents answer *what* and *why* questions (e.g., What are the local resources and potential impacts and why are they significant or worth protecting?). The long range interpretive plan also explicitly focuses on *how* questions (e.g., How do interpreters deliver messages to diverse audiences so that the public supports and participates in efforts to preserve resources?). Using recommendations in the long range interpretive plan, a park also develops an annual implementation plan and an interpretive database. These three elements comprise the comprehensive interpretive plan.

NPS Director's Order 41: *Wilderness Stewardship,* section 6.14, calls for wilderness character, resources, and stewardship to be "an integral component" of a long range interpretive plan. Parks with any classification of wilderness are to include and address interpretive themes that reflect that wilderness. The long range interpretive plan has the dual role of guiding visitor education about wilderness character (both its value and any rules that protect it), as well as ensuring that interpretive programming does not directly or indirectly have an adverse effect on the qualities of wilderness character.

Interpretive themes developed on a parkwide basis should incorporate key messages on wilderness character. The planning process represents an opportunity to determine whether current themes adequately reflect wilderness character. Resources and values related to wilderness character, as expressed in the wilderness character narrative, foundation document, or park plan, can contribute to interpretive theme development.

Incorporating wilderness character into a long range interpretive plan gives park staff an analytical tool to ensure that interpretive messages are relevant and effective in communicating wilderness character themes. Messages about wilderness character can help focus discussion of the idea of wilderness by moving from an acknowledgement of personal and cultural meanings, to language found within the Wilderness Act. Such messages provide opportunities for visitors to reflect on wilderness character and reach a common understanding of wilderness and its value.

In planning the best ways to communicate with various audiences, the team developing a long range interpretive plan can use the wilderness character framework to consider the potential impacts to wilderness character that may result from various message-related activities, as well as their potential benefits. For example, considering potential impacts on the opportunities for solitude quality helps identify when and where guided activities in wilderness would have the least impact, while still providing for the benefits of these activities. See chapter 4 for information on linking a long range interpretive plan to interpretive activities and education.

The Death Valley National Park Wilderness and Backcountry Education Strategy provides an example of how wilderness character has been incorporated in an interpretive plan, and can be found on the NPS Wilderness Character Sharepoint site at http://share.inside.nps.gov/sites/WASO/WSD/WC.

Exotic Plant Management Plan

An exotic plant management plan (EPMP) supports park-level natural resource management programs and provides comprehensive guidance and documentation for project managers and cooperators. An exotic plant management plan provides a context for systematic evaluation and adaptive management, and lays a course for the future by identifying additional program elements needed to achieve park goals for managing exotic (nonnative) plants. The plan articulates current and future concerns about particular species and presents a program of management action including reasons to address particular species, and the types of methods to be used. There are no prescribed templates for an exotic plant management plan; however they typically follow an environmental assessment (EA) format. Although these plans are common in the National Park Service, they can be highly variable.

Activities to address nonnative species that could affect wilderness character include accessing backcountry work locations; a range of treatment methods, including manual and chemical methods; and the manipulation of plants, an inherent characteristic of nonnative plant management. Outcomes of an exotic plant management plan should relate directly to the qualities, indicators, and measures in the wilderness character monitoring framework as described in *Keeping It Wild*. Steps for developing an exotic plant management plan that considers effects to wilderness character include:

- *Determine the scope of necessary action*—Considering current policy and practices, discuss whether weed treatments should be implemented in wilderness. Management action in wilderness should never be a foregone conclusion.
- *Analyze tradeoffs*—Identify the range of actions required for a particular weed treatment in terms of the effects on the qualities of wilderness character and the resulting tradeoffs of different management actions. For example, the action to control weeds in wilderness degrades the untrammeled quality and use of motorized tools required by some treatment methods degrades the undeveloped quality; however, these actions may improve the natural quality. Consider the means of access to treatment areas and use this analysis to inform decisions regarding nonnative plant management.
- *Identify logical connections between an exotic plant management plan and wilderness character*—Determine the relative priority of wilderness lands, or specific locations within wilderness, when assessing the overall goals of wilderness stewardship and nonnative plant management. In a largely weed-free wilderness, there might be a high priority for early detection and eradication of incipient populations. Integrated pest management is an approach that inherently considers site characteristics in determining the most appropriate tool(s) for weed control, and recognizes that multiple tools may be needed at different locations to achieve desired results.

- *Provide specific mitigation measures*—When developing alternative mitigation measures, be sure to consider their impacts on wilderness character within the plan, rather than solely within a minimum requirements analysis, often included as an appendix to the plan. For example, alternatives could be developed that do not allow motorized access or mechanical equipment in wilderness, but instead focus on manual control methods. These might include tools that have been specifically developed for use in wilderness, such as horse-mounted herbicide sprayer systems.
- *Use a minimum requirements analysis*—When a park is conducting nonnative plant management in wilderness, potential actions must be analyzed either through a programmatic minimum requirements analysis developed for nonnative treatments, or individual minimum requirements analyses developed for individual actions, or a combination of the two.

Indicators and Measures

The exotic plant management plan can provide direction for monitoring wilderness character trends by identifying appropriate measures and potential sources of data. If staff have not yet identified measures or developed monitoring protocols for invasive and exotic species management and its effect on wilderness character, the plan can also help determine standards by which to assess these effects. If a wilderness stewardship plan and wilderness character monitoring measures have been developed, the exotic plant management plan can be designed to integrate the content of these plans, and to formulate management actions that have the least detrimental effect to wilderness character, and also provide data for wilderness character monitoring. Additional guidance and suggestions for data sources and applications are in table 6 below.

Photo: NPS, Yosemite Wilderness, Yosemite National Park

Table 6. Indicators and measures related to invasive and exotic species management plans (not all wilderness character indicators are included).

Quality	Indicator	Measure	Discussion	Data Suggestions
Untrammeled	Actions authorized by the federal land manager that manipulate the biophysical environment	Number of actions to manage plants, animals, pathogens, soil, water, or fire	Generally these plans manipulate nonnative plants to move toward restoration of native plant communities with no further manipulation or control after a nonnative plant population is treated successfully.	An annual work plan component could be incorporated to provide better resolution regarding anticipated actions.
Natural	Plant and animal species and communities	Number of nonnative species	Reduction of nonnative species would directly benefit this measure. Nonnative plant management in itself is a form of conservation of native plant species and supports native ecosystems.	Provide a mechanism by which the list of species is updated periodically in the NPSpecies web-based application.
		Abundance, distribution, or number of invasive nonnative species	Reduction of nonnative species would directly benefit this measure. Nonnative plant management in itself is a form of conservation of native plant species and supports native ecosystems.	Actual weed treatments in the National Park Service are typically recorded in the Alien Plant Control and Management Database, and can be used to query abundance and distribution of species that are targeted for control.
	Biophysical processes	Area and magnitude of pathways for movement of nonnative species into wilderness	Consistent with interagency thinking about examining entry points within and outside parks and managing invasive species at multiple scales.	Primary vectors and pathways for invasion are sometimes included in the exotic plant management plan, but typically are presented as a parkwide analysis. Additional refinements would usually be needed to use this data to inform wilderness character monitoring.

Quality	Indicator	Measure	Discussion	Data Suggestions
Undeveloped	Use of motor vehicles, motorized equipment, or mechanical transport	Type and amount of administrative and nonemergency use of motor vehicles, motorized equipment, or mechanical transport	Use of motorized equipment and transport may have short-term adverse effects on the landscape and visitor experience.	The decision to allow motorized equipment is often included in the exotic plant management plan, but the details of planned uses are usually found in minimum requirements decision analysis documents. In many cases, these are done on an annual basis for routine or recurring activities, such as nonnative plant management. In those cases, it will be necessary to collect actual use data after the fact (e.g., days or hours of chainsaw use).
Solitude	Remoteness from sights and sounds of people inside the wilderness	Number of trail contacts visitors have with work crews (through the presence of the crews or visibility of management actions)	Although generally short-term and minimally adverse, visitors may experience impacts from the presence and visibility of crews and their actions.	Record cards from staff and volunteers help track encounter rates.
	Remoteness from occupied and modified areas outside of wilderness	Extent and magnitude of intrusions on the natural soundscape	When motorized equipment is determined to be necessary to meet the goals of the exotic plant management plan, consider the intensity, frequency, and duration of soundscape intrusion.	It may not be possible to determine actual impact to park visitors unless visitor use data are also analyzed to determine if visitors were in aural proximity of the noise.
Other features of value	Deterioration or loss of cultural resources integral to wilderness character	Number of authorized actions that result in disturbances to cultural resources (visitor and commercial use [e.g., catholes, trampling, hearths, aircraft landings]; findings of adverse effect for projects and operations)	Cultural landscapes may contain invasive nonnative species that can naturalize and spread; or cultural landscapes may be impacted by the invasion of nonnative species; or cultural landscapes may contain historic noninvasive exotics that need to be preserved.	Work closely with the cultural resources staff to determine which elements of the landscape are significant (generally described in a cultural landscape inventory) and what nonnative plant treatments may be used in the cultural landscape and under what conditions.
	Other features locally defined.			

Climbing Management Plan

Climbing includes rock climbing, snow and ice climbing, mountaineering, canyoneering, and caving, where climbing equipment such as ropes and fixed or removable anchors are generally used to support an ascent or descent. The NPS recognizes that climbing is a legitimate and appropriate use of wilderness. Section 7.2 of Director's Order 41 elaborates on this by directing that "any climbing use or related activity must be restricted or prohibited when its occurrence, continuation or expansion would result in unacceptable impacts to wilderness resources or character, or interfere significantly with the experience of other park visitors." In addition, "If climbing activities occur in wilderness, climbing management strategies will be included as part of the park's Wilderness Stewardship Plan, or other activity-level plan."

Director's Order 41 includes a specific list of rules to guide climbing practices in wilderness areas. These rules will create the foundation for a new generation of climbing management plans for wilderness parks and may help resolve long-standing debates around the connection of climbing and wilderness character. Climbing provides sought-after visitor experiences in wilderness and desired conditions for visitor use should be developed and defined in the context of wilderness character, considering that:

- Rock climbing is a traditional form of primitive recreation that is appropriate in wilderness and solitude and unconfined recreation qualities of wilderness are sought after by climbers.
- The occasional placement of a fixed anchor for belay, rappel, or protection purposes does not necessarily impair the future enjoyment of wilderness or violate the Wilderness Act. However, climbing practices with the least adverse impact on wilderness resources will always be the preferred choice.
- Permitting, enforcement, and education can reduce or avoid conflicts; however, the imposition of management restrictions on visitor behavior adversely affects the primitive and unconfined recreation qualities of wilderness character.

A number of climbing actions and visitor use patterns have the potential to adversely affect wilderness character. A climbing plan should identify current and anticipated impacts to wilderness character such as:

- The size of climbing groups and their tendency to concentrate use within certain recreation areas in wilderness degrade the solitude quality of wilderness character.
- The installation of fixed gear and the presence of abandoned gear or caches may be considered an impact on the natural, undeveloped, and primitive recreation qualities of wilderness.
- Impacts associated with climbing base camp sites and the routes used to access these sites may adversely affect the natural quality through direct or diffuse impacts, as well as opportunities for solitude by indicating the presence of other people and potentially the other features of value quality of wilderness, such as a cultural resource.
- Impacts associated with climbing rescues, such as the use of helicopters, adversely affect the undeveloped quality and opportunities for solitude.

Indicators and Measures

If staff is looking to define wilderness character or develop monitoring protocols, the management actions (including visitor-use monitoring standards) prescribed in the climbing management plan need to be considered within the framework of wilderness character qualities and indicators. Measure(s) will then need to be developed to determine at what level wilderness character is either enhanced or degraded by the visitor activities and management actions. If the park has a wilderness stewardship plan and wilderness character monitoring measures in place and knows in advance the kinds of actions that could degrade wilderness character, select the appropriate measures or thresholds for monitoring impacts associated with climbing so there is no degradation of wilderness character. Table 7 provides more guidance and suggestions for data sources and applications.

Photo:
NPS, Shenandoah Wilderness, Shenandoah National Park

Table 7. Indicators and measures related to climbing management plans (not all wilderness character qualities or indicators are discussed).

Quality	Indicator	Measure	Discussion	Data Suggestions
Natural	Physical resources	Extent and magnitude of disturbance or loss of soil or soil crusts	Concentration of visitor use at the base of popular climbing routes may result in impacts to soil or soil crusts.	This will probably require heads-up digitizing and/or GPS data collection to document the extent and seasonality of this impact.
	Plant and animal species and communities	Abundance, distribution, or number of indigenous species that are listed as threatened and endangered, sensitive, or of concern	Climbers may have an impact on bird nesting/ roosting and on rare plants within cliffs and rocky areas.	Document and survey cliff-associated rare plants and animals. Consider implementing long-term monitoring programs.
Undeveloped	Use of motor vehicles, motorized equipment, or mechanical transport	Type and amount of emergency use of motor vehicles, motorized equipment, or mechanical transport	Climbing activities may result in increased search and rescue operations that require the use of motorized equipment and transport. Such uses may have short-term adverse effects on the landscape and visitor experience. High frequency of such uses may have long-term or nearly continuous impacts during high use seasons and popular locations.	Emergency use of motorized transport or equipment is not routinely described in detail in the case incident report for each emergency. Consider implementing a standard reporting requirement in the case incident record for duration, location, and/ or frequency of motorized use in support of search and rescue operations.
	Unauthorized use of motorized equipment	Type and amount of motorized equipment use not authorized by the federal land manager	Use of motorized power drills is prohibited (36 CFR 2.12).	
Solitude	Remoteness from sights and sounds of people inside the wilderness	Area of wilderness affected by access or travel routes that are inside the wilderness	Informal trails used to access popular climbing routes are common and may be highly visible. Such trails are a sign of people in wilderness, potentially affecting the sense of solitude for other climbers and nonclimbing wilderness users.	GIS data and aerial photography can be useful tools to quantify and track changes to the amount, persistence, and location of informal trails.
	Facilities that decrease self-reliant recreation	Type and number of user-created recreation facilities	Fixed anchors are installations often associated with climbing routes.	U.S. Forest Service tech guide

Quality	Indicator	Measure	Discussion	Data Suggestions
Other features of value	Deterioration or loss of cultural resources integral to wilderness character	Number of unauthorized actions that result in disturbances to cultural resources (looting, trespass activities, noncompliance with National Historic Preservation Act	Some climbing activities may take place in unauthorized areas of spiritual importance to tribes or in traditional cultural properties.	Climbing blogs/websites may reveal such unauthorized actions. Likewise, tribal members may raise it as a concern to park managers.
		Number of authorized actions that result in disturbances to cultural resources (visitor and commercial use [e.g., catholes, trampling, hearths, aircraft landings]; findings of adverse effect for projects and operations)	Authorized climbing routes should be located away from cultural sites but there may still be come potential for disturbances to unknown cultural resources.	Review proposed climbing routes with cultural resources staff and their data sources to identify areas of concern.
	Other features locally defined.			

Photo: NPS, Denali Wilderness, Denali National Park & Preserve

Fire Management Plan

The purpose of the fire management plan (FMP) is to provide guidance for firefighter and public safety; to include fire management strategies, tactics, and alternatives; to identify significant values for protective management actions; and to maintain consistency with resource management objectives, area activities, and environmental laws and regulations (particularly NPS Director's Order 18: *Wildland Fire Management).* The planning process for a fire management plan requires that a high level of detail be provided for various plan elements. This degree of detail mirrors the complexity of maintaining interagency consistency when dealing with fire, and the challenges of managing the potentially wide-reaching impacts caused by fire and management actions to suppress, contain, or allow it, both within park boundaries and outside of them. The fire management plan should be reviewed annually to ensure currency with laws and management objectives and to evaluate conformity and compliance with the annual work program. A comprehensive FMP review and updated plan is required every five years.

Fire management plans and wilderness character are closely intertwined. The importance of the connection between fire and wilderness is a primary focus of the NPS Director's Order 41: *Wilderness Stewardship,* which offers specific guidance and tools in a dedicated section. Table 8 is based on the current FMP template outline in *Reference Manual 18: Wildland Fire Management* and lists the most obvious areas of a fire management plan that are relevant to wilderness character. In brief, the expression of the qualities of wilderness character, and associated indicators and measures, can be reflected in the fire management plan and guide the determination of how fire can best be managed to preserve wilderness character.

Photo: NPS, Sequoia-Kings Canyon Wilderness, Sequoia and Kings Canyon National Parks

Table 8. Crosswalk of fire management plan template sections (version as of June 16, 2010) to the concept of wilderness character.

FMP Template Section	Relationship to Wilderness Character
1.2.2.1. Management Environment—List different management designations (e.g., wilderness) that affect or constrain fire management activities	This is an opportunity to describe the biophysical and geographic features of wilderness and perhaps to highlight specific aspects of wilderness character that were identified in the wilderness character narrative.
2.1 Fire Policy—Identify and cite key sources of interagency and NPS guidance and direction that affect or drive actions described in the FMP	Reference the Wilderness Act, DO-41, NPS *Reference Manual 41*, and any site-specific acts that designated wilderness with specific provisions or direction (e.g., California Desert Protection Act). DO-41 provisions apply to all categories of wilderness, whether designated or in other categories, reflecting servicewide wilderness policy in addition to the Wilderness Act and park-specific designations.
2.2 Park/Resource Management Planning—Identify and cite requirements and direction contained in park-specific documents that influence or affect fire management actions	Where wilderness character is addressed in the park's general management plan, resource stewardship strategy, or wilderness stewardship plan, wilderness character concepts should be brought forward into this section.
3.1.1. Fire Management Goals and Objectives—List the fire management goals and objectives. These provide the programmatic direction for the fire program. They should be stated within the context of the approved land and resource management plan direction to the extent that direction exists.	Protection of wilderness character might be carried forward from a general management plan, resource stewardship strategy, or wilderness stewardship plan into the fire management plan as a goal in this section. In some cases fire management objectives may be used to inform wilderness character measures and standards, or vice versa. For example, the fire management plan might include an objective to reduce unplanned human caused ignitions by X%, which is directly related to the wilderness character measure regarding departure from natural fire regimes (natural quality) and number of actions to manage fire (untrammeled quality).
3.2 Fire Management Unit Specific Characteristics, Management Constraints and Guidance—Describe restrictions that affect implementation; include considerations for unplanned ignitions and fuels treatments	Use this section to discuss how wilderness character should frame certain fire management strategies or tactics. Discuss wilderness character as a value at risk. For example, a suppression strategy for natural ignitions in a fire-dependent ecosystem will eventually degrade the natural quality of wilderness character, and the use of prescribed fire degrades the untrammeled quality. This is the section where specific administrative prohibitions would be mentioned, such as no bulldozers without written permission from the superintendent, as well as references to other predetermined minimum requirements decision analysis (MRDA) / minimum requirements analysis that constitute a constraint on fire management actions.
4.2.2. Preparedness Activities—Identify minimum impact suppression tactics (MIST) guidelines used in the park, including wilderness considerations if applicable	Reference protection of wilderness character in the MIST guidelines and identify specific considerations for protection of wilderness character.
4.3 Management of Unplanned Ignitions	Incorporate wilderness character considerations into Wildland Fire Decision Support System (WFDSS) preplanning documents as appropriate to set initial response priorities, management requirements and restrictions, and standard language to include in delegation of authority for transfer to an incident management team.
4.4 Burned Area Emergency Response (BAER)—Describe short and long-term rehabilitation standards, guidelines, and procedures	Identify prohibited or restricted rehab treatments (e.g., seeding, construction of flood control structures in wilderness). Identify wilderness character as a value to be protected.

FMP Template Section	Relationship to Wilderness Character
4.5 Management of Planned Fuels Treatments	Consider including restoration or maintenance of wilderness character as a factor in the project prioritization criteria for fuels treatments. Include wilderness character in the minimum requirements decision analysis and environmental screening form for fuels treatments.
4.5.2 General Fuels Management Implementation Procedures	Include directly or by reference standards and/or procedures to be followed when developing minimum requirements for implementation of fuels projects in wilderness.
4.8 Data and Records Management	Identify specific types of information needed from the fire program to support wilderness character monitoring and build those requirements into the fire program standards. For wilderness character monitoring, use the ignition point (in or out of wilderness) as the measure or if mapped perimeters are available, use the actual fire polygon to determine what burned in wilderness and any suppression actions taken in wilderness.
5.2 Monitoring	Identify where data acquired through standard fire effects monitoring, especially for fuels treatments, would be used to inform wilderness character monitoring.
Appendix G: Preparedness Plan—MIST guidelines for the park, including wilderness considerations	Address specific actions or guidelines for the protection of wilderness character. In developing this section, a guiding question to ask is "Do the MIST guidelines adequately protect wilderness character and not just wilderness resources?" Recognize that the MIST guidelines are more of a set of philosophical guidelines and suggestions, and not a single set of 'tactics' that are followed the same everywhere. Each unit needs to define how MIST guidelines apply specifically to their local situational context. MIST tactics may also change from incident to incident on the same unit given unique conditions, fire behavior, and opportunities.
Appendix K: Standards for MIST, BAER, and Rehabilitation	Provide a rationale for what is or is not appropriate in wilderness regarding the qualities of wilderness character. Of particular relevance are watershed stabilization treatments (e.g., hillslope treatments) that attempt to alter natural post-fire watershed response, and plant restoration methods. BAER plans should include an MRDA analysis for actions proposed within wilderness.

Photo:
NPS, Lassen Volcanic
Wilderness, Lassen Volcanic
National Park

Indicators and Measures

The outcomes of FMPs have direct connections to the wilderness character framework described in *Keeping It Wild,* including several measures explicitly dedicated to fire management. Table 9 provides more guidance on the connections and suggestions for data sources and application.

Table 9. Indicators and measures relevant to fire management plans (not all wilderness character indicators are discussed).

Quality	Indicator	Measure	Discussion	Data Suggestions
Untrammeled	Actions authorized by the federal land manager that manipulate the biophysical environment	Percent of natural fire starts that received a suppression response	Direct connection.	This is a standard element reported for all wildland fires, and it may be possible to derive it from the Wildland Fire Management Information (WFMI) database, the ICS-209 form, or the DI-1202 Fire Report narrative. Where locations are mapped as points rather than polygons, it may not be possible to determine if fire ignition was in or out of wilderness. If perimeter mapping as a polygon is necessary, identify this as a program standard in the fire management plan. Use this to derive a more precise measure of suppression action in wilderness.
	Actions not authorized by the federal land manager that manipulate the biophysical environment	Number of unauthorized actions*by agencies, citizen groups, or individuals that manipulate plants, animals, pathogens, soil, water, or fire *(*deliberate ignitions caused by humans)*	Direct connection.	This can be derived from the fire source code in the WFMI database, ICS-209 form, or DI-1202 Fire Report narrative. Where locations are mapped as points rather than polygons it may not be possible to determine if ignition was in or out of wilderness. If perimeter mapping as a polygon is necessary, identify this as a program standard in the fire management plan.
Natural	Biophysical processes	Departure from natural fire regimes averaged over the wilderness *(Note: or stratified by vegetation type or regime or fire management unit)*	Direct connection. This could either be a way to judge the impact of fire or justify its prescriptive use.	This can typically be derived from LANDFIRE Fire Regime Condition Class (FRCC) maps or based on local fire regime research. Fire Regime Condition Class and/or applicable local research will usually be included and discussed in the fire management plan. Estimated pre- and post-treatment fire regime condition class is a required data field to be reported for each proposed fuel treatment.

Quality	Indicator	Measure	Discussion	Data Suggestions
Undeveloped	Use of motor vehicles, motorized equipment, or mechanical transport	Type and amount of administrative and nonemergency use of motor vehicles, motorized equipment, or mechanical transport	Direct connection. Would be a measure to guide plan conditions within plan implementation.	Proposed uses can be assessed using a minimum requirements analysis as part of the development of the fire management plan and compliance documentation. Additional analysis may be useful for each specific project. Note that due to safety and other concerns at the time of implementation, the planned tools may not be what are actually used.
	Use of motor vehicles, motorized equipment, or mechanical transport	Type and amount of emergency use of motor vehicles, motorized equipment, or mechanical transport	Direct connection. Would be covered in the fire management plan to determine situations that would justify motorized use, and strategies to avoid it.	Use MRA preplanning during development of the fire management plan and compliance documents to assess general sideboards and exceptions to the use of motorized equipment on unplanned ignitions. Long-term events will benefit from the completion of an incident-specific MRA as part of the long-term implementation planning in conjunction with the WFDSS process. Post-fire information on actual use may be derived from the DI-1202 Fire Report narrative, ICS-209 forms, or a Resource Advisor Report. However, this will probably be incomplete data and often will not distinguish the types of equipment used or exact locations for incidents that involve both wilderness and nonwilderness lands. If these details are needed to inform wilderness character monitoring, establish specific program standards for the fire management plan.

Photo: NPS, eligible wilderness, Big Cypress National Preserve

Quality	Indicator	Measure	Discussion	Data Suggestions
Other features of value	Deterioration or loss of cultural resources integral to wilderness character	Number of unauthorized actions that result in disturbances to cultural resources (looting, trespass activities, noncompliance with the National Historic Preservation Act)	Direct connection for human ignited fires (arson or accidental) that damage cultural resources.	The fire management plan should identify cultural resources staff that will serve as resource advisors to mitigate potential damage to cultural resources by fire suppression operations or fire use. Suppression related damages should be addressed during suppression damage repair.
		Number of authorized actions that result in disturbances to cultural resources (visitor and commercial use [e.g., catholes, trampling, hearths, aircraft landings]; findings of adverse effect for projects and operations)	Direct connection for management-ignited prescribed fires and suppression activities that may disturb unknown cultural resources.	Consult cultural resources staff during prescribed fire plan preparation to mitigate known cultural resources and provide for contingency planning for unknown cultural resources. Cultural resources staff should serve as resource advisors to mitigate potential damage to cultural resources by fire suppression operations. Suppression-related damages should be addressed during suppression damage repair.
		Number of naturally caused disturbances (e.g., erosion, animal digging, floods, rising sea levels, fires, tree throws)	Direct connection for disturbances caused by naturally ignited fire and post-fire watershed effects.	The fire management plan should include cultural resources in the BAER section to preidentify cultural resource types at risk due to post-fire flooding or soil erosion, and cultural resource personnel should be involved in preparation of the BAER plan after a fire.
	Other features locally defined.			

Planning for Effects of Climate Change on Wilderness Character

The National Park Service increasingly needs to consider the effects of global climate change on the qualities of wilderness character, the infrastructure that allows public access to parks and wilderness, and on the societal implications of wilderness. Lands designated for protection as wilderness have been set aside to protect valued biological and/or physical attributes in a natural state free from human development, disturbance, and manipulation. Climate change, particularly to the degree that it is human-caused, threatens all the values for which these areas were designated. Climate change will force many difficult decisions about wilderness stewardship because it will fundamentally compromise the degree to which protected areas function as a refuge from the effects of expanding civilization.

Responses to climate change will be highly variable from place to place, depending on the localized effects of change. Some examples include:

- Restoration of the natural process of fire in wilderness to reduce the risk of catastrophic fire elevated by past fire suppression practices, the enlarging wildland-urban interface, and accelerated climate change.
- Given that climate change will more than likely adversely affect water quality and quantity, proper stewardship of wilderness watersheds—the source of much of the remaining high-quality water—is critical. To ensure that water quality is not impaired, ongoing uses such as recreation and grazing need to be managed and natural disturbance regimes need to be sustained.
- Given the challenges species will have in moving in response to climate change, loss of biotic diversity can be minimized by sustaining and/or restoring undisturbed corridors and elevation gradients among and within wildernesses. It is also important to ensure that critical habitat and populations remain undisturbed.

An adaptive planning framework is the NPS conceptual approach for considering climate change in park planning and management. Considering climate change in park planning and management demands flexibility to accommodate how understanding of climate change and its impacts will evolve over time through observations and scientific projections. The 2010 NPS Climate Change Response Strategy instructs NPS planners to "Incorporate climate change considerations and responses in all levels of NPS Planning." The Climate Change Response Program and the Water Resources Division in the Natural Resource Stewardship and Science directorate have developed an intranet site dedicated to climate change planning. Site resources include policy and guidance; climate science information, data and reference materials; and examples of climate change considerations in park planning. The site is available at http://www1.nrintra.nps.gov/climatechange/planning.cfm.

Photo: NPS/Allison Banks, Glacier Bay Wilderness,Glacier Bay National Park & Preserve

During any planning process, there is an opportunity to explore the specific relationship between climate change and the indicators and measures under each monitoring question in *Keeping It Wild* (see Chapter 5). As parks begin to think through adaptation strategies it may be helpful to work through the monitoring questions in conjunction with the following set of trend questions.

- What are the trends in actions that control or manipulate the "earth and its community of life" inside wilderness?
- What are the trends in terrestrial, aquatic, and atmospheric natural processes inside wilderness?
- What are the trends in nonrecreational development inside wilderness?
- What are the trends in mechanization inside wilderness?
- What are the trends in cultural resources inside wilderness?
- What are the trends in outstanding opportunities for solitude inside wilderness?
- What are the trends in outstanding opportunities for primitive and unconfined recreation inside wilderness?

As an example, the monitoring question, "What are the trends in terrestrial, aquatic, and atmospheric resources inside wilderness?" could be explored further by considering the following: What effect could climate change have on those resources? What monitoring protocols should be developed that will produce a "trend analysis" for those resources? What resources are most vulnerable to the range of plausible climate futures? Rather than looking at all the resources, consider those fitting a particular indicator and measure that might prove to be a likely candidate for a vital sign, and for which a data source already exists.

A trend question that could be more challenging is: What are the trends in mechanization inside wilderness? As parks become more involved in monitoring for wilderness character, and with the potential for more research requests within wildernesses, will there be a greater need for mechanical equipment? The related indicator is: "Use of motor vehicles, motorized equipment, and mechanical transport." The measure is: "What is the type and amount (weather stations, use of pumps to check on groundwater, vehicle access to get equipment into areas)?" Parks will need to assess each request to determine if there is a trend toward increased mechanization, as requests for more scientific activities related to climate change are put forward.

Once trend data are available, each question could be expanded to include a second question: "How might those trends vary under different climate change scenarios?" Finally, a key question is: "How do we adapt to these changes in the face of climate change?"

Photo: NPS/Michael Haynie/ Doug Buehler, Guadalupe Mountains Wilderness, Guadalupe Mountains National Park

A scenario planning process has been used as a tool to further climate change planning at selected parks and landscapes across the country. The process continues to evolve into a versatile tool that can be applied at various spatial scales. Potential entry points for wilderness character in scenario planning for parks with wilderness include:

- Existing wilderness character indicators and measures can be used to help park staff think about what a specific wilderness area might look like under various climate change scenarios.
- Plant and animal species and communities are important indicators. The measures used to determine wilderness character trends will be critical for wilderness character monitoring; they can also be tied directly to the critical monitoring recommended in climate change scenario planning.
- If a park does not have existing wilderness character indicators and measures, and is thinking about developing a wilderness stewardship plan or wilderness character monitoring protocols, it would be appropriate to consider scenario planning as a first step. Wilderness character indicators and measures could be tied directly to scenario planning monitoring. The Climate Change Intranet site's "Scenario Planning" subpage http://www1.nrintra.nps.gov/climatechange/planscenarios.cfm contains case examples and references and will be a useful source in the consideration of scenario planning.

4

Integrating Wilderness Character into Management and Operations

I believe we have a profound fundamental need for areas of the earth where we stand without our mechanisms that make us immediate masters over out environment.
—Howard Zahniser

Photo:
NPS/Keith Brumid-Smith,
Stephen Mather Wilderness,
North Cascades National Park

Photo: NPS/Daniel Silva,
Theodore Roosevelt Wilderness,
Theodore Roosevelt National Park

Chapter 4—Integrating Wilderness Character into Management and Operations

Daily operations and management decisions can have significant immediate impacts to wilderness character, as well as more gradual, cumulative effects. Management decisions from a wide range of park divisions can affect wilderness character. This chapter includes information and conceptual frameworks to guide decision making in the areas of minimum requirements analysis, scientific activities, environmental compliance, facility management and maintenance activities, emergency services, interpretive activities and education, and natural and cultural resource management. This chapter also includes information and resources for wilderness character training, which helps ensure a consistent and knowledgeable approach by park staff in making day-to-day decisions that can affect wilderness character. Emerging guidance on commercial services in wilderness is included in chapter 6.

Key Points:

- Preserving wilderness character should be the primary consideration of any minimum requirements decision.
- Wilderness character should be considered above cost and convenience.
- An interdisciplinary team should complete the analysis.

Minimum Requirements Analysis

Any management action within wilderness has the potential to affect wilderness character, and should thus be evaluated on its basic necessity, and examined for ways to minimize or mediate any adverse effects. A minimum requirements analysis guides compliance with NPS management policies, and helps determine if potential actions by the National Park Service or government agents are the minimum necessary to accomplish a particular objective, and if so, how to minimize any adverse effects. Preserving wilderness character should be the primary consideration of any MRA decision for potential actions in wilderness.

Although park managers have flexibility in how they apply the MRA process, they must clearly weigh and document the positive and negative impacts of proposed actions, using wilderness character as a major criterion. The analysis must honestly evaluate whether or not the action is necessary and if so, what activity is truly the minimum activity (method or tool) necessary to accomplish the action. The best way to meet these requirements is by using an interdisciplinary team to develop and review the minimum requirements analysis so the action is considered from multiple perspectives.

Various methods and standardized forms have been developed to document the analysis process. One such method/form is the Minimum Requirement Decision Guide (MRDG) developed by the Arthur Carhart National Wilderness Training Center, approved by the four federal agencies administering wilderness. It can be found online at http://www.wilderness.net/index.cfm?fuse=MRDG along with examples of how wilderness character has been addressed in a variety of management scenarios.

The minimum requirements analysis is a two-step process, and wilderness character should be evaluated during both steps:

- *Step 1*—Determine whether the proposed management action is necessary for administration of the area as wilderness and causes no significant impact to wilderness resources and character, in accordance with the Wilderness Act.
- *Step 2*—Determine the techniques and types of equipment necessary to minimize impacts on wilderness resources and character.

Photo: NPS, Denali Wilderness, Denali National Park & Preserve

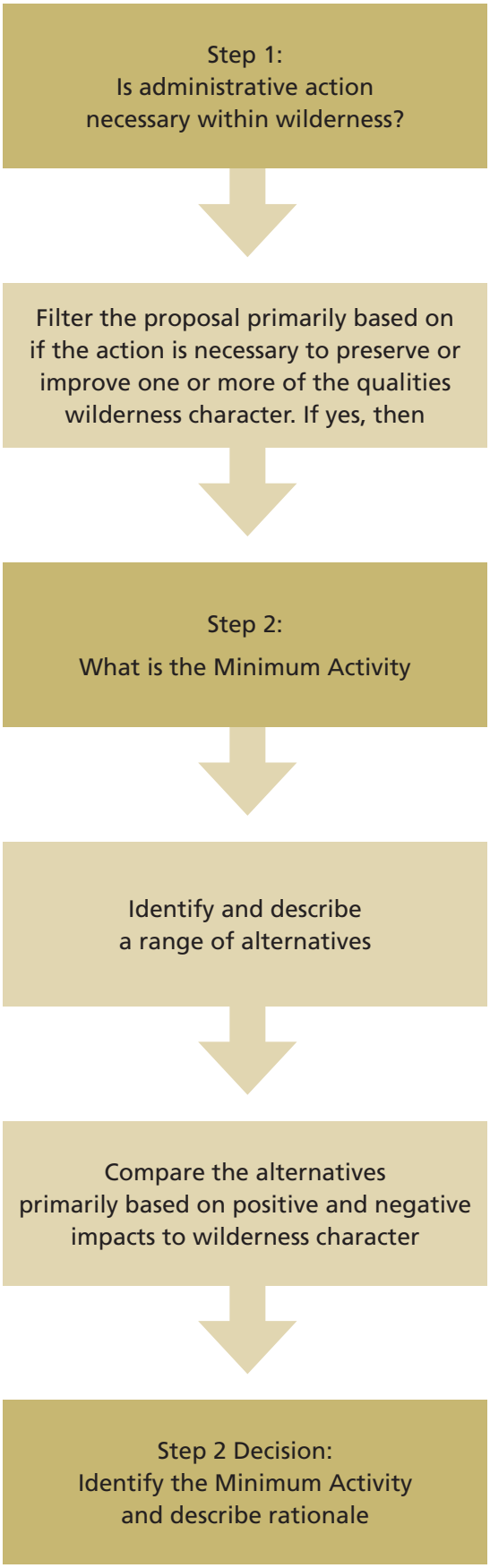
Step 1: Is the Action Necessary?

First identify the problem or situation that prompts a possible need for action; for example, a bridge has been washed out over a major river crossing. Describe proposed actions to address this situation; for example, replace the bridge or refrain from any action. Specific activities, methods, and tools used to address the issue—for example, the decision to use a helicopter to transport bridge materials—should not be identified at this time. This first step is often glossed over, ignored altogether, or used to describe a solution, which should be part of step 2. Step 1 provides the foundation for a minimum requirements analysis and must be taken seriously.

Step 1 involves the use of several filters, but wilderness character will be the only filter discussed here. This filter assesses whether the proposed action is necessary to preserve or improve one or more of the qualities of wilderness character:

- *Untrammeled*—This quality is degraded by modern human activities or actions that control or manipulate the components or processes of ecological systems inside wilderness.
- *Undeveloped*—This quality is degraded by the presence of structures, installations, habitations, and by the use of motor vehicles, motorized equipment, or mechanical transport that increases people's ability to occupy or modify the environment.
- *Natural*—This quality is degraded by intended or unintended effects of modern civilization on the ecological systems inside a wilderness since the area was designated.
- *Outstanding opportunities for solitude or a primitive and unconfined type of recreation*—This quality is degraded by settings that reduce these opportunities, such as visitor encounters, signs of modern civilization, recreation facilities, and management restrictions on visitor behavior.
- *Other features of value*—This quality refers to specific, unique aspects of a wilderness area that contribute to its wilderness character. These may or may not be present in an area, and may be degraded by a variety of specific factors such as deterioration in the condition of a cultural site or loss of an endangered species within the area.

The minimum requirements analysis process as it pertains to wilderness character



In some cases, not all of the qualities of wilderness character may be relevant to a proposed action, or a proposed action may cause no change to the existing status of wilderness character. For example, replacing an existing trail bridge neither increases nor decreases the number of structures in wilderness, so there would be no significant change to either the undeveloped or the primitive recreation qualities of wilderness character. A proposed action that would preserve or degrade certain qualities of wilderness character is treatment to control nonnative invasive weeds:

- *Untrammeled*—Weed treatment would degrade this quality because the action, even if necessary, is an intentional human-caused manipulation of "the earth and its community of life."
- *Undeveloped*—Weed treatment does not degrade this quality unless motorized equipment or mechanical transport is used. In that case, if an action is determined to be necessary, assess the impacts of implementing specific alternatives in step 2.
- *Natural*—Weed treatment improves naturalness and helps preserve this quality, although if nontarget native species were adversely affected this would degrade this quality.
- *Outstanding opportunities for solitude or a primitive and unconfined type of recreation*—Weed treatment requires field technicians, the presence of whom may affect opportunities for solitude. The effect on this quality may only be short-term; however, the likelihood and magnitude of an effect will vary among the specific alternatives determined in step 2, if an action is determined to be necessary.
- *Other features of value*—It is likely that weed treatment would have negligible impacts on any significant additional value not already accounted for in the other qualities, unless, for example, there were nonnative species that are now considered an historic cultural resource.

If an action is determined necessary in step 1, after considering all the filters, document the rationale, including how the action supports preservation of wilderness character, and then proceed to step 2. In the weed example above, action may or may not have been determined necessary once all the step 1 filters were considered.

Photo:
NPS, Stephen Mather Wilderness, North Cascades National Park

Step 2: Determine the Minimum Activity.

This step involves developing a range of alternatives that describe what specific methods and techniques (often referred to as minimum tool) will be used, when and where the activity will take place, what mitigation measures will be necessary, and the general effects to the wilderness resource and wilderness character.

Identify and describe a full range of feasible alternatives, including, as applicable:

- No action
- No section 4(c) prohibited uses
- Minimal section 4(c) prohibited uses
  (e.g., a combination of motorized and nonmotorized methods or tools)
- Proposed section 4(c) prohibited uses

The level of detail required in the description of alternatives and effects varies by the complexity of the activity (method or tool) necessary to complete an action. A "no action" alternative is included to help confirm whether or not an action in wilderness is necessary, and to facilitate a comprehensive comparison of effects. If an action is necessary, identify all alternatives that were considered and rejected as not being feasible to implement, along with the rationale for dismissing each alternative. Determining that a proposed action is possible to accomplish but would have an unacceptable effect on wilderness character is a valid reason for declaring an alternative infeasible.

Photo:
NPS, Yosemite Wilderness, Yosemite National Park

Compare the potential effects of implementing each action alternative on wilderness resources and character using several criteria. In addition to effects on wilderness character, these criteria may include maintaining traditional skills, legislated special provisions, economic values, and convenience for each phase of an activity, including design, construction, management, removal, or restoration. NPS management policies state that the potential disruption to wilderness character is to be considered before and given significantly more weight than the other criteria, such as economic benefits and convenience. Wilderness character will be the only criterion discussed here. A "no impact" response would be selected if it was determined that there would be no positive or negative impact to any quality of wilderness character. This, however, would be a rare case in wilderness, with most management actions having an effect on some quality of wilderness character. Criteria should be applied by describing in a detailed narrative the positive and negative impacts of each alternative in terms of the wilderness character qualities:

- *Untrammeled*—Discuss the degree to which the components or processes of ecological systems are intentionally controlled, manipulated, or hindered by each proposed alternative. Typically, actions that affect this quality are those that are broader in scale or impact to ecological systems, such as weed treatment or prescribed fire. In this case, simply state that there is an insignificant effect and, if appropriate, include these effects in a discussion of the Natural quality.
- *Undeveloped*—Wilderness is meant to be a place where "the imprint of man's work will remain substantially unnoticeable," and to contrast other areas of "growing mechanization." Include in the discussion the effects of the use of any motorized equipment, mechanical transport, structures, or installations on maintaining the undeveloped quality of wilderness character.
- *Natural*—Describe the potential for each proposed alternative to protect, degrade, or restore natural conditions (e.g., air, water, soil, wildlife, fish, plants) including endangered, threatened, or rare species, natural biological diversity, and self-regulating ecosystems. Include, where applicable, a discussion of the effects related to protecting natural conditions within the regional landscape from, for example, insects, disease, or nonnative species.
- *Outstanding opportunities for solitude or a primitive and unconfined type of recreation*—Identify how opportunities for visitors to experience solitude or a primitive and unconfined type of recreation will be protected or degraded. Describe the impacts that will be noticeable to the visitor and which could affect the wilderness experience. Include effects on visitors from the use of motorized equipment, mechanical transport, landing of aircraft, structures, or installations.
- *Other features of value*—Address other features and values that have been identified as a part of wilderness character specific to the wilderness by describing the potential effects on these other features of value for each MRA proposed alternative. All wilderness areas may not have this quality of wilderness character.

Photo: NPS, recommended wilderness, Kobuk Valley National Park

In some cases, the impact to wilderness character by two different alternatives will be relatively equal. If this occurs, comparison using these other criteria can help decide which of these alternatives is preferable. If a compromise of wilderness resources or character is unavoidable, only those actions that preserve, or improve wilderness character and/or have localized, short-term adverse impacts will be acceptable.

Select the alternative that uses the minimum activity (method or tool) necessary to administer the area as wilderness and that also conforms to all laws and agency policy. Describe the rationale for the selection in terms of the positive or negative impacts to the qualities of wilderness character. The rationale for the selected alternative should demonstrate that the decision is the result of an objective evaluation of the alternatives. It should not be a justification for a predetermined decision, a bias toward a certain alternative, or an alternative or method not related to the preservation of wilderness character.

Key Points:

- Scientific activities are encouraged when the benefits outweigh the impacts to wilderness character.
- Managers should vet the proposal through *A Framework to Evaluate Proposals for Scientific Activities in Wilderness,* and the minimum requirements analysis if necessary.
- Park staff should communicate expectations and the importance of wilderness character with researchers early in the process.
- Managers should monitor and log proposed, active, and inactive projects as well as cumulative impacts.

Scientific Activities

Science and research, including physical and social, are an integral part of wilderness stewardship, and the Wilderness Act and NPS policy support scientific activities in wilderness. The Wilderness Act also, however, emphasizes the preservation of wilderness character as its principle mandate, and scientific activities have the potential to impact wilderness character by increasing structures, manipulating the environment, or decreasing solitude. On the other hand, some scientific activities are critical to wilderness preservation, and the National Park Service encourages scientific study that advances understanding of wilderness, provided the benefits outweigh the impacts to wilderness character. Proposals for scientific activities within wilderness must be evaluated with a high degree of rigor and should undergo a minimum requirements analysis. A thorough minimum requirements analysis allows wilderness managers to make defensible decisions by weighing impacts and benefits to each of the qualities of wilderness character and document how these decisions are made. The wilderness character framework also allows managers to set long-term goals and desired future conditions for wilderness character, which helps managers evaluate proposals, decisions, and cumulative impacts in a broader context. The wilderness character framework contributes to improved communication between park staff and scientists, thereby decreasing traditional conflict between these groups, and increasing the benefits of research to both wilderness management and the broader scientific community.

Photo: NPS, Stephen Mather Wilderness, North Cascades National Park

Evaluating a Proposal for Scientific Activity in Wilderness

When evaluating a proposal for scientific activities in wilderness, managers should consult *A Framework to Evaluate Proposals for Scientific Activities in Wilderness* (Landres and others 2010), available in the "Research and Scientific Activities Toolbox" at http://www.wilderness.net/toolboxes/documents/resSciAct/Scientific%20Activities%20Evaluation%20Framework.pdf, and use a minimum requirements analysis to vet the proposal. The framework is a mechanism to evaluate impacts and benefits of scientific activities to help managers make decisions or recommendations on a proposal based on a standardized assessment of benefits and impacts. Managers should also complete a documented, two-step MRA process to determine if the proposed activity is necessary, and if so, how to minimize impacts to wilderness character. Much of the minimum requirements analysis can be informed by weighing impacts and benefits through the framework referenced above. Scientific activities may involve prohibited uses, which mandates a minimum requirements analysis, or may have significant cumulative effects on wilderness character, which can be thoroughly assessed through a minimum requirements analysis. Failure to pass the MRA stage is not necessarily a cause for automatic rejection of a proposal, but may inform researchers on how to restructure their research activities in such a way as to reduce or eliminate adverse impacts to wilderness character.

Improving the Management of Scientific Activities in Wilderness

An effective process for management of scientific activities in wilderness will incorporate these actions:

- Provide researchers with information on wilderness character, prohibited uses, and minimum requirements analysis before they present a proposal.
- Develop standard operating procedures for evaluating proposed scientific activities and their impacts and benefits to wilderness character (see "Other Tools to Evaluate Proposals and Their Impacts and Benefits to Wilderness Character," below).
- Monitor proposed, active, and inactive research projects, as well as all existing scientific structures within wilderness. This helps ensure the removal of scientific equipment and structures no longer needed for active research, and also tracks the cumulative impacts of these projects.
- Outline wilderness stewardship goals and desired conditions of wilderness character to help guide proposal evaluations.

Photo: NPS, Rocky Mountain National Park Wilderness, Rocky Mountain National Park

Other Tools to Evaluate Proposals and Their Impacts and Benefits to Wilderness Character

The "Research and Scientific Activities Toolbox" available online at http://www.wilderness.net/toolboxes provides law and policy guidance, tools, worksheets, and examples for evaluating these activities in wilderness. The evaluative tools, framework, and worksheets consider impacts to wilderness character through filter questions and other processes that help managers determine the appropriateness of a proposed activity. Examples of guidance and tools provided include:

- *Scientific Activities and Research in NPS Wilderness: Guidelines for Wilderness Managers:* http://www.wilderness.net/toolboxes/documents/resSciAct/Scientific%20Activities%20Evaluation%20Framework.pdf
- *Wilderness Research in Alaska's National Parks:* www.nps.gov/akso/Docs/Wilderness.pdf
- Worksheets and Instructions (Proposal Evaluation Tools): http://www.wilderness.net/index.cfm?fuse=toolboxes&sec=resSciAct

Other resources and examples are available at:

- NPS Wilderness Character Sharepoint site: http://share.inside.nps.gov/sites/WASO/WSD/WC
- *Arthur Carhart Minimum Requirements Decision Guide & Examples:* http://www.wilderness.net/index.cfm?fuse=MRDG

Photo: NPS, Glacier Bay Wilderness, Glacier Bay National Park & Preserve

Environmental Compliance

This section addresses how to address wilderness character while complying with the National Environmental Policy Act. A desired outcome is to increase consistency among environmental assessments and environmental impact statements to facilitate their development and review. If used consistently, this approach will improve broad understanding, both by planning reviewers and the public, of the way proposed actions affect wilderness character. Enhancing consistency in NEPA documents should also improve wilderness stewardship. Note that this section is not intended to address compliance with section 106 of the National Historic Preservation Act, compliance with floodplain and wetlands requirements, specific resources.

The National Environmental Policy Act requires federal agencies to fully consider the environmental impacts of any proposed action prior to implementation. A variety of NPS plans with the potential to affect wilderness character may require NEPA documentation. In addition to wilderness studies and wilderness management plans, these may include general management plans, commercial services plans, visitor use management plans, and air tour management plans. NPS actions to treat invasive plants, install footbridges or food lockers, or build climate monitoring stations in wilderness, would trigger a NEPA process.

Determine whether or not wilderness character should be addressed in a NEPA document during the scoping phase, when a planning team considers issues and concerns regarding a potential action. Always address wilderness character when developing a wilderness study or stewardship plan. For actions occurring in any category of wilderness (designated, proposed, recommended, and eligible), a planning team must determine the potential effect on wilderness character. Seven key points in the NEPA process during which wilderness character should be considered are:

1. Scoping and preparing an environmental screening form
2. Selecting impact topics
3. Developing the "Affected Environment"
4. Developing the "Alternatives"
5. Writing the "Environmental Consequences"
6. Identifying the NPS preferred alternative
7. Preparing a decision document

For comprehensive guidance about NEPA requirements, see NPS Director's Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision Making* and the NPS *Director's Order 12 Handbook,* available online at http://planning.nps.gov/document/do12handbook1.pdf.

The following sections describe how to address wilderness character at key stages in the NEPA process. References to several examples of NEPA documents that address wilderness character are included at the end of the section.

Photo: NPS, Lassen Volcanic Wilderness, Lassen Volcanic National Park

Scoping and Preparing an Environmental Screening Form

Scoping is the process a planning team uses to identify major issues to address in a NEPA document, and includes both external scoping (canvassing the public and other agencies) and internal scoping (NPS staff). Wilderness has both local and national significance, which underscores the need for adequate and effective participatory processes for public involvement at broad scales. During scoping, an environmental screening form is typically completed. The environmental screening form determines the NEPA pathway for a NPS action (e.g., a memo to file, categorical exclusion, environmental assessment, or environmental impact statement). One of the mandatory criteria to consider in an environmental screening form is whether an action could have a significant impact on wilderness character.

Many actions in wilderness are routinely categorically excluded from further NEPA analysis, such as manual weed control, and maintenance of existing trails and campsites. Use care in approving actions under a categorical exclusion. If an action could potentially cause more than a minor adverse impact to wilderness character, set a national precedent, or be controversial, selecting a categorical exclusion is not the appropriate NEPA pathway.

Scoping also involves articulating the purpose and need for the project, and project goals. For projects proposed within wilderness it is important to properly state the issues being addressed and the need to take action in wilderness. It is also important to include the preservation of wilderness character in project goals.

Selecting Impact Topics

Planning issues and impact topics focus environmental analysis and ensure the relevance of impact evaluation. Based on federal laws, Council on Environmental Quality guidelines, NPS management policies, scoping, staff judgments, and especially issues, a planning team identifies which impact topics to analyze in a NEPA document. Wilderness character should always be the primary impact topic when analyzing impacts on wilderness. This ensures that impacts are evaluated based on their effects to the qualities of wilderness character. If potentially adverse impacts (or benefits) to wilderness character are only minor, then wilderness character may be dismissed from detailed analysis. If wilderness character is dismissed from detailed analysis, be sure to discuss the rationale in a section identifying impact topics that were dismissed from detailed analysis. This lets readers know that wilderness character was not overlooked.

In the past, impacts to wilderness have been addressed in NEPA documents in inconsistent ways. Impacts to wilderness have been evaluated under titles such as “Visitor Experience,” “Wilderness Resources (Including the Wilderness Visitor Experience),” “Scenic Resources and Visual Quality,” “Vegetation,” and “Wilderness Experience and Noise.” This inconsistent approach can lead to confusing descriptions of the affected environment, complicate impact analysis, and make it difficult for readers to locate discussions about impacts to wilderness resources. To avoid these problems, use wilderness character terminology and explicitly identify the location of wilderness character impact analysis in a NEPA document.

Developing the "Affected Environment"

This section of a NEPA document succinctly describes existing natural, cultural, socioeconomic, and other resources that would be affected either directly or indirectly by any of the action alternatives under consideration. The "Affected Environment" section of the document should describe a park's wilderness character using the qualities of wilderness character identified in chapter 1 of this document. Much of this information can be taken from the wilderness character narrative portion of wilderness stewardship building blocks (if available). Description of wilderness character qualities should include current conditions and factors affecting these conditions. Also include discussion of the overall condition of wilderness through an integration of these qualities.

Developing the "Alternatives"

Depending on the proposed action, wilderness character may or may not play a role in developing alternatives. For example, a general management plan alternative for a park with wilderness should normally consider effects to wilderness character from all actions that are part of an alternative. However, if the NEPA document is evaluating snowmobile use along road corridors and developed areas, wilderness character would probably play a very small role in developing different alternatives. Wilderness character should be integral to the development of all alternatives for wilderness studies and wilderness stewardship plans.

Alternatives that propose Wilderness Act section 4(c)-prohibited uses trigger the need to incorporate a minimum requirements analysis into the compliance document. Evaluate actions using the same two-step process described earlier in this chapter: (1) Is the action *necessary?* and if so, (2) What is the minimum activity required to accomplish the desired result? Develop the *minimum* requirements analysis concurrently with proposed alternatives and preliminary impact analysis, not at the end of the process. This makes development an iterative process that refines alternatives to best meet management goals while minimizing impacts to wilderness character. Document the MRA process using the Carhart or similar worksheets and include this documentation in an appendix to the environmental compliance document.

Photo: NPS/Peter Landres, Sequoia-Kings Canyon Wilderness, Sequoia and Kings Canyon National Parks

Writing the "Environmental Consequences"

If wilderness character is determined to be a relevant impact topic, then analyze the effects of a potential action along the following dimensions:

- *Direct versus indirect impacts*—An alternative can directly affect wilderness character (e.g., establishing a backcountry campsite in a wilderness area affects the undeveloped quality), and an alternative can also have an indirect or delayed effect on wilderness character (e.g., developing a campground near a wilderness area, which eventually results in increased use and decreased solitude).
- *Quality of the impact*—The alternative could have an adverse or beneficial effect on wilderness character.
- *Duration of the impact*—The alternative could result in a short-term or long-term change to wilderness character. Explicitly define the duration of these timeframes. Generally, a short-term impact would be temporary and is often associated with the effects of construction or a single event (e.g., hand-pulling of weeds at a site). Long-term impacts have more permanent effects (e.g., a proposal for wilderness designation may protect wilderness character in perpetuity).
- *Intensity of the impact*—This refers to the degree or magnitude to which wilderness character would be beneficially or adversely affected. This dimension assesses the relative size or amount of the effect, not the geographic extent or duration and frequency (see the NEPA document examples at the end of the section for examples of wilderness character intensity thresholds).
- *Context of the impact*—This refers to the setting within which an impact may occur, such as a locality or region. In the case of wilderness character, the context is usually either localized or wildernesswide.

When a wilderness extends beyond a park boundary (into an adjacent national forest, for instance) the neighboring land management agency should be consulted regarding impacts.

When analyzing the effects of alternatives on wilderness character, be sure to consider each of the qualities of wilderness character. The analyst (with input from the interdisciplinary team) needs to synthesize and integrate all of these possible effects into a concise statement of the overall effect on wilderness character.

Identifying the NPS Preferred Alternative

The preferred alternative is the one that the NPS is leaning towards implementing. In parks with designated or proposed wilderness, wilderness character should be an important consideration when identifying an NPS preferred alternative.

Preparing a Decision Document

Decision documents complete the NEPA process for an environmental assessment or environmental impact statement and record the reasons for selecting a particular alternative. These documents also provide rationale for EA decisions that arrive at a "finding of no significant impact," or FONSI. Beneficial effects to wilderness character are one rationale for selecting a preferred alternative. As NPS wilderness is also considered a park resource, planners must affirmatively state that park resources would not be impaired by the selected alternative. This is particularly important if wilderness is a fundamental resource of a park. The qualities of wilderness character should be considered in the rationale for justifying why there is no impairment of this resource.

Examples

Examples of this approach to incorporating wilderness character into compliance documents include:

- *Nabesna Off-Road Vehicle Management Plan Draft Environmental Impact Statement* (2010): http://parkplanning.nps.gov/document.cfm?parkID=21&projectID=20698&documentID=35478
- *Climate Monitoring Program in the Arctic Alaska Network (ARCN) National Park Service Units Environmental Assessment* (2010): http://parkplanning.nps.gov/documentsList.cfm?parkID=11&projectID=31471
- *Final General Management Plan / Wilderness Management Plan / Environmental Impact Statement*, Apostle Islands National Lakeshore: http://parkplanning.nps.gov/projectHome.cfm?projectID=10903
- *Draft Grand Ditch Breach Restoration Environmental Impact Statement,* Rocky Mountain National Park: http://parkplanning.nps.gov/projectHome.cfm?projectID=24496
- *Draft General Management Plan Amendment / Wilderness Study / Environmental Impact Statement*, Gates of the Arctic National Park and Preserve (available soon)
- *Draft General Management Plan / East Everglades Wilderness Study / Environmental Impact Statement,* Everglades National Park http://parkplanning.nps.gov/document.cfm?parkID=374&projectID=11170&documentID=51890

External Compliance Document Review

The National Park Service reviews many compliance documents prepared by other agencies regarding activities and actions that could potentially affect park units and wilderness, such as proposed military aircraft overflights, oil and gas development, renewable energy development, transmission corridors, and transportation proposals. If wilderness could be affected, the analysis of impacts to wilderness character should be identified in such documents and analyzed using the qualities of wilderness character.

Key Points:

- Develop and agree upon facilities and maintenance standards through planning or other interdisciplinary teamwork.
- Analyze facility management and maintenance activities for their effects on wilderness character, especially the undeveloped quality and the solitude or primitive and unconfined recreation quality.
- Consider the use of primitive tools or modes of transportation.

Facility Management and Maintenance Activities

Wilderness character is closely tied to many of the daily activities of facility management and maintenance operations staff. Facility management, maintenance, and trail work can improve visitor access and experience, help protect natural and cultural resources, and improve visitor safety. On the other hand, facility management and maintenance activities can also detract from the qualities of wilderness character. As with resource management, fire, and other divisions within the park, decisions about activities and projects within wilderness should consider impacts and benefits to wilderness character. Managers should begin by developing and agreeing upon facilities and maintenance standards (e.g., width and surface for trails, design and placement of signs, sanitary facilities, and levels of equipment and crew noise) through planning or other interdisciplinary teamwork. These standards should be informed by desired conditions for each of the qualities of wilderness character as well as appropriate NPS management policies. In addition, planning facilities management and maintenance work in wilderness may require additional time, expertise, and funding to achieve project goals and preserve wilderness character.

Facility Management and Maintenance Work and the Undeveloped Quality

Park maintenance staff are in a unique position to protect and demonstrate the special nature of wilderness. The use of crosscut saws and other nonmechanized tools supports the undeveloped quality, strengthens connections with the land, perpetuates traditional skills, and demonstrates the special nature of wilderness to the public. However, nonrecreational structures, installations, and developments in wilderness that are not considered historic or cultural resources, impact the undeveloped quality. This includes the presence of buildings, utilities, or any other developments within wilderness. Perhaps the most common facility management and maintenance activities that affect wilderness character involve the use of motor vehicles, motorized equipment, or mechanized transport:

- Motor vehicles include any land, water, or air vehicles powered by gas or electricity (e.g., boats, aircraft, snowmobiles, all-terrain vehicles).
- Motorized equipment includes any machines or tools that use a motor or engine (e.g., chainsaws, generators), but does not include small, handheld, battery-powered equipment.
- Mechanical transport is defined in *Keeping It Wild* as "any contrivance for moving people or material in or over land, water, or air, having moving parts or providing a mechanical advantage to the user and powered by a living or nonliving power source" (e.g., carts, wagons, wheelbarrows).

The use of any of these vehicles or equipment detracts from the undeveloped quality, regardless of whether the use is necessary because of an emergency situation. This use must be approved by a minimum requirements analysis conducted by an interdisciplinary team that has thoughtfully considered whether the action is necessary within wilderness, and if so, what tools, methods, and actions are necessary to meet the minimum requirements for the administration of the area that result in the least negative impact to wilderness character.

When an action has been determined necessary within wilderness, staff should consider the use of primitive hand tools or modes of transportation, such as crosscut saws and pack stock, to accomplish management objectives and preserve wilderness character. The Wilderness Act contains no exceptions for management actions that are quicker, cheaper, or easier, so time and economic constraints are secondary to impacts on wilderness character.

Establishing an appropriate level of basic maintenance ensures that facilities, trails, or other structures are not "improved" to such a degree that they no longer fit the desired condition for the wilderness character of an area. A basic level provides clear, predetermined standards for staff to maintain facilities with as benign an effect on wilderness character as possible.

Facility Management and Maintenance Work and the Opportunity for Solitude or Primitive and Unconfined Recreation

Facility management, maintenance, and trail work may affect the opportunity for solitude or primitive and unconfined recreation by adding to the number of recreation-related developments, reducing the opportunity for primitive and unconfined recreation, and decreasing the remoteness from sights and sounds of people in wilderness. Recreational developments protect park resources and often improve the natural quality, but detract from solitude by reminding wilderness users of the presence of other visitors and also by decreasing the opportunity for self-reliant recreation. The presence of trails, shelters, signs, or bridges improves visitor safety, but reduces the opportunity for visitors to rely on their own skills to navigate and travel through wilderness. Developments such as toilets, campsites, and signs have an adverse effect on this quality of wilderness character whether they are for resource protection or visitor convenience. Facility management, maintenance or trail crews, as with resource management crews, may also impact the opportunity for solitude by increasing the number of people that visitors encounter in the wilderness. If facility management, maintenance, or trail crews are considering the use of section 4(c)-prohibited uses, a minimum requirements analysis may help them consider the impact of their proposed actions on all qualities of wilderness character.

Photo: NPS, Yosemite Wilderness, Yosemite National Park

Facility Management and Maintenance Work and the Natural and Untrammeled Qualities

Facility management, maintenance, and trail projects generally play a key role in protecting park resources, but crews may need to consider their impact on the natural quality of wilderness character if their activities have the potential to negatively impact water quality, increase erosion, or contribute to loss of soil crusts, native plant communities, or connectivity with the surrounding landscape. Facility management and maintenance activities could impact the untrammeled quality if they control, manipulate, or alter the biophysical environment. This would include large-scale actions such as building a dam but would not include small-scale actions such as removing a hazard tree or constructing a water bar.

Facility Management and Maintenance Work and the Other Features of Value Quality

Facility management and maintenance work play a critical role in protecting the other features of value quality of wilderness character. Protective fencing, cave exclosures, walkways over archeological sites, and shelters over paleontological resources can help protect these other features of value, but can also impact the undeveloped and the solitude or primitive and unconfined qualities. Activities and projects to protect these other features of value need to be planned carefully to minimize impacts to all of the other qualities of wilderness character. Historic structures and other cultural resources such as cabins, ruins, or trails may be priority assets for a park and part of the other features of value quality of wilderness character. Preservation maintenance activities have special planning and implementation considerations when they are conducted in wilderness. Work on historic structures should be planned with cultural resource and wilderness staff to meet both *The Secretary of the Interior's Standards for the Treatment of Historic Properties* and minimum requirements for wilderness. Importantly, a standard of treatment should be compatible with the preservation of wilderness character as well as the methods and materials needed for preservation maintenance. Primitive tools and use of local materials can help preserve both the historic character and wilderness character of an historic structure but could impact the natural quality if, for example, native trees are cut and used in the preservation action (see appendix 4.2 for an example in the Zion Wilderness in Zion National Park). Maintaining historic structures to desired conditions with minimal intervention will protect the historic "fabric" and wilderness character, while deferring maintenance until major interventions are necessary could impact multiple qualities of wilderness character in addition to historic integrity.

Photo: NPS, Zion Wilderness, Zion National Park

Facilities Outside of Wilderness

Facilities outside of wilderness can potentially influence wilderness character as well. For example, improvements to parkwide infrastructure, such as paving or widening roads and increasing the supply of parking facilities, often facilitates higher levels of visitor use and inundates trailheads with visitors. These facility improvements outside of the wilderness can indirectly detract from the opportunity for solitude or primitive and unconfined recreation within the wilderness. Increased visitation may lead to social trails and impact resources, which may lead to proposals to improve and maintain trails to a higher standard than originally intended, or proposals to use motorized and mechanized equipment. In other cases, bright lighting, high-traffic roads, and large campgrounds near the wilderness boundary may affect opportunities to experience natural sounds and dark skies within the wilderness. This concept of "trail creep" and other impacts to wilderness character may be mitigated by communication among staff, consideration of wilderness character, and interdisciplinary planning for visitor use management and facilities outside of wilderness.

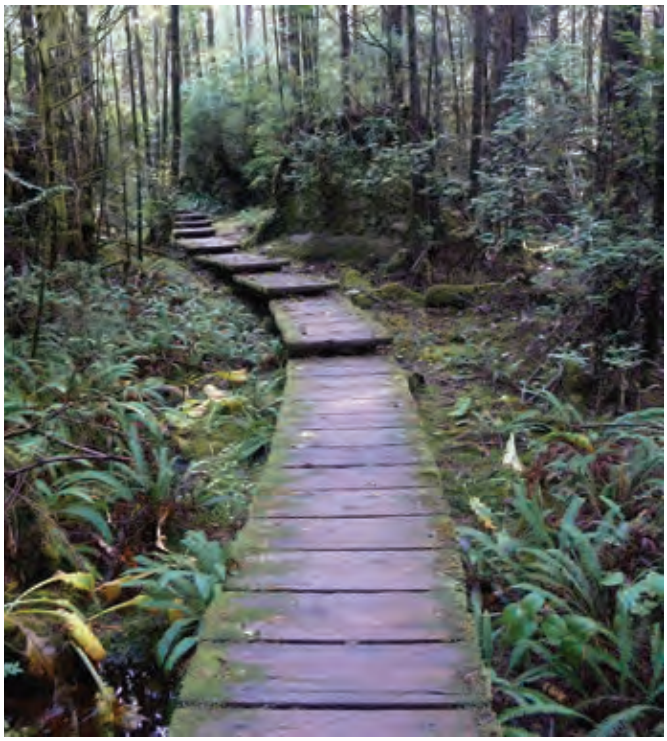
Decision Making and Further Examples

Wilderness is not intended to be an area of prohibitions that limits access and enjoyment, and facilities in wilderness are important aspects of visitor safety, experience, and resource protection. Wilderness is intended to provide opportunities for a special kind of experience that is markedly different from those on other types of public land. Evaluating facility management and maintenance activities within wilderness can be a difficult task. Sometimes, section 4(c)-prohibited uses are necessary to maintain portions of the wilderness to a very basic standard, or in cases where safety is an issue. Managers should still engage a variety of staff in honest discussion and consider:

- What is and is not necessary within wilderness?
- What should be considered a basic level of maintenance?
- Do the benefits of the proposed activities justify the impacts to wilderness character?

The Facility Management Software System (FMSS) database, which tracks changes in condition of facilities and assets including those in wilderness, may be a useful data source for tracking change in wilderness character over time, particularly for assessing impacts on the undeveloped quality and opportunity for primitive and unconfined recreation quality. Examples of analyzing impacts to wilderness character through the *Minimum Requirements Decision Guide* for bridge failures and washouts, trail maintenance, and trail reconstruction projects are available online at http://www.wilderness.net/index.cfm?fuse=MRDG.

Photo: NPS/Peter Landres, Olympic Wilderness, Olympic National Park



Key Points:

- Uses prohibited by the Wilderness Act are allowed in emergencies but should only be used in critical or life-threatening situations.
- Education, risk management, and preplanning can reduce impacts to wilderness character.
- Impacts by emergency services on wilderness character should be monitored over time.

Emergency Services, Law Enforcement, and Wildland Fire

Impacts to wilderness character caused by administrative activities, including emergency operations, will occur. Planned administrative entries into wilderness degrade the untrammeled quality, while other activities may alter the natural or undeveloped quality. Emergency services can impact the quality of solitude. Through training, education, and a consideration of impacts to wilderness character in all preplanning efforts, those effects can be reduced. Joint training with cooperating agencies such as the U.S. Fish and Wildlife Service (USFWS), the U.S. Border Patrol, and county search and rescue teams can raise an awareness of wilderness values and an understanding of wilderness character concerns. Programmatic minimum requirements decision documents allow for consideration of wilderness character impacts prior to an incident and facilitate reporting at year's end.

Search and Rescue, and Risk Management

Search and rescue operations can negatively impact wilderness character. Low-level helicopter flights impact the undeveloped quality. Intensive rope rescue operations adversely impact the natural quality when the trampling of vegetation occurs. Large numbers of searchers eliminate opportunities for solitude in the search area.

Parks should consider preventive search and rescue programs as well as programs to evaluate public risk. Through the reduction of injuries and incidents, parks not only improve visitor safety, they preserve wilderness character. A careful evaluation of individual incidents as well as overall trends should lead to additional opportunities for education and user group outreach with an emphasis on personal responsibility and risk management through appropriate decision making.

The Wilderness Act does allow for some prohibited uses, such as helicopter landings, during emergencies involving the health and safety of persons within the area. Through park search and rescue plans, as well as site-specific preplans for common incident locations, parks may be able to avoid impacts to wilderness character. For example, if there is a common injury location that is a reasonable distance from a trailhead, a park could develop a preplan that states that a noncritical patient would be carried by litter to a trailhead as opposed to using a helicopter evacuation.

Impacts to wilderness character that occur during search and rescue incidents as well as training exercises should be included in monitoring programs. The total number of flight hours per year, the number of days when flights occur, or the total number of bolts placed could all serve as measures to track impacts to wilderness character resulting from search and rescue activities.

Law Enforcement

Illegal activities occurring in NPS wilderness can have substantial negative impacts on wilderness character. Plant and animal poaching negatively impact both the natural and untrammeled qualities. Illegal all-terrain vehicle use impacts both the undeveloped quality as well as the natural quality, and may degrade cultural resources in the other features of value quality. Marijuana grow sites and illegal U.S. border crossings can impact all five qualities of wilderness character. Through an analysis of these impacts, parks may choose to take actions that negatively impact wilderness character in the short term with the goal of reducing the long-term impacts of the illegal activities. Examples could include ranger patrols to deter wilderness regulation violations or the use of a helicopter to detect marijuana gardens. Case incident reports (CIRs) document law enforcement and emergency services activities in parks. Parks should review CIR content and formats and as they relate to documenting wilderness character impacts and reporting.

NPS regulations can detract from the unconfined quality of a visitors' recreational experience. The regulations may be necessary to preserve other aspects of wilderness character including the opportunity for solitude. Through monitoring, the extent of regulations can be tracked over time and evaluated for necessity.

As with other emergency services, planning, communication, education, and minimum requirements discussions can lead to a reduction in impacts on wilderness character.

Wildland Fire Management

Both wildfire management actions and planned fuels treatments (including management-ignited fires) have potential to impact the untrammeled, natural, and other features of value qualities of wilderness character through altering the natural fire regime. Helicopters, other aviation resources, and mechanical equipment such as chainsaws and portable pumps impact the undeveloped quality, while management-ignited fires and unplanned fires that are allowed to burn may improve the natural quality while adversely affecting cultural resources in the other features of value quality. Fire management activities protect life and property but they also protect or restore resources and may contribute to the preservation of wilderness character. Integrating wilderness character into management and planning encourages a more holistic view of wildland fire management. Chapter 3 provides an in-depth discussion of wilderness character and fire management planning.

Photo: NPS, Zion Wilderness, Zion National Park

All actions affecting wilderness character, including the use of aviation resources and other motorized equipment, should be evaluated through a minimum requirements analysis and monitored with the overall goal to preserve or improve wilderness character. Decisions regarding the implementation of planned ignitions and management of unplanned ignitions should weigh the potential for positive long-term benefits on wilderness character against immediate and cumulative negative impacts. Burned area stabilization and rehabilitation plans should carefully consider impacts to wilderness character. For example, the negative impacts to the untrammeled quality caused by a native plant reseeding program should be weighed against the positive impacts to the natural quality.

Planning and education can reduce some impacts by identifying alternate transportation methods, such as stock use as well as the use of minimum impact suppression techniques. The *Interagency Incident Response Pocket Guide* carried by many wildland firefighters includes a section concerning MIST guidelines and can be an excellent field resource. Tactics such as the use of Leave No Trace principles for spike camps, preplanning to avoid motorized equipment use during management-ignited fires, and the use of natural features for fire breaks can all maintain or improve wilderness character.

Photo: NPS, Mojave Wilderness, Mojave National Preserve

Interpretive Activities and Education

Incorporating wilderness character into a long range interpretive plan ensures that interpretive messages are relevant and effective in preserving wilderness character. See chapter 3 for information about developing a long range interpretive plan. The concept of wilderness character helps focus discussion of wilderness from diverse personal and cultural meanings to a common understanding based on the language of the Wilderness Act. The wilderness character framework also helps managers consider the potential adverse effects of various message-related activities and development actions, as well as benefits that may contribute to wilderness character. For example, considering potential effects on the opportunity for solitude shapes decisions on the location, duration, and frequency of guided activities in wilderness so as to have the least impact on this quality to other visitors.

Providing educational opportunities and messages to the public before they get to wilderness is among the most effective tools for promoting wilderness ethics that preserve wilderness character. The conceptual framework for wilderness character facilitates explanations of management decisions to the public. It is important that interpretive and educational outreach staff be able to clearly articulate the qualities and preservation of wilderness character in a way that emphasizes a shared responsibility. For example, increased fire danger may lead to increased wilderness restrictions and the decision to prohibit the use of fires, smoking, and gas stoves. Interpretive and educational outreach staff can explain the tradeoffs between the opportunity for unconfined recreation quality and benefits to the natural quality through reduced risk of accidental ignitions.

The following principles could guide the development of educational messages that incorporate wilderness character:

- Promote and perpetuate public awareness of, and appreciation for, wilderness character, resources, and ethics, while providing for acceptable use limits.
- Encourage the public to use and accept wilderness on its own terms; i.e., the acceptance of an undeveloped, primitive environment and the assumption of the potential risks and responsibilities involved in using and enjoying wilderness areas.
- Focus on fostering an understanding of the concept of wilderness that includes respect for the resource, willingness to exercise self-restraint in demanding access to it, and an ability to adhere to appropriate, minimum-impact techniques.

Key Points:

- Wilderness character should be reflected in interpretive themes and educational messages.
- Education is one of the most effective tools for mitigating visitor use issues in wilderness.
- The wilderness character framework enables staff to communicate about wilderness with the public.
- Leave No Trace messages complement and enhance wilderness character messages.

Messages emphasizing Leave No Trace principles mesh easily with preserving the qualities of wilderness character. For example, "travel on durable surfaces" preserves the natural quality and lessens the chance of social trails developing, which may result in a management response to either construct a trail or limit visitation, both of which also impact the opportunity for primitive and unconfined recreation. The Leave No Trace Center for Outdoor Ethics produces a series of skills and ethics booklets covering a wide range of activities and geographic areas (e.g., Canyoneering, Alaska Wildlands) that provide useful information for interpreters on minimizing visitor impacts.

Training staff to consider and promote wilderness character when issuing wilderness permits improves visitor education, provides consistency, and promotes public acceptance and understanding of potentially unpopular management policies aimed at preserving wilderness character.

Well-informed park visitors also play a powerful role in not only minimizing their own impacts on wilderness character, but as advocates of such action to other users and outside influences on the park. An inspired and well-informed public can be a powerful advocate to preserve or improve all qualities of wilderness character.

Photo: NPS, Great Sand Dunes Wilderness, Great Sand Dunes National Park & Preserve

Natural Resources

Wilderness character is closely tied to many of the daily operations conducted by natural resource management staff. Control of invasive species, accumulated fuels from fire suppression or exclusion, impacts on natural sounds and night skies, protection of paleontological resources, the potential effects of climate change, and visitor experience are among the many concerns of natural resource managers. Actions associated with such concerns could have a variety of effects on wilderness character. Preserving natural resources, the integrity of native ecological systems, and improving visitor experience are all key components of wilderness character, but natural resource managers must also consider effects of any action they take on the qualities of wilderness character. To preserve wilderness character, actions must be determined to be necessary. Any activity (method or tool) taken to accomplish the action should eliminate or minimize any impact to wilderness character. A good way to make these determinations is through the completion of a minimum requirements analysis.

Preserving the natural quality and the untrammeled quality can often be contradictory; however, the Wilderness Act requires both qualities to be preserved to the greatest extent possible. For example, removing invasive species can improve the natural quality, but simultaneously degrades the untrammeled quality. Staff should engage in discussions about how potential actions may affect both qualities and honestly weigh the benefits and impacts to wilderness character in decision making. In some cases, a short-term sacrifice in the untrammeled quality may be necessary to gain a longer term benefit to the natural quality. While this is often a sound and legitimate argument, managers should also be conscious of the cumulative impacts of many short-term sacrifices to the untrammeled quality. A good time to discuss some of these broader issues is during the planning process. Wilderness character should be considered and included when developing desired conditions in support of a resource stewardship strategy. For more information about wilderness character and development of a resource stewardship strategy see chapter 3.

When natural resource staff conducts internal monitoring, surveys, or other activities within wilderness, they must be aware that installations may detract from the undeveloped quality, and large groups of technicians, volunteer groups, or work crews may impact the opportunity for solitude, especially when planning to stay in the wilderness for days at a time. Consider conducting these activities on days of the week or in seasons with lower visitor use. Much of this internal monitoring will be critical for wilderness character monitoring. Data regarding plant and animal populations and communities, air and water quality, soundscapes and night skies, and status of geologic and other important resources are all important components of wilderness character monitoring. Much of this data may be gathered from existing efforts or databases so staff should consider collaborating with inventory and monitoring (I&M) networks or other monitoring efforts. For more information on conducting scientific activities within wilderness see the previous section in this chapter.

Key Points:

- Preserving all the qualities of wilderness character is equally important, so managers should carefully weigh long- and short-term impacts and benefits.
- Natural resource staff should be especially conscious of cumulative impacts of large work or survey crews, as well as cumulative trammeling actions.
- Wilderness character monitoring will probably benefit from existing data, such as inventory and monitoring data or RSS indicators.

Cultural Resources

This section focuses on how the management of cultural resources and wilderness overlap, and how cultural resource management and wilderness stewardship can be compatible. This section (and appendix 4.1) also offers some practical ways to improve communication between wilderness and cultural resource staff by identifying incorrect assumptions commonly held by both groups. This section builds on prior NPS efforts (NPS 2002) and recent publications (Landres and others 2008, Cowley and others 2012) that show a strong connection between cultural resources and wilderness. In addition, Wild and McLeod (2008) discuss the connection between cultural resources and protected areas globally. One of the most important take-home messages of this section is that park and project managers need to fully consider the values and impacts of all resources as they develop management and operational plans and strategies for the programs and resources for which they are responsible.

As described in chapter 1, cultural resources may fit within the other features of value quality of wilderness character if they have scientific, educational, scenic, or historical value. In some this relationship between cultural resources and wilderness character is clear, particularly when wilderness designation provides a specific reference to cultural resources such as in Mesa Verde Wilderness within Mesa Verde National Park. Similarly, the 1994 California Desert Protection Act established the Death Valley Wilderness in Death Valley National Park and directed the National Park Service to protect and preserve "historical and cultural values of the California desert associated with ancient Indian cultures, patterns of western exploration and settlement, and sites exemplifying the mining, ranching, and railroading history of the Old West." In these cases it is understood that cultural resources are part of the fabric of the wilderness and that wilderness designation protects these resources. More commonly, however, this relationship is not expressed in legislation and this lack of clarity has in some cases led to confusion and misunderstanding.

Photo: NPS, Saguaro Wilderness, Saguaro National Park

Misunderstandings About Cultural Resource and Wilderness Laws

There are several misunderstandings about wilderness and cultural resource laws. Perhaps the most common misunderstanding is that the Wilderness Act has priority over cultural resource laws, or that cultural resource laws, including the NPS Organic Act, have priority over the Wilderness Act. This misunderstanding, especially when wilderness legislation does not explicitly discuss cultural resources, has led some to the view that cultural resources must be removed because they are "developments" in an otherwise "undeveloped" wilderness; or, at the other end of the spectrum, the view that cultural resources must be maintained and retained in wilderness without considering

the full range of options and their resulting impacts on wilderness. In fact, no federal law has priority over another unless explicitly stated in congressional legislation and neither wilderness nor cultural resource laws state that they have a priority over the other. Therefore, all cultural resource laws apply to cultural resources in wilderness, just as the Wilderness Act also applies. Another common misunderstanding is that the Wilderness Act section 4(a)(3) statement that "Nothing in this Act shall modify the statutory authority under which units of the national park system are created" allows park staff to prioritize particular provisions of the NPS Organic Act over the Wilderness Act. As discussed in scholarly publications on how various laws apply in wilderness (e.g., Rohlf and Honnold 1988, Dawson and Hendee 2008, Miles 2009), the congressional and policy mandate to park managers is to uphold both laws, not to put either law above the other.

Managing Cultural Resources in Wilderness

Planning is fundamentally important to ensure that the values of both wilderness and cultural resources are preserved. The sooner that planning occurs the better, serving as a mechanism for bringing wilderness and cultural resource staff together, along with facility management staff as appropriate, to determine which situations will be easy to manage, and which will be difficult to manage, and therefore, require greater discussion and care. The challenges in managing cultural resources in wilderness are similar to those managing other resources inside wilderness. In particular, there may be competing resource-specific goals that require tradeoffs, but the overriding goal is to make an informed and transparent decision that maximizes the preservation of wilderness character and the cultural resource. In many cases there may be a lack of sufficient information about cultural resources in a wilderness requiring a long-term, evolving discussion between wilderness and cultural resource staff to make these decisions as new information becomes available. Resolving these challenges requires a common framework for understanding wilderness and cultural resource values and laws. Such a framework is presented below and appendix 4.1 provides an expanded set of principles to foster better understanding and communication.

The framework presented here is that:

- Cultural resource laws apply inside wilderness.
- Cultural resources may be part of wilderness character.
- The Wilderness Act's mandate to preserve wilderness character applies to managing cultural resources in wilderness.

There are several implications of this framework. First, cultural resources need to be inventoried and evaluated so a determination of their significance can be established. Second, cultural resource and wilderness staffs need to discuss which cultural resources rise to the level of a "character-defining feature" (a phrase used in historic preservation) for that wilderness. Third, cultural resources that do not rise to this level are still managed under the legal obligations of cultural resource laws. Fourth, the management prescription for a particular cultural resource inside wilderness needs to consider its role in history and in the wilderness, requiring discussion between wilderness and cultural resource staffs to reach an informed and transparent decision.

Managing cultural resources in wilderness will require case-by-case application of the framework presented here. One tool to help apply this framework is the minimum requirements analysis, discussed in detail in chapter 4. NPS policy requires that a minimum requirements analysis be completed for preservation prescriptions or actions on cultural resources inside of wilderness, including inventory, monitoring, scientific investigations, and treatments. The intent of this analysis is not to prevent actions but to ensure that they are necessary and if so, that the minimum tool is used. Appendix 4.2 offers a summary of the MRA process employed to restore an historical wilderness cabin in Zion National Park. Cabins often present the greatest challenge to managing cultural resources in wilderness, and this example shows how when cultural resource and wilderness staffs work together both the cultural resource and wilderness character can be preserved.

Another tool to help apply this framework is the set of three online training modules on managing cultural resources in wilderness (http://www.wilderness.net/index.cfm?fuse=NWPS&sec=elearning) developed by the Arthur Carhart National Wilderness Training Center. Both wilderness and cultural resources staffs are encouraged to take this training. The modules cover a range of topics, including laws, definitions, the scientific and societal importance of cultural resources that occur in wilderness, the legal and procedural requirements for inventory and monitoring of cultural resources and how these can be conducted in wilderness-appropriate ways, examples showing particular areas of potential conflict, and examples showing how cultural resource management and wilderness stewardship are compatible.

Photo: NPS/Peter Landres, Buffalo National River Wilderness, Buffalo National River

Wilderness Character Training for Park Staff

Park superintendents, assisted by wilderness coordinators, are responsible for ensuring that park personnel have appropriate wilderness character training. Primary goals should be to establish a common understanding of wilderness character and stimulate conversation among staff from all divisions about how various planning, management, and monitoring activities affect wilderness character.

Why and When a Staff Should Participate in Wilderness Training

Wilderness is a special designation and a valuable resource in and of itself, with more than 83% of NPS land managed as wilderness. Staff should therefore have an understanding of why wilderness is special and of the unique values the National Park Service is charged to preserve.

While staff from all divisions should have an understanding of how their job relates to wilderness character, wilderness training is especially important in conjunction with a formal wilderness planning process, or when staff begins to develop the building blocks of wilderness character (see chapter 2). Before beginning either process, it is imperative that all staff have a solid and common understanding of wilderness character. This significantly improves communication and efficiency and allows discussions to move forward positively and constructively.

Primary Outlets for Wilderness Character Training

Parks may opt to conduct wilderness training either in-house or seek help from outside sources. In addition, joint training, such as has been done with the National Park Service, the U.S. Fish and Wildlife Service, and the U.S. Border Patrol, can raise awareness of wilderness values and promote understanding of wilderness character concerns. The following three groups are available to assist parks in wilderness stewardship training, or provide products, materials, and guidance:

- *The Arthur Carhart National Wilderness Training Center* works with the four wilderness-managing agencies to develop interagency solutions to wilderness challenges. Materials developed by the Carhart Center are distributed to every wilderness unit and training sessions are offered where they are needed most. Contact: Tim Devine, (406) 243-4612.
- *The NPS Wilderness Stewardship Division* offers planning assistance, support, and resources to wilderness parks. Contact: Garry Oye, (702) 895-4893.
- *Regional Wilderness Coordinators* can help facilitate the integration of wilderness character into NPS planning, management, and monitoring and can provide useful resources for this purpose. Contact information for your regional wilderness coordinator can be found on InsideNPS under Wilderness Stewardship Division Contacts http://inside.nps.gov/waso/contacts.cfm?lv=3&prg=813

Key Points:

- All divisions and categories of status (permanent, term, seasonal, volunteers) have a stake in and can affect wilderness.
- Staff training can be done either in-house or with assistance from the Arthur Carhart National Wilderness Training Center or the WASO Wilderness Stewardship Division.
- Training should provide a common understanding of wilderness character and facilitate dialogue with staff about wilderness at their park.
- Any staff member may interact with the public and should be able to communicate wilderness values.

Photo: NPS, Everglades National Park

Outside Training Assistance

If a park is seeking formal wilderness stewardship training, including wilderness character training, the Carhart Center offers both classroom and online training. Upcoming opportunities are listed on the course calendar, and further information about these opportunities can be found online at http://www.wilderness.net/index.cfm?fuse=NWPS&sec=courses. Information about distance education courses available through the University of Montana can be found online at: http://wmdep.wilderness.net/.

In-house Training and Resources

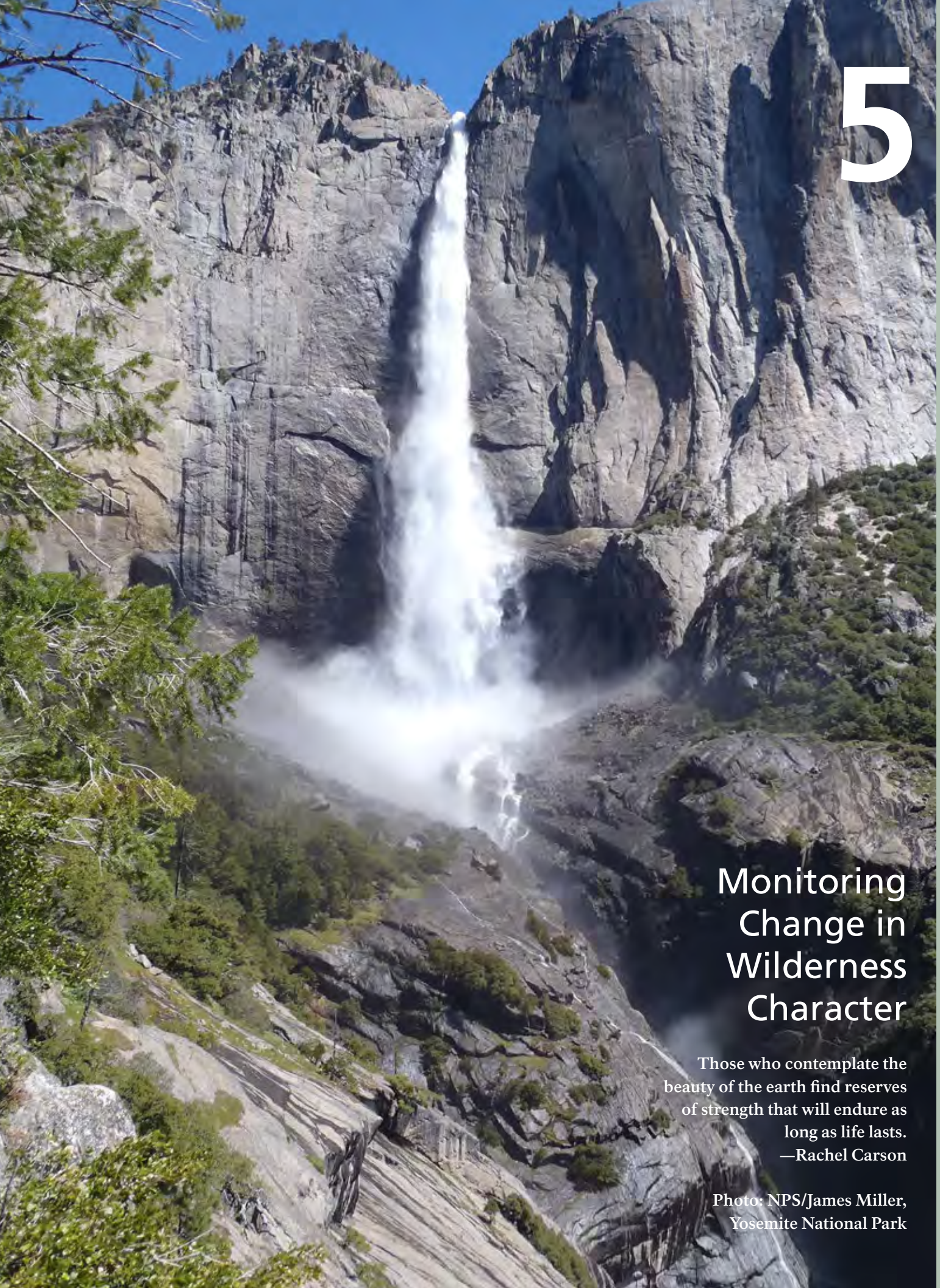
Parks may also conduct in-house wilderness stewardship training to help all staff improve their understanding of wilderness character. These in-house trainings often foster interdisciplinary dialogue that contributes positively to wilderness planning, management, and monitoring within a park. Again, the primary goal of wilderness stewardship training is to provide a common understanding of wilderness character, to involve staff in engaging conversations about wilderness issues in their park, and to identify how wilderness character relates to different divisions of wilderness stewardship. For wilderness character workshop agendas from other parks, please visit the "Wilderness Character" tab on the NPS Wilderness Stewardship Program online at http://share.nps.gov/TBD. For further guidance and resources, see the resources and contacts below:

- *The NPS Wilderness Stewardship Division* provides resources on wilderness management, education, training, and research, available online at http://wilderness.nps.gov.
- *The Arthur Carhart National Wilderness Training Center* provides online courses, modules, and webinars on wilderness character and a variety of other topics, including cultural resources within the wilderness character framework. For a list of courses and topics see http://carhart.wilderness.net.
- *Minimum Requirements Analysis* worksheets and information can be found under "Management Tools," available online at http://wilderness.net/index.cfm?fuse=MRDG.

- *Wilderness Toolboxes* provide information on the interface between wilderness and specific management issues. The "Wilderness Character" toolbox can be found online at http://www.wilderness.net/index.cfm?fuse=toolboxes&sec=WC and includes:
  - *Preserving Wilderness Character: Why, What, and How.* This presentation, including notes, describes the concept of wilderness character, why it is important to preserve, and how the concept can be used to improve wilderness stewardship.
  - *Keeping It Wild: An Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System.* This publication was developed by an interagency team to help improve wilderness stewardship at all administrative levels—from on-the-ground management to national policy review.
  - *Monitoring Changes in Wilderness Character.* This presentation is narrated by Peter Landres, ecologist with the Aldo Leopold Wilderness Research Institute, and Chris Barns, a wilderness specialist with the Arthur Carhart National Wilderness Training Center. This presentation is focused on tracking change in wilderness character and includes a transcript.
- *The NPS Wilderness Character Integration Team (WCIT)* has since reexamined and updated recommendations for integrating wilderness stewardship into planning, management, and monitoring, so presentations should be supplemented with recommendations put forth within this *User Guide*. Guidance documents developed by the Wilderness Character Integration Team can be found online at the NPS Wilderness Character Sharepoint site: http://share.inside.nps.gov/sites/WASO/WSD/WC. These include workshop agendas, guidance for developing wilderness character narratives and monitoring strategies, and a wealth of other resources.
- *Videos:*
  - *America's Wilderness.* This three-minute video by the NPS Wilderness Stewardship Division provides an inspiring introduction or closing to a wilderness stewardship training session and can be viewed and downloaded at http://wilderness.nps.gov/.

Photo: NPS/Jacob Frank, Denali Wilderness, Denali National Park & Preserve

Photo: NPS/Peter Landres, Sequoia-Kings Canyon Wilderness, Sequoia and Kings National Parks



5

Monitoring Change in Wilderness Character

Those who contemplate the beauty of the earth find reserves of strength that will endure as long as life lasts.
—Rachel Carson

Photo: NPS/James Miller, Yosemite National Park

Photo: NPS, Wrangell-St. Elias Wilderness, Wrangell-St. Elias National Park & Preserve

Chapter 5—Monitoring Change in Wilderness Character

Introduction

This chapter describes how to track change in wilderness character. This is the process of gathering data on selected measures of wilderness character to assess their current condition and seeing how these measures, and wilderness character, change over time. The methods used to assess conditions and track change in wilderness character presented here are based on those in *Keeping It Wild: An Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System* (Landres and others 2008). This chapter describes how park staff can identify locally relevant measures to represent each of the qualities of wilderness character and the process for tracking how they change over time. The trends in each measure are then synthesized, using the rules described in *Keeping It Wild,* to assess how wilderness character is changing over time. Using the *Keeping It Wild* strategy provides a way to track trends in wilderness character within the National Park Service that is nationally consistent and locally relevant.

Key Points:

- *Keep it useful.* Use measures that are relevant to the wilderness.
- *Keep it practical.* Use existing data whenever and wherever possible.
- *Keep it simple.* Start with the smallest number of measures that allow assessing current conditions and tracking change in the five qualities of wilderness character over time, and build capacity as resources allow.

Why Track Change in Wilderness Character

There are many reasons for tracking change in wilderness character. Most simply, if we don't know the status and trend of a resource (whether it is stable, improving, or degrading), we don't know if we are protecting it. This applies to the unique wilderness resource. Further, NPS *Management Policies 2006,* chapter 6, "Wilderness Preservation and Management," section 6.3.7, states that, "The principle of nondegradation will be applied to wilderness management, and each wilderness area's condition will be measured and assessed against its own unimpaired standard." NPS policy also states that wilderness character is to be preserved in potential, proposed, recommended, and designated wilderness. From a practical perspective, the most important reason for tracking change in wilderness character is to provide solid information that can be used to inform management decisions and improve on-the-ground wilderness stewardship in parks, for example, by:

- Evaluating and documenting the short- and long-term effects of actions taken inside wilderness, as well as the effects from threats outside wilderness, on wilderness character.
- Providing solid information for park planning and evaluation of the effectiveness of management actions.
- Fostering better internal communication about wilderness among different resource staffs and program areas.
- Synthesizing data from across different resource staffs and program areas into a single, holistic assessment of change in wilderness character.
- Communicating with the public about the condition of the qualities of wilderness character and how they are changing over time.
- Providing legacy information that will endure over time and help guard against "shifting baselines" as personnel change.

In addition to improving park wilderness stewardship, tracking change in wilderness character can directly help the National Park Service understand and track the effects of climate change and fulfill NPS initiatives for "State of the Park" reporting.

Terminology of Measures and Indicators

In this *User Guide,* tracking change in wilderness character uses the term "measure" as a specific aspect of wilderness on which data are collected to assess the condition and trend of an indicator. The "indicator" is a more general concept, in keeping with the dictionary definition, that is something that is estimated and not measured directly. The indicator is a distinct and important element of one of the qualities of wilderness character that links the measures to the qualities of wilderness character, and the qualities link directly to the statutory language of the 1964 Wilderness Act. Different NPS programs, however, use the same terms in different ways. Monitoring for visitor use, for example, uses the term "indicator" to define the object of data collection. Functionally, "measure" from tracking change in wilderness character, and "indicator" from visitor use, mean the same thing, but this can easily be a source of confusion (see table 5 in chapter 3).

Overview of How to Track Change in Wilderness Character

Wilderness character is a holistic concept, integrating and synthesizing data from many different resource areas and programs within a park. The basic strategy for tracking change in wilderness character is for park staff to select at least one measure for each of the indicators described in the publication *Keeping It Wild* (see table 2 in chapter 1). For national and interagency consistency, the same indicators are used in every wilderness. However, wilderness character is a unique combination of attributes at each park so the measures must be locally relevant and locally selected rather than nationally consistent and nationally selected. Each measure should be relevant to tracking change in an attribute or element of the indicator or to tracking a threat to this indicator. Much more information on selecting measures is provided below in this chapter.

Once measures are selected, data are collected, compiled, or gathered from existing sources. The wilderness character baseline, from which all future trends are determined, is defined as the first time data are collected for the entire set of measures. To maximize efficiency, existing or legacy data are used whenever and wherever possible and appropriate. However, where no data exist professional judgment may be used with a narrative description of how accurate and adequate this judgment is. Park staff will also need to define what a significant change is in each measure from one monitoring period to the next. For example, staff might define a significant change as any change in the numerical value of the measure, or as a certain percentage change in the numerical value of the measure, or use the statistical technique of regression analysis if sufficient data are available. The publication *Technical Guide for Monitoring Selected Conditions Related to Wilderness Character* provides many examples of how a significant change is defined, and is available online at http://www.wilderness.net/toolboxes/documents/WC/FS%20Wilderness%20Character%20Technical%20Guide.pdf. The trends (not the data) from every measure are combined using the rules in *Keeping It Wild* to derive a simple composite trend for the indicator; trends for each indicator are then combined using these same rules to derive a trend for the quality, and trends from the qualities combined to derive a trend for wilderness character. Table 10 shows a hypothetical example of how trends are combined within one quality of wilderness character.

Photo: NPS, Glacier Bay Wilderness, Glacier Bay National Park & Preserve

Table 10. A hypothetical example showing how trends are combined across measures and indicators to show the trend in the undeveloped quality of wilderness character.

Indicator	Measure	2012 Data	2017 Data	Trend in Measure	Trend in Indicator	Trend in Quality
Nonrecreational structures, installations, and developments	Number of authorized physical developments	12	5	▲	▲	▲
	Number of unauthorized physical developments	17	21	◀▶		
Inholdings	Index combining number of acres and potential impact	205	90	▲	▲	
Use of motor vehicles, motorized equipment, or mechanical transport	Index combining type and amount of administrative and nonemergency use	74	31	▲	▼	
	Index combining type and amount of emergency use	9	21	▼		
	Index combining type and amount of unauthorized use	14	27	▼		

The trend in the measure is derived by comparing the data from the two monitoring periods (2012 and 2017) and park staff establish local rules for identifying whether the change is significant. The trend in the indicator is derived by combining only the trend (not the data) from each measure using the rules from *Keeping It Wild.* For each measure, assign a numerical value of -1 to a downward trend, 0 to a stable trend, and +1 to an improving trend. These values are added together for the measures under an indicator and if the resulting value is negative the trend in the indicator is downward, if the resulting value is zero the trend in the indicator is stable, and if the resulting value is positive the trend is improving. The trend in the quality is derived using these same rules by combining the trends across the indicators. Trends (improving, stable, decreasing) are represented by arrows (up, two-headed sideways, down, respectively).

This strategy provides local flexibility and relevance while allowing the trend in wilderness character (stable, improving, or degrading) to be consistently and easily used for regional and national reporting. A crucial point is that the trend in wilderness character is derived only by assessing what is happening over time within a park and cannot be determined simply by establishing a baseline. Also, wilderness character cannot be compared from one wilderness to another because wilderness character is unique at each park. Further, trends in the measures, indicators, qualities, or in wilderness character do not mandate certain actions—trends inform decisions rather than trigger actions.

Frequency of Tracking Change in Wilderness Character

Tracking change and reporting on the trend in park wilderness character should generally occur every five years. This time span is sufficient to provide ongoing information and keep park staff engaged. Some measures, such as the number of structures or installations, may not change at all during this time span and it is sufficient to simply record the same number as the previous reporting period. Other measures will probably change yearly and should be tracked as such, especially management actions under the untrammeled quality, and the use of motorized vehicles, mechanized equipment, and mechanical transport under the undeveloped quality.

What Qualifies as Tracking Change in Wilderness Character

As more park staffs have learned about the concept of wilderness character, there has been some confusion about what qualifies as tracking change in wilderness character. For example, campsite conditions may be monitored throughout a park, and while this may be important and an element or attribute of wilderness character, monitoring campsites by itself is not wilderness character monitoring. So how do we know when a monitoring program qualifies as "tracking change in wilderness character"? In general, to qualify as "tracking change in wilderness character" or "wilderness character monitoring" the following four monitoring requirements must be met:

- Is conducted in designated wilderness or in an area that is managed as wilderness by agency policy.
- Includes at least one measure for each of the indicators that represent the qualities of wilderness character described in chapter 1.
- Uses a defined baseline and is conducted at least twice (e.g., at five-year intervals) to determine a trend in all of the measures.
- Synthesizes the trends of all the measures into an integrated assessment of trend in wilderness character.

Photo: NPS, Yosemite Wilderness, Yosemite National Park

Two examples of how measures, indicators, and qualities are linked:

The measure "amount of visitor use" informs the indicator "remoteness from sights and sounds of people inside wilderness," because a greater amount of visitor use would correspond with a person's opportunity to be away from the sights and sounds of people. The concept of remoteness and the opportunity to experience places without the sights and sounds of other people directly relates to opportunities for solitude or primitive and unconfined recreation, one of the five qualities of wilderness character.

The measure "number of lakes and other water bodies stocked with fish" informs the indicator "actions authorized by the federal land manager that manipulate the biophysical environment." Tracking this measure tells us about the trend in actions that control or manipulate the "earth and its community of life" inside wilderness, or, the untrammeled quality of wilderness character.

Identifying Measures

Keeping It Wild identifies 37 possible measures (see appendix 5.1) and recommends that at least one be selected for each indicator. As described in the section on terminology, an indicator is a distinct and important element of one of the qualities of wilderness character that links the measures to the qualities of wilderness character, and the qualities link directly to the statutory language of the 1964 Wilderness Act. A measure is a specific aspect of wilderness on which data are collected to assess the condition and trend of an indicator. See the adjacent text box for examples that show how measures, indicators, and qualities are linked.

Different Approaches to Identify Measures

Given the variety of parks and their differences in size, staffing, complexity of wilderness program, and many other factors, there is no single method for identifying measures that works best. Park staff will use the indicators described in *Keeping It Wild* but have the latitude to choose whichever measures are most meaningful for their wilderness. Measures should be quantifiable, relevant to the indicator and the particular wilderness, reliable so that others will know the quality of the data, and repeatable so monitoring can continue when staff change.

Park staff can use different approaches, and combinations of these, to identify measures that will be most relevant to tracking change in wilderness character. *Keeping It Wild* suggests several measures for each indicator—park staff may choose one or more measures from the list, modify suggested measures, or create their own. Involving a broad range of park disciplines (e.g., facilities, interpretation, protection, natural resources, cultural resources, fire) in measure selection will ensure they are relevant and enjoy broad support. Ultimately, assessing conditions of wilderness character and tracking its change should be a parkwide effort because the data spans multiple disciplines. Three potential approaches to identify measures are:

- Convene the park's wilderness committee (if one exists) or another form of interdisciplinary team to review the indicators and example measures listed in *Keeping It Wild* (see appendix 5.1) and identify relevant measures on the list and brainstorm modifications or new measures under each of the five qualities.
- Instead of convening the wilderness committee, the project lead or chair of the committee can opt to review the indicators in *Keeping It Wild* and brainstorm measures by interviewing staff members individually. Natural and cultural resources staff as well as individuals associated with the NPS Inventory and Monitoring program may be most qualified to assess the availability and quality of existing data.
- As a third option, the project lead can develop a draft monitoring framework for distribution to staff and management for review and discussion.

Some wildernesses are co-managed by more than one agency, or a park wilderness may adjoin a wilderness managed by another agency. In these cases an effort should be made to convene an interagency team to identify potential measures and try to select measures that provide for consistency across jurisdictional boundaries while accommodating the different data sources available to different agencies.

Regardless of the process, park staff can brainstorm measures by identifying existing data sources to see what is already being monitored (see the "Gathering Data" section in this chapter). Staff can also identify where linkages exist with other data collection efforts and/or where data needs might overlap. For example, the NPS Ecological Integrity Assessment and the NPScape program may be good sources of both ideas for measures and data. In addition, an existing trails plan may have identified the need to measure impacts from campsites. Wilderness character monitoring efforts could boost support for implementing these other monitoring efforts because it would fulfill two purposes. For ideas of other possible measures, the U.S. Forest Service has developed a *Technical Guide for Monitoring Selected Conditions Related to Wilderness Character,* and the Bureau of Land Management has developed a *Technical Guide to Implementing Wilderness Character Monitoring.* Both of these documents can be a source for ideas and are available online at http://www.wilderness.net/WC.

Photo: NPS, Stephen Mather Wilderness, North Cascades National Park

Identifying Measures of Positive Change in Wilderness Character

Oftentimes, managers only collect data on measures of impacts or attributes that represent a degradation of wilderness character. This can pose a dilemma for park staff because showing positive changes in the qualities of wilderness character is also important. For example, tracking administrative decisions and actions that manipulate ecological systems is relatively easy, such as the use of prescribed fire to reduce fuels that have accumulated over decades of fire exclusion. This action would degrade the untrammeled quality of wilderness character even though it is taken to improve the natural quality of wilderness character. Further, actions that are not taken to preserve the untrammeled quality typically go unrecorded and therefore do not show how the trend in wilderness character may improve. By carefully identifying measures of positive change to meet the intent of the indicator, park staff can partially overcome this dilemma.

As a hypothetical example of a measure of positive change, consider the natural quality indicator "Plant and animal species and communities," and a multiyear effort to reintroduce an extirpated native species, for example a small mammal. Such a reintroduction may involve habitat manipulations, which degrade the untrammeled quality each year such actions occur, and may involve radio collaring or installing other monitoring devices that degrade the undeveloped quality. However, the tradeoff in each successive year is an increasing number of acres of suitable habitat for the reintroduced species and an increasing population size, which is a long-term improvement to the natural quality. To better describe these complex relationships and account for the net improvement to wilderness character, the measure "number of extirpated indigenous species" could be recast as "acres of species X habitat restored or occupied," or this could be an additional measure while keeping the original. This new measure accounts for the presence of species that should be there and is consistent with the original indicator. This new measure also contributes information about what type and how much habitat was restored, thereby accounting for management actions that enhance or improve the indicator. Table 11 offers a hypothetical example of how a measure of positive change, as described here, would compare with failure to use such a measure in tracking change in wilderness character.

Photo: NPS, Majory Stoneman
Douglas Wilderness,
Everglades National Park

Table 11. Hypothetical examples measuring positive change in wilderness character.

Timeframe and Actions Taken	Original Measure: Number of Extirpated Indigenous Species	Revised or Additional Measure: Acres of Species X Habitat Restored or Occupied
Year 1—habitat preparation	• Degrade untrammeled quality	• Degrade untrammeled quality
Year 2—animal release with radio collars, habitat improvement	• Degrade untrammeled quality • Degrade undeveloped quality • Improve natural quality (decrease number of extirpated species by one)	• Degrade untrammeled quality • Degrade undeveloped quality • Improve natural quality (100 acres restored, three breeding pairs)
Year 3—monitor collared animals and population size, continue habitat improvement	• Degrade untrammeled quality • Degrade undeveloped quality	• Degrade untrammeled quality • Degrade undeveloped quality • Improve natural quality (total 300 acres restored, eight breeding pairs)
Year 4—monitor collared animals and population size, continue habitat improvement	• Degrade untrammeled quality • Degrade undeveloped quality	• Degrade untrammeled quality • Degrade undeveloped quality • Improve natural quality (total 500 acres restored, 14 breeding pairs)
Year 5—reintroduction effort successful, cease intensive monitoring and habitat improvements	• Stable untrammeled quality • Stable undeveloped quality	• Stable untrammeled quality • Stable undeveloped quality • Improve natural quality

Identifying a measure of positive change may work especially well when a short-term action causes a downward trend in the untrammeled quality in a given year and the tradeoff is a long-term improvement in the natural quality that can be tracked annually. Alternatively, park staff may simply accept the short-term downward trend of one quality for the long-term improvement in another quality without creating a measure of positive change.

Photo: Ken and Mary Campbell, Olympic National Park

Example of a Feature that Contributes to Wilderness Character at Death Valley:

One of the features identified during scoping for the Death Valley National Park wilderness and backcountry management plan is the Copper Canyon vertebrate fossil site. The California Desert Protection Act of 1994, which designated the park's wilderness, specifically identifies paleontological resources as an "essential and superlative" value for the park. Copper Canyon is an extremely rare and scientifically important fossil-rich canyon that clearly fits within the "scientific value" identified in section 2(c)(4) of the Wilderness Act. Because paleontological resources are tangible and relatively easy to monitor, this particular feature can have a monitoring indicator and measure assigned to it in the park's wilderness character monitoring scheme.

Identifying Measures for the Other Features of Value Quality of Wilderness Character

If park staff determines that the other features of value quality of wilderness character applies to their park (for a description of this quality see chapter 1) they will also need to identify indicators and measures for this quality. If included, tracking trends in this quality is important for a complete understanding of the overall trend in wilderness character.

It is likely that ecological and geological values can be included in the natural quality. Scientific, educational, scenic, and historic values are often more difficult to fit within the natural quality. Staff can use this list of wilderness value categories to identify site-specific, tangible features that fit within the other features of value quality that are integral to the area's wilderness character. Identifying indicators and measures for this quality will require interdisciplinary discussion among different divisions at a park, for example, among wilderness and cultural resources staff. The other features of value quality should include those features that are truly unique to the area, and ideally would be mentioned in the enabling legislation or legislative history for the park or wilderness area. In many cases, these wilderness features will be the focus of specific management action and should be described in the wilderness character narrative and used to inform planning.

A generalized example of indicators, measures, and data sources for tangible cultural resources is provided in table 12. Cultural resources that are to monitor trends in wilderness character must be spatially defined, and their condition can be monitored through an active program of inventory, monitoring, and research recorded in servicewide databases such as the Archeological Sites Management and Information System (ASMIS), the List of Classified Structures, the Cultural Landscape Inventory (CLI), the Facility Management Software System (FMSS), or by park-specific databases.

Photo: NPS/Sarah Crump, recommended wilderness, Dinosaur National Monument

Table 12. Generalized (and hypothetical) example of indicators, measures, and data sources identified for the tangible cultural resources recognized in the other features of value quality of wilderness character.

Indicator	Potential Measure	Data Sources	Reporting Period
Deterioration or loss of cultural resources integral to wilderness character	Number of unauthorized actions that result in disturbances to cultural resources (looting, trespass activities, noncompliance with National Historic Preservation Act)	Citations, Archeological Resources Preservation Act (ARPA) violations, Secretary's annual report to Congress (SRC), Listing of Outlaw Treachery (LOOT) report in the SRC, Cultural Landscape Inventory, ASMIS and PMDS site condition reporting	Annual
	Number of authorized actions that result in disturbances to cultural resources (visitor and commercial use [catholes, trampling, hearths, aircraft landings, etc]; findings of adverse effect for projects and operations)	Citations, ARPA violations, Secretary's annual report to Congress, LOOT report in the SRC, Cultural Landscape Inventory, ASMIS and PMDS site condition reporting	Annual
	Number of naturally caused disturbances (erosion, animal digging, floods, rising sea levels, fires, tree throws)	Secretary's annual report to Congress, ASMIS and PMDS site condition reporting	Annual
	Amount of deterioration in specific resources (e.g., number of building walls down, number of trail treads destabilized, number of orchard trees damaged)	Citations, ARPA violations, Secretary's annual report to Congress, LOOT report in the SRC, Cultural Landscape Inventory, ASMIS and PMDS site condition reporting	Annual

Be Practical in Identifying Measures

Use measures for wilderness character monitoring already in use, such as a measure from a fire management plan, exotic plant management plan, or from measures developed under previous wilderness monitoring programs. In some cases, these measures may need to be modified so they are relevant to both. For example, measures for aspects of visitor experience previously established in a backcountry management plan may be changed to more practically fill the needs of both wilderness character monitoring and the general management plan. Initial selection of wilderness character measures may also be altered or augmented during more robust planning processes.

In addition, if a park is conducting monitoring for other programs, such as visitor use monitoring or vital signs monitoring as part of the NPS I&M program, such ongoing monitoring may also readily fit the needs for tracking change in wilderness character. It may also be prudent to consider measures currently in use for detecting the effects of climate change on park resources. Also, consider measures that can be used to establish baseline information to evaluate impacts to wilderness character from any actions park staff may take in the future as a response to climate change. See chapter 3 for other types of plans that may have existing measures that could serve as good wilderness character measures. When searching for such cross-connections, be aware that the terminology used by different programs may differ, as described in the subsection on terminology in the beginning of this chapter.

All the indicators from *Keeping It Wild* need at least one measure to capture the full range of wilderness character, but keep it as simple as possible. Use the minimum number of measures that will accomplish the goal of assessing current condition and tracking change and add other measures as organizational capacity allows. Build a program that will give the park something of value for the minimum amount of additional effort. See the following section on prioritizing measures to narrow the list to those measures that are most important and practical, and see appendix 5.2 for an example of measures that were identified for Lake Clark Wilderness in Lake Clark National Park and Preserve, Alaska.

Measures Can Change Over Time

While consistently using the same measures over time is necessary to show trend, it is also important to allow a monitoring program assessing conditions and tracking change in wilderness character to evolve over time. One of the reasons that measures may change is that new wilderness issues may arise or lower priority issues may become significant in their potential effect on wilderness character. As park staff learn more about a particular resource or threat, or as management direction changes, it is likely that some measures will need to be changed, adapted, added, or deleted. For example, a park may have a general management plan or wilderness stewardship plan that calls for collecting data on decibel levels to monitor natural sounds, but with the evolution of sound monitoring science, park staff may decide that the percentage of time that noise is audible in a particular area is a more meaningful measure. Staff may want to adapt new or improved measures as they become available. Assessing conditions and tracking change in wilderness character is relatively new and a park's monitoring strategy needs to be both effective and flexible, requiring a balance between consistently using existing measures and identifying new, more appropriate measures. If measures are changed, it is important to document when the change occurred and the reason(s) for this action so new park staff will understand when and why this change was made.

Photo: NPS, Yosemite Wilderness, Yosemite National Park

Prioritizing Measures

It is likely, as experience has shown at many parks, that park staff will identify many potential measures for each indicator, even though only one measure is required for each. All parks face money and time constraints and the list of potential measures will probably need to be winnowed. How do park staff decide which measures are cost-efficient and meaningful? How do they guarantee that the measures selected will be relevant and practical? Ultimately, the goal of prioritizing measures is to select the minimum set of measures that is practical and relevant and will provide the most representative picture of a park's wilderness character. The park's wilderness committee or other wilderness interdisciplinary team representing the resources, management, and operational divisions should prioritize which measures will be used to track change in wilderness character. Such a team approach will significantly improve internal dialogue and efficiency because concerns can be addressed in upfront discussion rather than after measures have been prioritized by an individual or two. Ultimately, this team will determine the final set of measures used by the park, balancing oversimplification (selecting too few measures) with overindulgence (selecting too many measures).

There is no set number of measures, or any specific measures, that must or should be used by a park. As park staff begins the process of prioritizing measures, three cautions are worth keeping firmly in mind:

- First, not all measures are relevant to each wilderness. If staffs choose measures solely based on minimizing cost and time for data collection, the resulting information may be meaningless.
- Second, choosing measures to achieve a desired outcome is "gaming the system" (for example, to make a manager look good or sound the alarm on a "threatened" wilderness) and will result in information that is also largely meaningless.
- Third, a haphazard selection of measures may result in an overall assessment that is incoherent, fundamentally flawed, and not viable as a useful management tool. In all of these situations, the resulting information will not help staff track change in wilderness character, wasting valuable time and effort.

A variety of different methods can be used to prioritize measures, such as using the opinion of a single individual, the consensus view of the wilderness committee, or more formal processes. Appendix 5.3 offers a worksheet based on a numeric ranking for each measure as one method of selecting the measures that meet the specific criteria in this worksheet. The worksheet can be used by the wilderness committee in one session or each team member can work separately, with the team convening later to compare results. Another option would be to have a lead person create the first set of rankings and then the wilderness committee reviews and refines these rankings. The idea is to eliminate subjective bias, create a dialogue, and produce a set of measures that has broad appeal and usefulness. Appendix 5.4 offers a filled-in example worksheet for prioritizing measures from Guadalupe Mountains Wilderness.

Weighting Measures

After selecting measures, park staff may want to weight the individual measures to reflect their ecological importance, managerial importance, vulnerability, or other factors. Weighting is not required but sometimes helps staff by providing a greater sense of practicality and understanding about the measures. If weighting is used, the weights assigned to all measures under an indicator must equal 100%. Weights for individual measures may be input into the Wilderness Character Monitoring Database (chapter 6). Weighting can also be used to "game" the monitoring results to show a particular desired trend; to avoid even the appearance of such manipulation, park staff need to provide a rationale for all weights used and then use these weights consistently over time.

An example of weighting that was used in developing a map of wilderness character for Death Valley National Park (see chapter 6) is shown in table 13. At Death Valley National Park, planners considered whether the measure was an actual degradation or had the potential for degradation, how pervasive or localized the impact was, how long-lasting the impact was, and the relationship of that measure to the enabling legislation.

Table 13. Example of weighting measures in the undeveloped quality of wilderness character at Death Valley National Park, California and Nevada.

Indicator	Measure	Weight
Nonrecreational structures, installations, and developments	Installations (including guzzlers and fences)	55
	Unauthorized installations/debris	10
	Borrow pits	35
Inholdings	State inholdings with road access	15
	State inholdings with no road access or held for wildlife	5
	Private inholdings	60
	Unpatented inholdings	20
Use of motor vehicles, motorized equipment, or mechanical transport	Off-road vehicle trespass	60
	Administrative uses	40

Photo: NPS, Sequoia-Kings Canyon Wilderness, Sequoia and Kings Canyon National Parks

Gathering Data

After selecting measures to assess the trend of an indicator, staff must either gather data or use applicable existing data. Protocols for gathering data on measures of wilderness character can be found in the U.S. Forest Service's *Technical Guide for Monitoring Selected Conditions Related to Wilderness Character,* and the Bureau of Land Management's *Technical Guide to Implementing Wilderness Character Monitoring,* both of which are available online at http://www.wilderness.net/WC. Existing data are found at easily accessed web sites, while other data must be mined from reports, collected in the field, or obtained through interviews with staff. Appendix 5.1 provides likely NPS data sources for all the possible measures listed in *Keeping It Wild.* Appendix 5.5 provides an extensive table of commonly available NPS data sources. In general, there are four primary sources of existing data:

- *Federal agencies*—Several federal agencies monitor resources and collect data, including the U.S. Geological Survey (USGS), National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA), and Natural Resource Conservation Service (NRCS).
- *National Park Service*—There are several servicewide NPS data sources along the lines of the Facility Management Software System. A variety of servicewide data are available out of the WASO Natural Resource Stewardship and Science (NRSS) offices, including Integrated Resource Management Applications (IRMA), Air Resource Division (ARD), Inventory & Monitoring program, and Exotic Plant Management Teams. Servicewide data are also available out of the WASO Cultural Resource Management office, including Archeological Sites Management and Information System, the List of Classified Structures, and the Cultural Landscape Inventory.
- *Parks*—Each park has its own data files and many parks have been monitoring wilderness conditions for a long time. Staff should consult with long-term employees and check park archives for potential data, along with checking case incident reports, commercial use authorizations (CUA), Research Permit and Reporting System, and Interagency Monitoring of Protected Visual Environments (IMPROVE).
- *Partners*—A variety of partners offer data, including county and municipal governments, state resource management or regulation departments, universities, and nongovernmental organizations such as The Nature Conservancy, The Wilderness Society, and Audubon Society.

Selecting data for a measure requires a balance of several data-quality factors. Data collected using peer-reviewed collection protocols are best, where the data are managed with quality assurance and quality controls, and are consistently collected over the monitoring period. Some data are not available in a standardized format. For example, data on the number of authorized and unauthorized entries into wilderness may not be found in a standard format. The "data miner," or person looking for data, may have to compile reports, interview staff, and determine if a given report has wilderness-specific information, and standardize those data and the way they are collected for future use. For example, an off-road vehicle entry would be recorded in a case incident report, maintained by the Ranger Division. The violation may be recorded as off-road vehicle travel, rather than a wilderness violation, thus requiring the data miner to determine if that impact occurred in wilderness.

When choosing a source of data for a measure, four factors—representativeness, sustainability, replication, and quality—need to be considered:

- *Representativeness*—Do the data reasonably represent the wilderness measure? For example, overnight wilderness-use permits, park-issued special use permits (SUP) and commercial use authorizations measure the amount of visitor use in a given area within a given time. Structures or facilities in wilderness inventoried in the Facility Management Software System measure the extent of authorized physical development in an area for the key facilities. These data sources are park-specific, and are highly representative of each park wilderness.
- *Sustainability*—How readily are the data retrieved and processed, and will the park be able to maintain this level of effort in future years? The IMPROVE network is a national program with park-specific monitoring stations operated under an agreement between federal agencies and a partner university. The program has longevity and support, making this data source highly sustainable. In contrast, special use permits and commercial use authorizations are highly representative of permitted park activities; however, they are not managed using standardized formats, with the sustainability of the data subject to the individuals who fill out the reports and maintain the files. These permits may not indicate, for example, if the authorized activity occurred in wilderness.
- *Replication*—Can similar information be collected in the future? There is a high confidence level that data collected with peer-reviewed published protocols have a high degree of replication and can be consistently interpreted. Conversely, while incident reports may be informative, these reports often record inconsistent information, lending to their low degree of replication.
- *Quality*—Are the data high quality, with proper quality assurance and quality control (QAQC)? Peer-reviewed data are generally of higher quality. Selecting data from existing national monitoring programs provides consistency over time and from one location to another, with the added benefit of formal QAQC processes. The IMPROVE network is an example of data with high quality assurance / quality control.

The optimal data gathering situation would be to use data that are highly representative, sustainable, repeatable, and of high quality. It is very likely that data used to monitor wilderness character will exhibit some but not all of these factors. Data from the NPS I&M program and interagency data sets will be of high quality but will be appropriate for only some measures. In contrast, other sources such as incident reports and park partners will be able to provide park-specific data, but these data may be of lower quality. Tracking change in wilderness character will require mining as many applicable data sources as possible and fully understanding the tradeoffs of using data from a variety of sources. The Wilderness Character Monitoring Database described in chapter 6 provides ways to describe data quality for each measure, which will be critical for both understanding and communicating the uses and limitations of the data.

Using the Information

Tracking change in wilderness character provides a variety of data and information. How these data and information may be used is summarized below. One of the most important uses of the information from tracking change in wilderness character is to improve communication both internally and externally. While the direction for managing wilderness from the Wilderness Act and agency policy may seem clear, there are many sources of contention in wilderness stewardship. Using clear and consistent terminology and locally relevant measures to track change and report results in a way that is targeted to specific audiences will directly improve communication among different divisions within a park and with external partners and stakeholders. In addition, this information can feed directly into servicewide reporting such as the *State of the Parks* that is included in the NPS Director's 2012 *A Call to Action.*

Photo: NPS/Shan Burson, Denali Wilderness, Denali National Park & Preserve

Reporting

Trends calculated from data provide the basis for reports at both a local and regional level, although the level of detail and the amount and type of information included in the report will vary depending on the target audience and geographic scale of the report. The goal is to provide web-based reporting that allows a user to see the overall status and trend of wilderness character, and then to dig down as deep as the user wants through each quality, indicator, and measure to see the data on which the status and trend are based. Similarly, a user could begin with the data for a single measure and see how they contribute to the indicator, quality, and the overall status and trend of wilderness character.

Local reports include information from individual measures up to wilderness qualities and overall wilderness character and are targeted and designed for the superintendent, senior park management staff, wilderness managers, and staff, and interested internal and external park wilderness stakeholders. The function of internal local reports is to provide tangible information on the trend in wilderness character, how individual trends within the park interact to influence overall trend(s), and the underlying basis for those trends. The reports allow managers to better understand and quantify the positive and negative impacts of management decisions on wilderness character and provide a feedback loop to help guide future management decisions, with the goal to improve wilderness stewardship and preservation of wilderness character. Furthermore, local reports serve as a communication tool for discussion between management divisions and within the wilderness staff, and serve as a tool to compare current conditions with the established baseline. Local reports sent to the regional wilderness coordinator promote communication and enable dialogue concerning how a park might improve its stewardship and the potential resources available to do so. External local reports allow the park to communicate the trend in wilderness character to interested constituents and increase transparency in wilderness stewardship and the underlying factors that influence stewardship decisions.

Regional reports are composed of aggregated trends, from the indicator level up, from all wildernesses in the region, and are targeted and designed for senior national and regional NPS management (including the director), congressional staff, and NWPS partner agencies. Regional reports do not compare separate wilderness areas; rather, a regional report gives the proportions of wildernesses with improving, stable, or degrading trends. Regional reports provide a means for regional and national program managers to understand and communicate the current status of servicewide wilderness character, highlight overall strengths and weaknesses in servicewide preservation of wilderness character, and serve as a discussion tool for the effectiveness of current management approaches, initiatives, and policies. For example, if wilderness character is degrading across much of the National Park Service, a review of policy implementation may provide information on whether this decline is due to policies that are not being implemented or policies that are not adequate to preserve wilderness character.

Supporting Wilderness Stewardship

Using a framework of qualities, indicators, and measures derived from the Wilderness Act and NPS management policies provides consistent and standardized information on assessing trends in wilderness character. NPS staff can recognize, understand, and support this direct link between legal mandates and the framework of qualities, indicators, and measures.

More specific ways that tracking change in wilderness character can be used to support stewardship include:

- *Assessing wilderness conditions*—Provide information that allows a park to directly assess whether standards established in plan direction are being met and management actions being implemented are effective.
- *Prioritizing actions*—Evaluate where future actions should be focused and where resources may be best invested to improve wilderness character.
- *Informing planning*—Help with plan development and revisions by identifying monitoring requirements for wilderness.
- *Communicating stewardship needs*—Express how different funding levels affect the requirements to preserve wilderness character.
- *Improving accountability*—Link stewardship actions, as well as actions that are not taken, directly to the Wilderness Act mandate to preserve wilderness character.
- *Establishing legacy information*—Establish a permanent database that creates one place for wilderness information to be passed on and used by future managers.

Trend information collected over many years, or spans between managers, will be especially powerful to preserve wilderness character. For example, knowing the number and type of actions taken to manipulate vegetation occurring now compared with what occurs 10 years from now will be an important way to know whether management programs are trending toward more or less manipulation. Similarly, knowing how the number and development level of buildings, trails, dams and other physical evidence of human occupation and modification are changing over time is the only way to know whether wilderness stewardship is improving, or degrading, the undeveloped quality of wilderness character.

Photo: NPS/Nyssa Landres, Gates of the Arctic Wilderness, Gates of the Arctic National Park & Preserve

Key Points:

- A downward trend in wilderness character or one of the qualities of wilderness character is information, not an indictment.
- A downward trend in one quality of wilderness character may be a trigger for management actions.
- Efforts to improve or preserve one quality of wilderness character may cause a downward trend in another quality.
- In some cases a short-term impact to one of the qualities may be necessary to achieve a long-term improvement in wilderness character.
- In all cases involving tradeoffs, the overriding goal is the overall preservation of wilderness character.

Dealing with a Downward Trend in Wilderness Character

NPS *Management Policies 2006* directly states the need for preserving wilderness character. While the intent of these policies is to prevent the deterioration of wilderness character from its condition at the time the area was designated as wilderness, sometimes downward trends are observed in individual qualities or in wilderness character as a whole. By objectively describing the overall trend in wilderness character and by understanding the individual components that affect this trend, superintendents will be in a much better position to decide whether this trend is acceptable or not and then whether any action will be taken. Tracking trend in wilderness character also fulfills the 2011 Director's Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making*, that appropriate technical and scientific studies will be conducted to provide sufficient resource information to make an informed decision.

In wilderness—unlike most other resources that the National Park Service manages—taking action to protect one quality of wilderness character will almost always lead to a downward trend in another quality. Many impacts that occur in park wilderness are the result of actions that are legal, reasonable, and often desirable. For example, installing a toilet may be necessary to reduce adverse resource impacts to the natural quality of wilderness character, even though this action would cause a downward trend in the undeveloped quality. Another example would be projects that involve collecting and collaring wildlife for monitoring. Presumably such a project went through a thorough evaluation process where it was decided that the project was necessary and that the benefits outweigh the impacts to wilderness character. The knowledge the park gains from the science is reflected in the measures under the natural quality as a long-term improvement to wilderness character. When evaluating the impacts and benefits of a proposal, a project may be justified in terms of its contribution to the natural quality even though there may be short- or long-term negative impacts to the untrammeled or undeveloped qualities, or both. Both examples above illustrate the difficult nature of wilderness stewardship that involves understanding the tradeoffs required in all decisions and actions.

Other impacts may result from activities occurring outside the park boundary or on private inholdings. For example, development on inholdings, state hunting and trapping regulations, and aircraft overflights are legal activities, over which the National Park Service has no, or only limited control or jurisdiction. Other impacts may be the result of many sources beyond park boundaries and across large geographic spans, such as air and light pollution or impacts of anthropogenic climate change. However, adverse impacts, regardless of their source, still degrade wilderness character. Therefore, these impacts should be reported when tracking trends in wilderness character to provide a complete and honest understanding of changes in wilderness character in a particular park.

Generally, the management action taken in response to a downward trend will need to be considered in a NEPA document (categorical exclusion, environmental assessment, or environmental impact statement). Ideally, the wilderness stewardship plan should identify standards (e.g., thresholds) that trigger specific and identifiable management actions. Tracking trends in wilderness character is then used periodically to assess if that standard is being met and park managers may choose to implement one or more of their preidentified management actions to try to reverse a downward trend.

In other cases, the downward trend may be the result of cumulative and incremental declines in several measures and qualities over time, and in this situation the standards and management actions may not be preidentified. But as the charge of the Wilderness Act is to preserve wilderness character, these situations should be recognizable as a result of tracking change (if they are not, parks should reconsider selection of their measures and data sources to increase sensitivity). In this case, the park's wilderness committee could start by backtracking the source of the deteriorating trend from the quality, to the indicator, to the measure, to the data source. At the data source level, the actual data should be carefully scrutinized. The intent here is not to dodge a deteriorating trend, but rather to make sure it is valid and real, and to assure that it is not an artifact of some error in data collection or data entry, change in instrumentation, or data gap.

Once the data are validated and the trend is determined to be real, the committee should carefully consider whether that deteriorating trend in that quality of wilderness character is acceptable or unacceptable in the context of the overall trend in wilderness character. For example, sometimes there is a short-term downward trend in the untrammeled quality (e.g., nonnative plant control) in order to provide for a long-term improvement to the natural quality (e.g., maintain native species composition), which may be acceptable to park managers in the context of preserving wilderness character as a whole. Where it is determined that the downward trend is unacceptable, the next step is to determine if the National Park Service has any control or jurisdiction over the source of the impact. As previously discussed, it may be well outside of NPS jurisdictional authority. In other cases, it may be something that the National Park Service could control but didn't have a reason to previously or it was simply not salient to park managers.

Photo: NPS/Garry Oye, Organ Pipe Cactus Wilderness, Organ Pipe Cactus National Monument

The deteriorating trend should alert agency staff to the need for actions designed to preserve and improve wilderness character. An example of this situation might be that the number of signs in wilderness keeps going up incrementally which leads to a deteriorating trend in the solitude or undeveloped quality, or both. While each sign by itself may be considered a negligible and justifiable impact, taken as a whole it may inspire the park to reconsider the use of signs and use a different method of information delivery for park visitors. Another example of this situation may occur with an increasing use of motorized and mechanized equipment in wilderness which degrades the undeveloped quality, where the increased use of such equipment may not be intentional but rather the indirect result of staff turnover and the subsequent loss of primitive skills. In this case, a renewed training effort might be undertaken to teach primitive skills so that there is less reliance on motorized and mechanized equipment. The point is to use the tracking change in wilderness character to periodically determine what the trends are in each quality of wilderness character and the overall composite of all qualities of wilderness character to assure that we are meeting our mandate to preserve wilderness character. And, if not, take reasonable actions to address the problems. A flowchart, figure 2, is provided to illustrate this process as a diagram.

In extreme cases of unacceptable deteriorating trends in wilderness character where the agency has no control or jurisdiction over the source of the impacts, the park may want to consider whether the overall condition results in impairment to park resources and values using the criteria and procedures provided in chapter 1 of NPS *Management Policies 2006.* Parks considering this course of action should consult with their regional legal counsel, environmental coordinator, and regional wilderness coordinator for additional guidance.

Photo: NPS, Otis Pike Fire Island High Dune Wilderness, Fire Island National Seashore

Figure 2. Flowchart showing the general process to respond to downward trends in wilderness character.

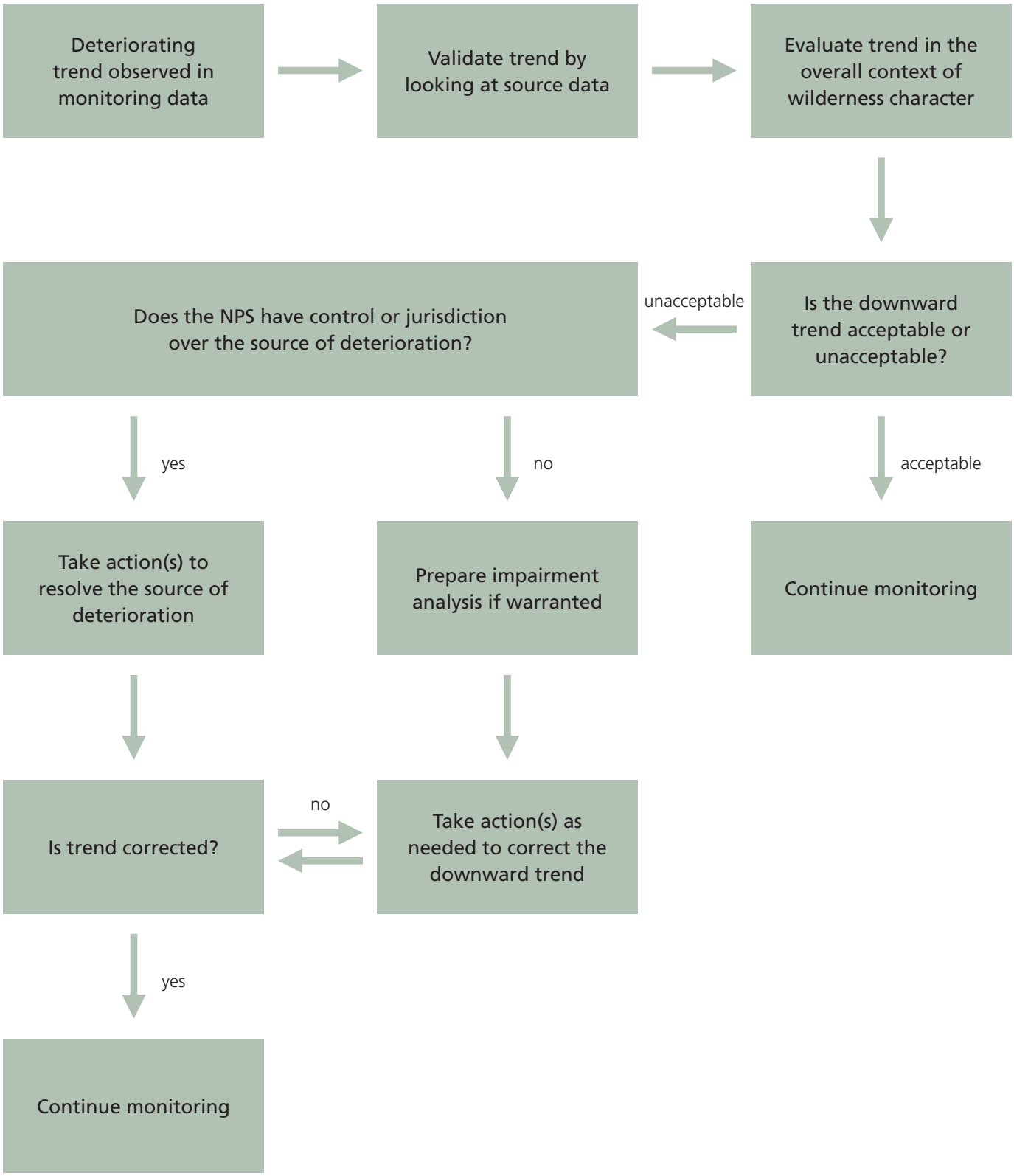
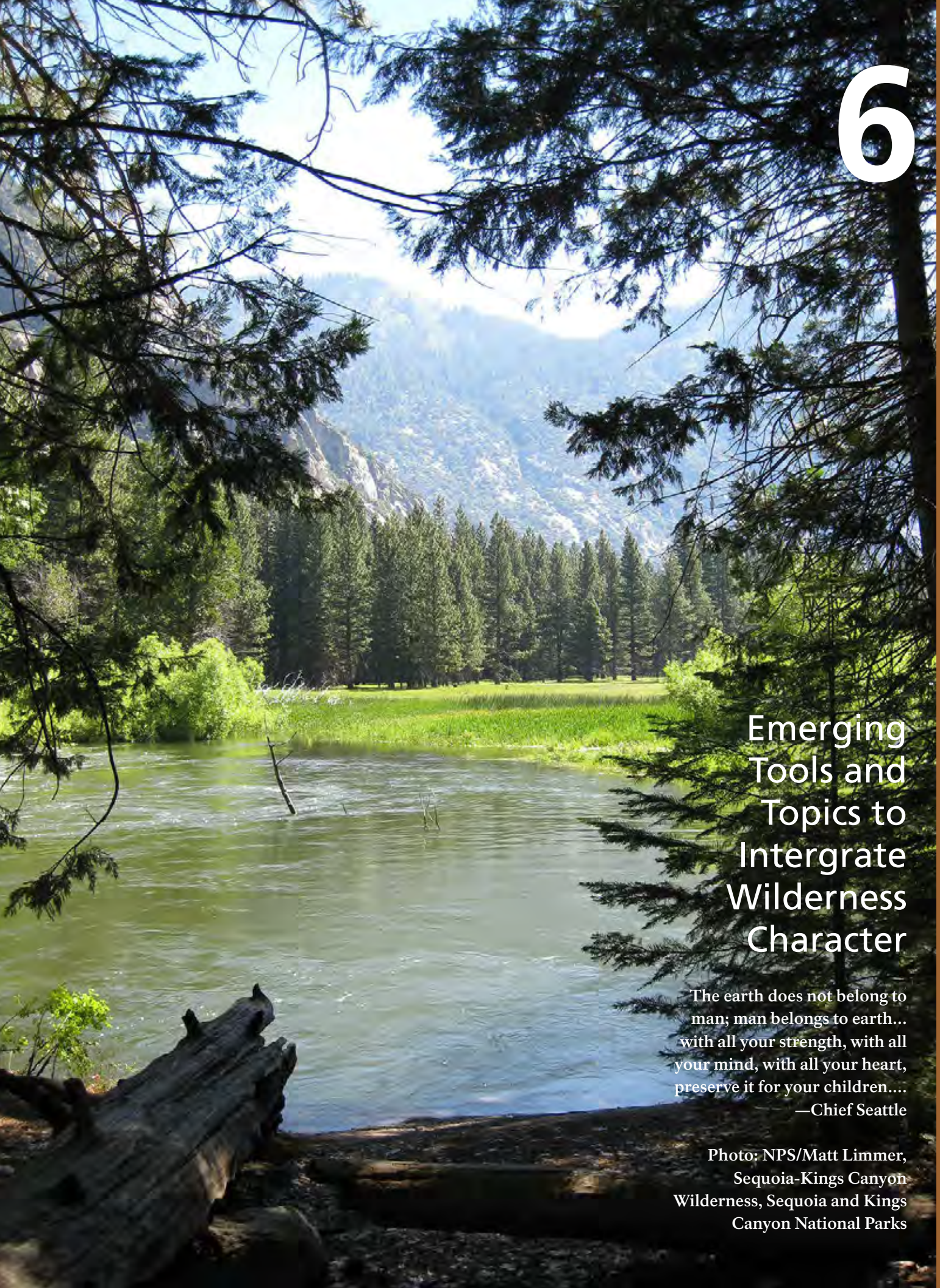


Photo: NPS/Daniel Silva, Shenandoah Wilderness, Shenandoah National Park



6

Emerging Tools and Topics to Intergrate Wilderness Character

The earth does not belong to man; man belongs to earth... with all your strength, with all your mind, with all your heart, preserve it for your children....
—Chief Seattle

Photo: NPS/Matt Limmer, Sequoia-Kings Canyon Wilderness, Sequoia and Kings Canyon National Parks

Photo: NPS/Kevin Hendricks, Sequoia-Kings Canyon Wilderness, Sequoia and Kings Canyon National Parks

Chapter 6—Emerging Tools and Topics to Integrate Wilderness Character

As wilderness character continues to be embraced by NPS staff, new tools will be developed to help integrate it into park planning, management, and monitoring. When such tools are shared, different parks can learn from one another and apply these tools if desired. A variety of tools are described below, and as other tools are developed they will be added to this chapter.

Mapping Wilderness Character

A wilderness character map based on GIS data depicts the status of wilderness character and how it varies across a park. As developed in *Keeping It Wild,* the qualities of wilderness character apply throughout an entire wilderness, even though features of the landscape and impacts to wilderness character vary from one place to another. Specific wilderness attributes have been mapped globally (Sanderson and others 2002), continentally (Carver and others in press), and nationally (Aplet, Thomson, and Wilbert 2000), yet procedures for mapping wilderness character have not been developed until now. A wilderness character map would:

- Show the current overall condition of wilderness character and how it varies across a landscape.
- Allow analysis of the effects of different planning alternatives on wilderness character by varying different factors that combine to produce the map and examining the results. Similarly, the map could be used for project planning to analyze the effects of proposed actions on wilderness character.
- Provide a baseline from which future monitoring could show the trend in wilderness character over time. As part of this process, a park would gain better understanding of their current data and whether new or better data would be needed for future planning and analyses of effects on wilderness character.

In addition to the three primary benefits described above, other potential benefits of a wilderness character map include identifying specific areas where actions could be taken inside the wilderness to improve wilderness character, or areas where actions should not be taken because they would degrade wilderness character. A wilderness character map would also help identify specific areas that are close to but outside the wilderness where actions might pose a significant risk of degrading wilderness character.

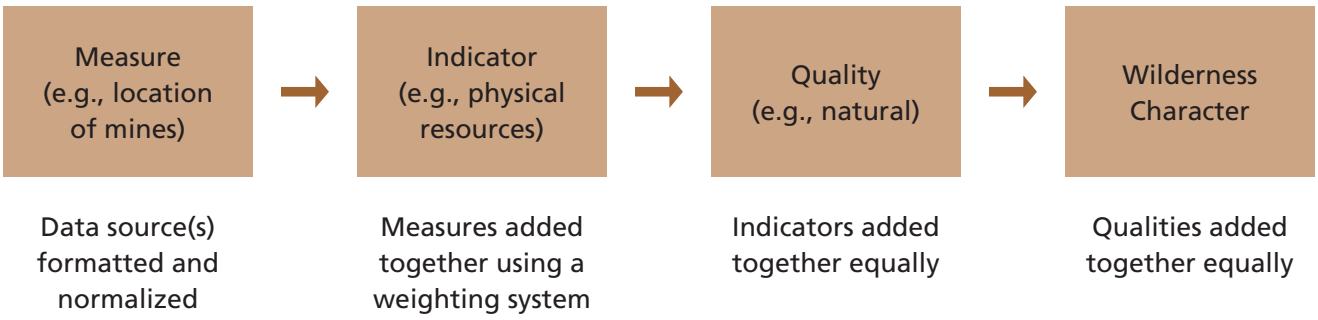
A Map of Wilderness Character for Death Valley Wilderness

New procedures were developed to map wilderness character in 2010 for the 3.1 million-acre Death Valley Wilderness, in Death Valley National Park. Death Valley staff wanted to develop this wilderness character map to help analyze the effects of different planning alternatives on wilderness character as they developed their wilderness and backcountry stewardship plan and to serve as a baseline for future monitoring of the trend in wilderness character. These new procedures are briefly described here and details on developing this map can be found on the NPS Wilderness Character Sharepoint site at http://share.inside.nps.gov/sites/WASO/WSD/WC and on wilderness.net at http://www.wilderness.net/index.cfm?fuse=toolboxes&sec=WC.

A team consensus approach was used for all decisions in developing the wilderness character map, tapping the experience and knowledge of park staff. Together, the interdivisional team had approximately 50 person-years of on-the-ground experience in the Death Valley Wilderness. This team conducted four face-to-face meetings and had several phone and email conversations in developing the wilderness character map.

The team developed this wilderness character map by first identifying potential measures for use as indicators of the qualities of wilderness character. From these potential measures, the team identified possible data sources and examined the quality of the spatial data for accuracy and completeness. In most cases there was more than one data source for a measure. For example, the measure "type and extent of visitor restrictions" (under the indicator "management restrictions on visitor behavior" in the solitude quality) could use two data sources: camping restrictions and areas closed to visitor use. Each measure was then "weighted" by the team; these weights reflect the importance of the measure in relation to the others under a particular indicator. The indicators for each quality were combined to produce a map for that quality, and the four maps, one for each quality, were in turn combined to create an overall map of wilderness character in the Death Valley Wilderness. Note that only four qualities of wilderness character were mapped in Death Valley; other parks may consider using the procedures described here for all five qualities. The overall steps for developing this map are shown in figure 3.

Figure 3. Overall flowchart for building a map of wilderness character for Death Valley Wilderness.



The detailed steps to create the wilderness character map are described in *Mapping Wilderness Character in Death Valley National Park – Technical Report and Methodology,* available on the NPS Wilderness Character Sharepoint site at http://share.inside.nps.gov/sites/WASO/WSD/WC and on wilderness.net at http://www.wilderness.net/index.cfm?fuse=toolboxes&sec=WC. The basic steps to develop this map are:

1. Answer the strategic questions described in appendix 6.1 to set the context for how the wilderness character map will be developed and what it will be used for.
2. Identify potential measures for each of the indicators for the qualities of wilderness character.
3. Identify spatial data sources for each potential measure.
4. Assess relevance, accuracy, completeness, and additional work required for the data sources for each measure.
5. Select measures based on the criteria in step 4.
6. Weight selected measures by their relative importance within each indicator to total 100. Measures and their weights within each indicator for the qualities of wilderness character developed by Death Valley National Park staff are provided in appendix 6.2. Each park needs to develop its own weighting scheme.
7. Using GIS, add the measures together for each indicator using their relative weights.
8. Using GIS, add the indicators together for each quality using equal weighting (or relative weighting if deemed appropriate in answering the strategic question in step 1).
9. Using GIS, add the qualities together for wilderness character using equal weighting.

The resulting maps of wilderness character are shown for each of the qualities of wilderness character (figure 4). These four maps of the qualities were combined using GIS, resulting in an overall map of wilderness character for the Death Valley Wilderness (figure 5). It is expected that the experience gained from building this first-ever wilderness character map for Death Valley National Park, which required approximately four months and a substantial amount of park staff time, will allow other parks to build a wilderness character map in much less time.

Photo: NPS/Peter Landres, Death Valley Wilderness, Death Valley National Park

Figure 4. The natural quality (A), untrammeled quality (B), undeveloped quality (C), and solitude or primitive and unconfined quality (D) of wilderness character at Death Valley Wilderness.

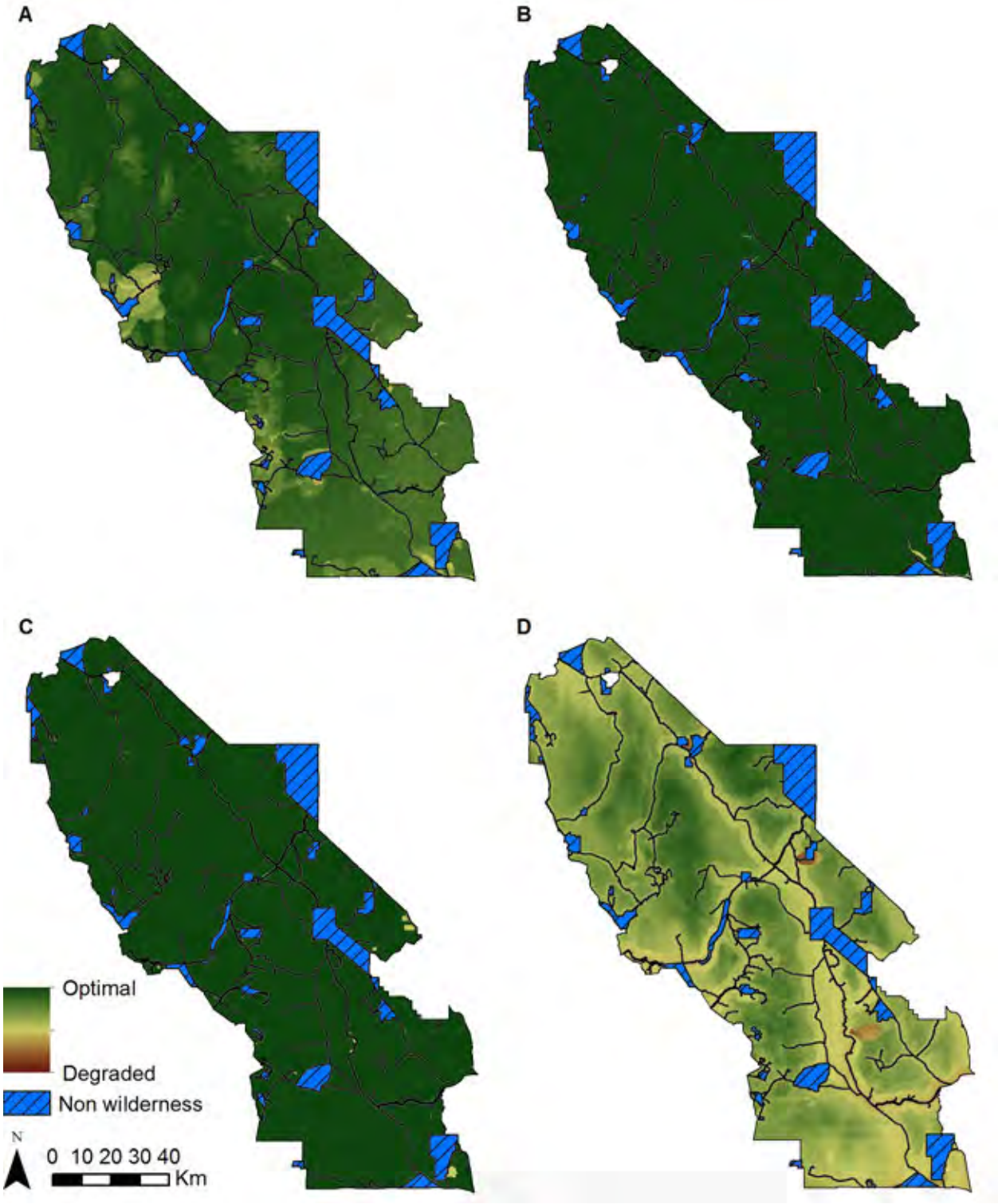
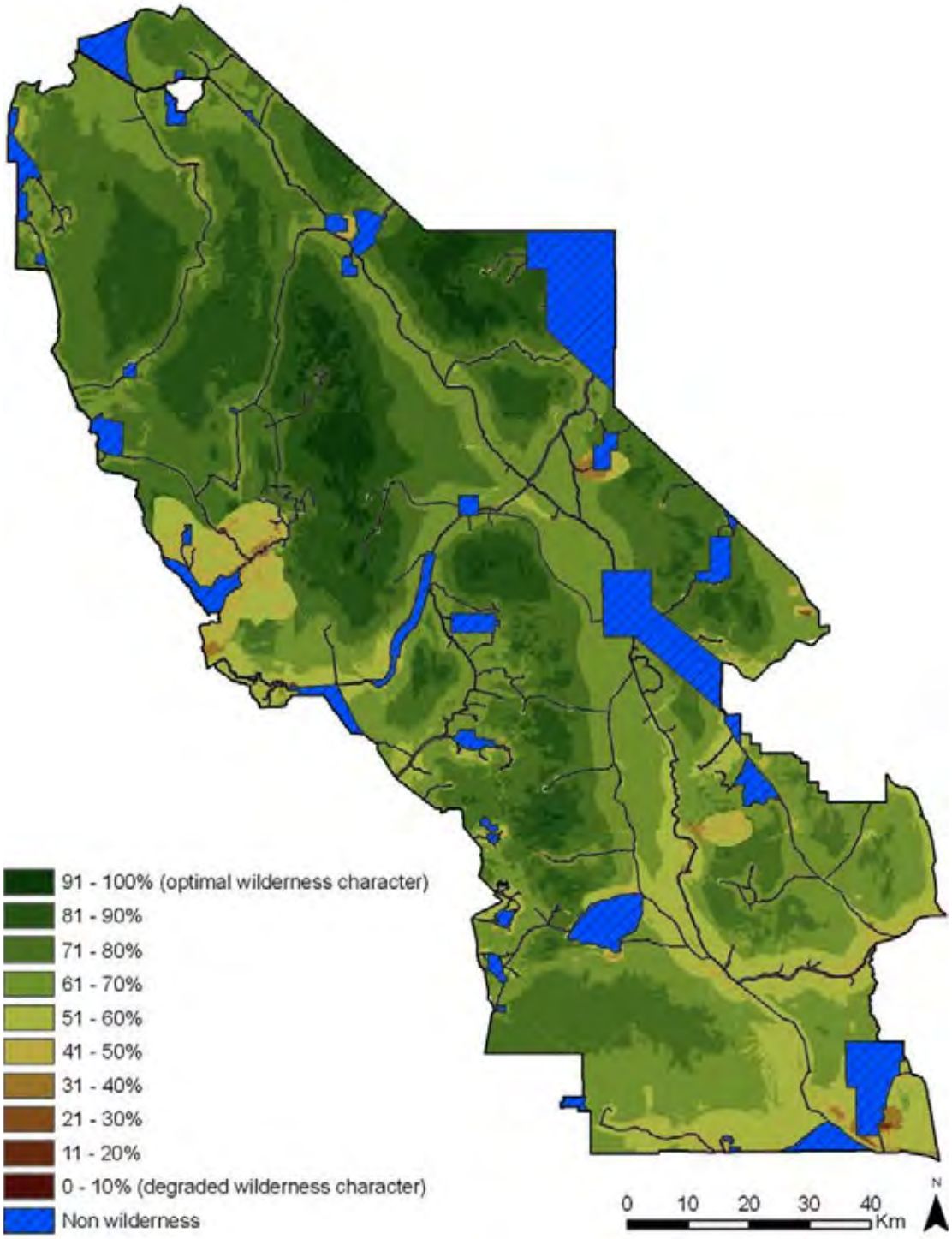


Figure 5. Wilderness character at Death Valley Wilderness from the combined qualities. The scale divides all the pixels in this map into 10% categories, with the top 10% of pixels that are the least degraded in darkest green, and the bottom 10% of pixels that are the most degraded in darkest brown.



Cautions About Developing a Wilderness Character Map

While there are several potential benefits to developing a wilderness character map, there are also concerns or cautions about its use. Understanding these concerns helps to avoid invalid and inappropriate uses of the map. These primary concerns are:

- *Creating sacrifice zones*—A map may facilitate inappropriate creation of "sacrifice zones" within the wilderness, directly contravening congressional and agency mandates to preserve wilderness character across the entire wilderness. For example, if the map shows that some areas are "better" or of "higher quality" than others, the tendency may be to focus efforts on preserving wilderness character only in these specific areas and allow wilderness character to degrade in other areas. By showing the current condition of wilderness character and how it varies across the entire wilderness, the intent of the map is to help staff maintain high-quality areas while raising the quality of wilderness character in other areas.
- *Comparing the condition of wilderness character between wildernesses*—A map may facilitate inappropriate comparison of wilderness character among different wildernesses when such maps are developed for other parks. The maps will show the current status or trend of wilderness character in different colors, and it will be easy for users to compare the quantity of a given color among different wildernesses. Comparing these maps among different wildernesses, however, is neither valid nor appropriate because each wilderness is unique, and the map for each wilderness is built with data for that wilderness and no others.
- *Assuming that the resulting maps accurately and precisely describe wilderness character*—Map products can be misconstrued as an accurate and precise description of wilderness character. These map products are really only an estimate of selected aspects of wilderness character for which spatial data were available for a particular wilderness at a certain point in time. In addition, these map products do not portray in any way the symbolic, intangible, spiritual, or experiential values of wilderness character. In short, while these map products are useful for the purposes described in this *User Guide,* these products do not describe the complexity, richness, or depth of wilderness character.

Photo: NPS/Peter Landres, Death Valley Wilderness, Death Valley National Park

Wilderness Character Monitoring Database

The Wilderness Character Monitoring Database is software that allows parks to enter monitoring data and other information on wilderness character. The database is currently a standalone Microsoft Access desktop application, although an online application is planned for the future. The desktop application houses data on each wilderness within its jurisdiction. Once the online capability is made available, the database will make it possible to track change in wilderness character throughout the National Park Service, as well as across the National Wilderness Preservation System. It will provide consistency in tracking measures, yet it also provides local flexibility to alter or add measures. Importantly, all measures entered into the database are pooled in a library of potential measures that is available to new users.

The database is based on the hierarchical framework described in *Keeping It Wild.* This framework takes wilderness character and breaks it down into qualities. Each quality is divided into monitoring questions, monitoring questions are divided into indicators, and finally indicators are divided into measures. The database is standardized from the qualities down to the indicator level. Measures are flexible and can be chosen by the park and unique to each wilderness. This design balances the need for national consistency and standardization with the flexibility required for local relevance and use.

Park staff will set up the measures in the database and enter the data for each measure. Trend in each measure is evaluated as stable, improving, or degrading based on the data. There is no national standard that can be used to determine the direction of this trend because each wilderness is unique and each park must determine what constitutes a "significant" change in each measure. Trends across measures are "rolled up," or aggregated, based on rules for combining trends in *Keeping It Wild.* Trends in wilderness character cannot and will not be compared across different wildernesses. What can be collected and reported, however, is the proportion of wildernesses in a region, or the nation, that show whether wilderness character is preserved or degrading.

At the park level, the database can be used as a tool to help staff understand how a management action in one measure or a number of measures affects the trend in wilderness character. Staff can add comments on the reasons for data and trends in the database. Parks can report the overall trends in wilderness character to interested parties and have the background information to understand why those trends are occurring. Each park can download a copy of the database from the NPS Wilderness Stewardship Program SharePoint site, Wilderness Character tab, at http://share.inside.nps.gov/sites /WASO/WSD/WC. A "Quickstart Overview" of how to use this database is in appendix 6.3.

Photo: NPS/Peter Landres, Bridge Canyon Wilderness, Lake Mead National Recreation Area

Determining the "Extent Necessary" for Commercial Services

Wilderness character can be used to inform decisions concerning commercial use in wilderness. The National Park Service, as well as other agencies that manage wilderness, are developing tools to address section 4(d)(6) of the Wilderness Act which states, "Commercial services may be performed within the wilderness areas designated by this Act to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas." The "purposes" referred to in section 4(d)(6) are those enumerated in section 4(b). Section 4(b) provides that "wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use."

The following considerations in this *User Guide* are provided for making decisions affecting the type, amount, location, and timing of commercial services allowed within NPS wilderness areas. It offers elements to consider when evaluating the "extent necessary" for commercial services in a specific wilderness until a more defined process and specific steps are developed and adopted by the National Park Service. Wilderness character is integral to making these decisions. Such evaluations could be addressed within a planning effort such as a general management plan or wilderness stewardship plan or could be addressed as a standalone effort. Determining the extent necessary for commercial services in wilderness should be undertaken using an interdisciplinary approach that includes the wilderness manager, commercial services staff, and other specialists as appropriate. Each park will present a different situation so the discussion offered here must be adapted for the circumstances at each park. Until a more specific NPS process is adopted, consultation with NPS solicitors is advised.

Is the commercial service necessary, appropriate, and consistent with the National Parks Omnibus Management Act of 1998?—The act states, "It is the policy of the Congress that the development of public accommodations, facilities, and services in units of the National Park System shall be limited to those accommodations, facilities, and services that—(1) are necessary and appropriate for public use and enjoyment of the unit of the National Park System in which they are located; and (2) are consistent to the highest practicable degree with the preservation and conservation of resources and values of the unit." This wording is a first filter for the types of commercial services that are necessary and appropriate to the park unit and to the wilderness management zone, and may filter out some services without having to further evaluate "extent necessary" from the Wilderness Act.

Photo: NPS/Kevin Hendricks, Sequoia-Kings Canyon Wilderness, Sequoia and Kings Canyon National Parks

What other existing guidance is available?—Consult enabling legislation and legislative history for the park and wilderness area and other relevant legislation. For example, does the legislation allow any types of uses that are not normally allowed in wilderness? If so, they should be described in detail and included in this analysis. Also consult park-specific documents, including general management plans, wilderness stewardship plans, commercial services plans, foundation documents, cultural resource management plans, and other applicable documents.

Which activities (commercial services) are proper for realizing the recreational or other wilderness purposes of the areas?—The "purposes" referred to in section 4(d)(6) are those enumerated in section 4(b). Section 4(b) provides that "... wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use." This involves analyzing the available opportunities for each of the public purposes to determine whether the proposed commercial service enables visitors to realize any public purpose which is not currently available through noncommercial means.

A distinction between commercial services and nonrecreational educational groups can be based on the NPS educational fee waiver definition of an educational group (Director's Order 22: *Recreation Fees)*. Such nonrecreational educational groups are usually permitted under a special park use permit, and a similar but separate evaluation process could be used to determine whether or not to issue a requested permit, and if so, the conditions required under the permit to maintain wilderness character.

What is the extent necessary for activities that are proper?—Evaluate the amount of commercial use that is necessary to achieve the purposes identified earlier. Visitor capacity is one important consideration in determining the extent of commercial services. If a wilderness has determined visitor capacity, activities that are at or near visitor capacity may not be able to accommodate commercial services. Within established capacities, the minimum amount of commercial services necessary should be balanced with noncommercial activities. Commercial services, similar to all other activities, may only be allowed in wilderness if while doing so wilderness character is preserved or improved. Commercial services may be limited to preserve opportunities for primitive recreation or other aspects of wilderness character. Specific consideration should also be given to the potential long-term and short-term impacts such use might have on each quality of wilderness character, with an indication of whether such use would degrade, maintain, or improve each quality of wilderness character. Wilderness areas with potential commercial use conflicts should consider using measures in wilderness character assessment that will monitor the condition of wilderness qualities affected by commercial use. Examples include hiker encounter rates, the health of meadows, and the size of campsites.

How do "extent necessary determinations" fit with planning —A number of different types of planning processes could include the determination of the extent necessary for commercial services in wilderness, including general management plans, wilderness stewardship plans, and commercial service plans. Making this determination within a planning framework includes an analysis of impacts and public involvement. Zoning can be completed as part of a wilderness stewardship plan or general management plan to define the types and amounts of use, as well as other designations intended to preserve wilderness character. Through the creation of zones, commercial use in different portions of a wilderness can be managed in a different manner. Maintaining consistency with the wilderness character identified in zoning should be a key element in the evaluation of a proposed commercial service.

Considerations in Commercial Service Decisions:

- Is the commercial service "necessary and appropriate for public use and enjoyment?"
- Is there guidance in legislation or other park plans?
- Which activities are proper for realizing one or more of the public purposes of wilderness?
- What is the extent necessary for the activities which are proper?
- Does it preserve wilderness character?
- Is the commercial use consistent with visitor use standards?
- Can commercial services be appropriately managed through zoning?
- Are use allocations concerning amount, timing, type, and location of use acceptable to the public?
- Have impacts to wilderness character been evaluated through a minimum requirements analysis?

Parks completing wilderness stewardship plans or general management plans can use wilderness character measures and standards to guide establishment of visitor capacities (maximum amount of use that can be accommodated) for all users, commercial and noncommercial. A challenge facing many parks is the issue of day use. Many staffs have developed capacities for overnight use but have not begun the difficult task of identifying capacities for wilderness day use. Areas at or near capacity should consider prohibiting additional types or increased amounts of commercial use. Maintaining consistency with capacities and related standards for a given location and season should be a key element in the evaluation of a proposed commercial service. Areas with an established visitor capacity must next determine how use will be allocated between the general public, commercial users, and those with special use permits. The amount, timing, type, and location of use must all be determined using a NEPA-compliant public participatory process.

Apply the minimum requirements process for operations plans—NPS *Management Policies 2006,* section 6.4.4, requires the application of the minimum requirement concept to the operation plans of commercial services. When analyzing an operating plan, emphasize activities and methods that have the least amount of adverse effect on wilderness character.

Example

Zion National Park recently completed a commercial services evaluation using portions of the eight-step process. The park completed a general management plan in 2001. The plan created two zones for the Zion Wilderness, a primitive zone and a pristine zone. Through the general management plan, the decision was made to not allow commercial use in the pristine zone. The general management plan called for a wilderness stewardship plan to be completed within five years. Two goals for the wilderness stewardship plan were to create a carrying capacity based on resource protection and visitor experience standards for the area, and to decide whether commercial services were necessary in the primitive zone. Through two comment periods, members of the public were asked if commercial use should be allowed in the primitive zone. A strong majority of respondents indicated that they did not wish for commercial use to occur. Additionally, many areas within the primitive zone were already at or near standards. Based on these two factors, the park made the decision not to allow commercial use in any portion of the Zion Wilderness.

Photo: NPS, Yosemite Wilderness, Yosemite National Park

Next Steps

NPS Director's Order 41: *Wilderness Stewardship* provides direction for managing commercial services in wilderness and will be followed by an update to the commercial services section in NPS *Reference Manual 41: Wilderness Stewardship,* being undertaken by the NPS National Wilderness Leadership Council. There are also "extent necessary determinations" underway within wilderness stewardship plans for Death Valley, Sequoia-Kings Canyon, Black Canyon of the Gunnison, and Haleakela national parks.

References and Appendixes

"…. in Wildness is the preservation of the World."
—Henry David Thoreau

Photo:
NPS/Dan Niosi, Denali Wilderness, Denali National Park & Preserve

Glossary

Term/Phrase	Definition
Affected Environment	Existing biological, physical, social, and economic conditions of an area that are subject to change, both directly and indirectly, as a result of a proposed human action.
Alternatives	Sets of management elements that represent a range of options for how, or whether, to proceed with a proposed project. An environmental impact statement or environmental assessment analyzes the potential environmental and social impacts of the range of alternatives presented.
Archeological Resources	Any material remains or physical evidence of past human life or activities that are of archeological interest, including the record of the effects of human activities on the environment. They are capable of revealing scientific or humanistic information through archeological research.
Building Blocks of Wilderness Character	Crucial steps needed to provide the foundation for effectively integrating wilderness character into planning management and monitoring. The blocks include: assemble wilderness basics, assess wilderness character, and integrate wilderness character into management and operations.
Commercial Services	Commercial (for profit) operations, either ongoing or occasional in nature, that operate under NPS-issued permits or contracts to provide appropriate and necessary visitor services in national parks.
Cultural Landscape	A geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with an historic event, activity, or person or exhibiting other cultural or aesthetic values. There are four general types of cultural landscapes, not mutually exclusive: historic sites, historic designed landscapes, historic vernacular landscapes, and ethnographic landscapes (Birnbaum 2004).
Cultural Landscape Inventory	The Cultural Landscape Inventory is an NPS website database containing information on national register-eligible and potentially eligible cultural landscapes, as well as cultural landscapes determined noneligible but which are managed as cultural resources, within the national park system. This evaluated inventory identifies and documents each landscape's location, size, physical development, condition, landscape characteristics, character-defining features, as well as other valuable information useful to park management.
Cultural Resources	Those tangible and intangible aspects of cultural systems, both living and dead, that are valued by or representative of a given culture or that contain information about a culture. They include but are not limited to sites, structures, districts, objects, landscapes, and historic documents associated with or representative of peoples, cultures, and human activities and events, either in the present or in the past. Cultural resources also can include primary written and verbal data for interpretation and understanding of those tangible resources.
Designated Potential Wilderness	Federal lands that Congress intends to become fully designated wilderness upon the elimination of a nonconforming use prohibited by the Wilderness Act.
Eligible Wilderness	A finding of a formal eligibility assessment process whereby NPS lands were determined to be eligible for further wilderness study. The determination of an area's eligibility, or ineligibility, for further study must be approved by the Director of the National Park Service before publication of the final eligibility determination in the *Federal Register.*
Ethnographic Resource	See "Traditional Cultural Resource."
Extirpated Species	A species that formerly occurred within a wilderness but is no longer present there. An extirpated species is different from an extinct species in that extinction is the loss of all the individuals of a species, whereas a species may be extirpated from one area but still living in another area.
Facilities	Buildings and the associated supporting infrastructure such as roads, trails, and utilities.
Feasibility	As used as a criterion in evaluating possible measures for tracking change in wilderness character, this term evaluates how practical it would be to monitor the measure.

Term/Phrase	Definition
Historic Structure	As defined by Director's Order 28: *Cultural Resource Management,* an historic structure is "a constructed work . . . consciously created to serve some human activity." Historic structures are usually immovable, although some have been relocated and others are mobile by design. They include buildings and monuments, dams, millraces and canals, nautical vessels, bridges, tunnels and roads, railroad locomotives, rolling stock and track, stockades and fences, defensive works, temple mounds and kivas, ruins of all structural types, and outdoor sculpture.
Indicators	Distinct and important elements within each monitoring question. In nearly all cases, there is more than one indicator under a monitoring question. See "Wilderness Character Monitoring." A selected subset of components or elements of a resource or value that are particularly "information rich" and that represent or "indicate" the overall condition of the resource or value. There may be one or several indicators of condition for a particular resource (National Park Service 2012a).
Indigenous Species	A species that originally inhabited the area now designated as wilderness.
Infrastructure (nonlinear)	Installations or structures used to support activities such as telecommunications, water development, livestock grazing, or wildlife management. It includes debris such as old dump sites, plane crash sites, or locations of unexploded ordinance. It includes memorials or other monuments other than those placed during land surveys. It also includes unattended measurement devices left in place for at least one year for the purpose of recording environmental data, such as meteorology or seismic activity.
Installations	Same as "Infrastructure (nonlinear)."
Inholding	Nonfederal land within the boundary of a wilderness.
Invasive Species	An "invasive species" is defined as a species that is 1) nonnative (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health (Executive Order 13112, appendix 1).
Inventory	An extensive point-in-time effort to determine location or condition of a resource, including the presence, class, distribution, and status of plants, animals, and abiotic components such as water, soils, landforms, and climate. Inventories contribute to a statement of park resources, which is best described in relation to a standard condition such as the natural or unimpaired state. Inventories may involve both the compilation of existing information and the acquisition of new information. They may be relative to either a particular point in space (synoptic) or time (temporal). See "Monitoring."
Keeping It Wild	An interagency strategy to monitor trends in wilderness character across the National Wilderness Preservation System.
Major Trail Feature	A significant constructed feature associated with a system trail. Most commonly, this term refers to a trail bridge, but it also includes a dock, constructed stairs, and a boardwalk, excluding other minor features such as trail signs and culverts.
Management Ignited Fire	Also referred to as "prescribed fire," this would be any fire ignited by management actions under certain predetermined conditions to meet specific objectives related to hazardous fuels reduction or habitat improvement. A written, approved prescribed fire plan must exist, and NEPA requirements must be met before ignition. Prescribed fires are ignited and managed within a "window" of very specific conditions, including winds, temperatures, humidity, and other factors specified in the burn plan.
Management Zone	A geographical area for which management directions or prescriptions have been developed to determine what can and cannot occur in terms of resource management, visitor use, access, facilities or development, and park operations.
Manipulation	Any action taken inside a wilderness boundary to affect a biophysical environment.

Term/Phrase	Definition
Measures	A specific aspect of wilderness that can be measured or quantified. Specific feature(s) used to quantify an indicator, as specified in a sampling protocol. For example, pH, temperature, dissolved oxygen, and specific conductivity are all measures of water chemistry (National Park Service 2012). One or more specific measurements used to quantify or qualitatively evaluate the condition of an indicator at a particular place and time. There may be one or more *specific measures of condition* for each *indicator of condition* (National Park Service 2012a).
Mechanical Transport	Any contrivance for moving people or material in or over land, water, or air, having moving parts, that provides a mechanical advantage to the user, and that is powered by a living or nonmotorized power source. This includes, but is not limited to, sailboats, hang gliders, parachutes, bicycles, game carriers, carts, and wagons. It does not include wheelchairs when used as necessary medical appliances. It also does not include skis, snowshoes, rafts, canoes, sleds, travois, or similar primitive devices without moving parts.
Minimum Requirements Analysis	A written analysis that helps determine and document if potential actions by the National Park Service or government agents are the minimum necessary to accomplish a particular objective in wilderness and, if so, how to minimize any adverse effects.
Monitoring	The general purpose of monitoring is to detect changes or trends in a resource over time. Further defined as the collection and analysis of repeated observations or measurements to evaluate changes in condition and progress toward meeting a management objective. As used in this document, it is synonymous with tracking change in wilderness character.
Monitoring Questions	Major elements under each quality that are significantly different from one another. Monitoring questions frame wilderness character monitoring to answer particular management questions. In this context, monitoring questions are similar to monitoring goals. See "Wilderness Character Monitoring."
Motor Vehicle	Machines used to transport people or material across or over land, water, or air, and which are powered by the use of a motor, engine, or other nonliving power source. This includes, but is not limited to motor boats, all-terrain vehicles, snowmobiles, and aircraft that either land or drop off or pick up people or material (i.e., not aircraft that merely fly over the wilderness).
Motorized Equipment	Machines that are not used for transportation but are powered by a motor, engine, or other nonliving source. This includes, but is not limited to, machines such as chain saws and generators. It does not include small hand-carried devices such as shavers, wristwatches, flashlights, cameras, stoves, or other similar small equipment.
Museum Collections	Assemblage of objects, works of art, historic documents, and/or natural history specimens collected according to a rational scheme and maintained so they can be preserved, studied, and interpreted for public benefit. Museum collections normally are kept in park museums, although they may also be maintained in archeological and historic preservation centers.
Natural Quality	One of the qualities of wilderness character. This quality monitors effects of modern people on ecological systems inside wilderness since the time the area was designated. Wilderness ecological systems are substantially free from the effects of modern civilization.
Natural Processes	All processes such as hydrologic, geologic, and ecosystem that are not the result of human manipulation.
Natural Wilderness Lake	A body of water not originally created by human impoundment (such as via a dam or levee).
Nonnative Species	Species of plants or wildlife that are not native to a particular area and may interfere with natural biological systems.
Paleontology	The study of the forms of life existing in prehistoric or geologic time, as represented by the fossils of plants, animals, and other organisms.

Term/Phrase	Definition
Other Features of Value Quality	This quality of wilderness character has been defined by the National Park Service to capture features with scientific, educational, scenic, or historical value that may not be included under the other four qualities. This quality is unique to an individual wilderness and, typically, the "other feature of value" occurs only in specific locations within a wilderness.
Paleoecology	The branch of ecology that deals with the interactions between ancient organisms and their environment.
Park Foundation Document	This is a foundational statement for the park that provides basic guidance for planning and management decisions. Through the identification of core components—park purpose, significance, fundamental and important resources and values, and interpretive themes—the foundation fosters a shared understanding of what is most important about the park. The foundation also describes special mandates and administrative commitments, which provide context for park management; includes an assessment of planning and data needs that provides a focus for planning at the park; and a park atlas, composed of geo-spatial data about the park and its setting. A park foundation document provides a focus for park planning activities and establishes a baseline from which planning proposals are developed.
Potential Wilderness	Lands identified in a wilderness study that are surrounded by or adjacent to lands proposed for wilderness designation but that do not themselves qualify for immediate designation due to temporary nonconforming or incompatible conditions.
Proposed Wilderness	The lands proposed for wilderness designation as identified by the Director of the National Park Service to the Department of the Interior as an outcome of a formal wilderness study.
Qualities	Primary elements of wilderness character that link directly to the statutory language of the 1964 Wilderness Act. The qualities of wilderness are untrammeled, undeveloped, natural, outstanding opportunities for solitude or a primitive and unconfined type of recreation, and other features of value. All five qualities are of equal importance and stature to understand, describe, and assess trends in wilderness character.
Recommended Wilderness	The lands recommended by the Secretary of the Interior to the president of the United States as suitable for inclusion in the National Wilderness Preservation System. The president is then responsible for transmitting his recommendations with respect to wilderness designation to both houses of Congress for formal designation.
Record of Decision	The public document describing the decision made on an alternative in an environmental impact statement.
Reliability	As used as a criterion in evaluating possible measures for tracking change in wilderness character, this term evaluates whether the measure can be monitored accurately with a high degree of confidence and would yield the same result if measured by different people at different times.
Representativeness	As used in choosing data sources for a measure for tracking change in wilderness character, this term asks whether the data source reasonably captures, or stands for, the information needed to track the wilderness measure.
Replication	As used in choosing data sources for a measure for tracking change in wilderness character, this term asks whether similar information can be collected in the future.
Resource Stewardship Strategy	A written document that presents long-term, comprehensive strategies for managing natural and cultural resources. It is not a decision-making document, but rather an analytical document that identifies and tracks indicators of desired conditions and recommends comprehensive strategies to achieve and maintain desired conditions over time.
Road	A motor vehicle travelway wider than 50 inches, unless classified and managed as a trail. (36 C.F.R. 212.1.)
Significance	As used as a criterion in evaluating possible measures for tracking change in wilderness character, this term evaluates the degree to which the measure is directly related to the quality of wilderness character and is relevant and useful to park staff in the management of that quality.

Term/Phrase	Definition
Site Hardening	Any development that creates an impervious ground surface. Usually used as a way to direct visitor use and reduce impacts to resources.
Social Trails (User Trails)	A social trail is an informal, nondesignated trail between two locations. Social trails often result in trampling stresses to vegetation and soils.
Solitude, or Primitive and Unconfined Recreation Quality	Wilderness provides opportunities to experience solitude or primitive and unconfined recreation, including the values of inspiration and physical and mental challenge. One of the qualities of wilderness character. This quality monitors conditions that affect the opportunity for people to experience solitude or primitive, unconfined recreation, rather than monitoring visitor experiences per se.
Sustainability	As used as a consideration in choosing data sources for a measure for tracking change in wilderness character, this term asks how readily the data are retrieved and processed, and whether the park will be able to maintain this level of effort in future years.
System Trail	A linear feature constructed or delineated by the National Park Service for the purpose of allowing the free movement of people or stock. This is distinct from nonsystem trails ("user-developed" or "social" trails) that are not delineated by the agency.
Traditional Cultural Resource	Any site, structure, object, landscape, or natural resource feature assigned traditional, legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it.
Traditional Cultural Property	A resource (property) associated with cultural practices, beliefs, the sense of purpose, or existence of a living community that is rooted in that community's history or is important in maintaining its cultural identity and development as an ethnically distinctive people. Traditional cultural properties are ethnographic resources eligible for listing in the National Register of Historic Places.
Trend	Directional change measured in resources by monitoring their condition over time. Trends can be measured by examining individual change (change experienced by individual sample units) or by examining net change (change in mean response of all sample units) (National Park Service 2012b).
Unauthorized Action	Any action undertaken by anyone, any group, or any agency without specific approval by the authorized line officer.
Undeveloped Quality	Wilderness is essentially without permanent improvements or modern human occupation. One of the qualities of wilderness character. This quality monitors the presence of structures, construction, habitations, and other evidence of modern human presence or occupation.
Unfinished Wilderness	Geographic areas that have been through some level of study or recommendation for wilderness but have yet to be designated by Congress. This is a global term used to encompass potential wilderness, proposed wilderness, and recommended wilderness.
Visitor Capacity	As it applies to parks, visitor capacity is a component of visitor use management consisting of the maximum amounts and types of visitor use that an area can accommodate while sustaining desired resource conditions and visitor experiences, consistent with the purpose for which the area was established.
Untrammeled Quality	Wilderness is essentially unhindered and free from modern human control or manipulation. One of the qualities of wilderness character. This quality monitors human activities that directly control or manipulate the components or processes of ecological systems inside wilderness.
Visitor Experience	The perceptions, feelings, and reactions a park visitor has in relationship with the surrounding environment.
Visitor Use	Refers to the physical, human presence in an area for recreational, educational and interpretive, inspirational, or scientific purposes.
Visitor Use Characteristics	Includes the amount, type, timing, and distribution of visitor use, including visitor activities and behaviors.
Visitor Use Levels	Refers to the quantity or amount of use a specific area receives, or the amount of parkwide visitation on a daily, monthly, or annual basis.

Term/Phrase	Definition
Visitor Use Management	The proactive and adaptive process of planning for and managing characteristics of visitor use and its physical and social setting, using a variety of strategies and tools, to sustain desired resource conditions and visitor experiences.
Vulnerability	As used as a criteria in evaluating possible measures for tracking change in wilderness character, this term evaluates both and current and near term (within 10–15 years) level of risk or threat to a quality of wilderness character.
Wilderness	Federal lands that are part of the National Wilderness Preservation System as designated by the U.S. Congress.
Wilderness Basics	One of the building blocks of wilderness character, this includes assembling the background wilderness information, developing a wilderness character narrative, and identifying issues for future wilderness stewardship planning.
Wilderness Character	Wilderness character may be described as the combination of biophysical, experiential, and symbolic ideals that distinguishes wilderness from other lands. These ideals combine to form a complex and subtle set of relationships between the land, its management, and the meanings people associate with wilderness. For practical purposes it is generally defined as the composite of the qualities of wilderness character. *Note*: The Wilderness Act does not define "wilderness character" and despite a rich legislative history on many aspects of the Wilderness Act, the congressional committees that developed and debated the Wilderness Act of 1964 did not discuss the meaning of this phrase.
Wilderness Character Baseline Condition Assessment	Provides the reference point against which change to wilderness character is measured and evaluated.
Wilderness Character Monitoring	A process of hierarchically dividing wilderness character into successively finer elements. In order, these elements are: Qualities à Monitoring Questions à Indicators à Measures. Data are gathered on selected measures of wilderness character to assess how wilderness character is changing over time.
Wilderness Character Narrative	Describes what is unique and special about the wilderness, and the major issues that need to be addressed to preserve wilderness character. The narrative is composed of an overview that provides a broad context of the wilderness within the region, followed by each of the qualities of wilderness character. The narrative is a positive and affirming description of what the wilderness is now and into the foreseeable future and is not intended for criticizing current management programs or for analyzing or balancing tradeoffs among different resources and values of wilderness.
Wilderness Stewardship Plan Handbook	An NPS-specific comprehensive guidance document for the process and content of wilderness stewardship plans. The first edition was released in 2004 and it was substantially revised and released again in 2014 as a companion to the document *Keeping it Wild in the National Parks: A User Guide to Integrating Wilderness Character into Park Planning, Management, and Monitoring.*
Wilderness Resources	Any specific resource within a wilderness. This is not the same as "wilderness character" that refers to the holistic aggregate of all the individual wilderness resources that occur within an area.
Wilderness Study	A formal study, by a federal land management agency, of areas that are eligible for wilderness designation. The study typically evaluates lands and waters against the criteria outlined in the Wilderness Act of 1964. If the wilderness study results in a wilderness proposal for NPS lands, the findings are forwarded to the Director of the National Park Service for consideration and possible action.

The primary sources for this glossary are NPS *Management Policies 2006,* NPS Director's orders and their predecessors (e.g., NPS-28: *Cultural Resource Management Guideline, Natural Resource Management Reference Manual #77)* and *Keeping It Wild* (2008), or else the definitions were created specifically for this *User Guide.* Where other sources were used they are shown as abbreviations in parentheses following the definition. Those other sources used in compiling this glossary are listed below by the citation:

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Appendix 1— How this User Guide was Developed

This *User Guide* was developed by the NPS Wilderness Character Integration Team for all parks with wilderness resources. This team was jointly chartered in 2010 by the NPS Office of Park Planning and Special Studies and the NPS Wilderness Stewardship Division to "provide leadership within the NPS for integrating and using wilderness character in park planning, management, and monitoring. The intended outcome from the work of this team will be for all NPS wilderness parks to understand how the idea of wilderness character applies to their park and how wilderness character informs and guides their day-to-day and on-the-ground activities that occur within a wilderness park." The *User Guide* is the primary product by which this team intends to accomplish wilderness character integration within the NPS.

The team was composed of the following 20 people with a combined total of 234 years of experience in wilderness stewardship:

- Mike Bilecki, Chief of Resource Management,
  Fire Island National Seashore, Patchtogue, New York
- Carol Cook, Program Analyst,
  Park Planning and Special Studies, Washington, D.C.
- Sarah Craighead, Superintendent,
  Death Valley National Park, Death Valley, California
- Jeremy Curtis, Chief of Maintenance for Chiricahua National Monument,
  Ft. Bowie National Historic Site and Coronado National Monument, Wilcox, Arizona
- Tim Devine, Arthur Carhart National Wilderness Training Center,
  Missoula, Montana
- Sandee Dingman, Biologist,
  Lake Mead National Recreation Area, Boulder City, Nevada
- Michael Haynie, Park Ranger Interpretation,
  Guadalupe Mountains National Park, Salt Flat, Texas
- Chris Holbeck, Natural Resource Program Manager,
  Midwest Regional Office, Omaha, Nebraska
- Chip Jenkins, Superintendent,
  North Cascades National Park, Sedro-Wolley, Washington
- Peter Landres, Ecologist and WCIT co-chair,
  Aldo Leopold Wilderness Research Institute,
  Rocky Mountain Research Station, U.S. Forest Service, Missoula, Montana
- Adrienne Lindholm, Regional Wilderness Coordinator,
  Alaska Regional Office, Anchorage, Alaska
- Melissa Memory, Chief of Cultural Resources,
  Everglades and Dry Tortugas national parks, Homestead, Florida
- Christina Mills, Wilderness Fellow, Wilderness Stewardship Division,
  Washington, D.C. (WCIT co-chair beginning the second year)
- Ray O'Neil, Plateau District Ranger, Zion National Park, Springdale, Utah
- Ruth Scott, Natural Resource Specialist,
  Olympic National Park, Port Angeles, Washington

- Miki Stuebe, Environmental Protection Specialist, Environmental Quality Division, Natural Resources Stewardship and Science, Lakewood, Colorado
- Suzy Stuzman, Regional Wilderness Coordinator and WCIT co-chair, Intermountain Region, Lakewood, Colorado
- Karen Trevino, Director, Natural Sounds and Night Skies Program, Natural Resources Stewardship and Science, Fort Collins, Colorado (WCIT member the first year)
- Frank Turina, Planner, Natural Sounds and Night Skies Program, Natural Resources Stewardship and Science, Fort Collins, Colorado (WCIT member beginning the second year)
- Wade Vagias, Management Assistant and WCIT co-chair, Yellowstone National Park, Mammoth, Wyoming (WCIT co-chair for the first year)

As the work began, all team members agreed to spend a total of four weeks per year on this effort: two face-to-face meetings per year that focused on discussion and making the decisions that were needed, and two weeks of time in their offices developing products. Face-to-face meetings were held in September 2010, February 2011, September 2011, February 2012, and October 2012. Monthly conference calls were held to assess progress and address issues requiring the team's discussion and decision. Decisions made by the team were based on the majority view. When strongly divergent yet minority views were expressed, these views were included in the *User Guide.*

This large team was divided into three working groups that corresponded roughly with the *User Guide* chapters on planning, management and operations, and tracking change. There was, however, substantial interaction among these working groups on an as-needed basis and some individuals worked closely with more than one working groups. Peter Landres was responsible for overall editing and organization of the *User Guide.* Principal authors for each *User Guide* chapter were:

- Chapter 1 – Peter Landres
- Chapter 2 – Suzy Stutzman
- Chapter 3 – Carol Cook (chapter lead), Suzy Stutzman, Sandee Dingman, Ruth Scott, Sarah Craighead, Mike Bilecki, Chip Jenkins
- Chapter 4 – Tim Devine (chapter lead), Wade Vagias and Christina Mills (initial chapter leads), Miki Stuebe, Ray O'Neil, Melissa Memory
- Chapter 5 – Peter Landres (chapter lead), Adrienne Lindholm, Michael Haynie, Chris Holbeck, Karen Trevino, Frank Turina, Jeremy Curtis
- Chapter 6 – Peter Landres (chapter lead), Suzy Stutzman
- Glossary – Sandee Dingman
- Appendices – Peter Landres (lead), Suzy Stutzman, Sandee Dingman, Chris Holbeck

As products were developed they were posted on the NPS Wilderness Character Sharepoint site, reviewed, and discussed on monthly conference calls and biannual face-to-face meetings. The first rough draft of the *User Guide* was completed for in-depth review at the September 2011 meeting, revised based on discussion at this meeting, and reviewed by a technical writer for review at the February 2012 meeting. This draft was released in April 2012 for pilot testing over the spring and summer. Input from pilot testing was incorporated into the *User Guide* in late summer and the final draft *User Guide* reviewed at the final meeting of the WCIT in October 2012 and subsequent revisions made through March 2013.

Appendix 2.1—Developing a Wilderness Character Narrative with an Interdisciplinary Group

Purpose of a Wilderness Character Narrative

A wilderness character narrative describes what is unique and special about a specific wilderness, organized by each of the qualities of wilderness character. This narrative is a positive, affirming description of a wilderness now and into the foreseeable future and includes a description of major influences on wilderness character. A narrative may be used in several ways:

- By providing considerable detail, it provides a basis for park foundation documents and serves as a framework for a wilderness stewardship plan.
- By addressing multiple resources (including both natural cultural resources), it fosters integration among different staff and program areas that need to function together to effectively preserve wilderness character.
- By clarifying the concept of wilderness character and the primary forces that affect it, a narrative provides a solid basis for identifying appropriate measures to assess trends in wilderness character.
- By explaining what is unique and special about a wilderness, it informs interpretive themes and serves as a starting point for discussion with the public about the current and future state of the wilderness.

Park staff who have developed a wilderness character narrative describe it as a "compass bearing" for what the wilderness is and the values that define wilderness character in the park. Another benefit of the narrative is that it provides a way to embrace and describe things that staff and visitors feel yet are typically ignored in formal park planning processes, such as stories about the land, the feelings that visitors are likely to experience, or the spiritual connection between people and the land.

In general, a wilderness character narrative, by making the concept of wilderness character tangible and specific for a park, provides a robust way to frame and articulate management decisions, including decisions about minimum requirements, scientific activities, and environmental impact analyses.

Wilderness Character Narrative

The narrative is a qualitative description of what is unique and special about the wilderness, organized by each quality of wilderness character.

Approaches for Developing a Wilderness Character Narrative

A wilderness character narrative should be developed by an interdisciplinary group representing a broad cross section of park staff and, when relevant, can include other stakeholders and tribes during the process or in review. The narrative can be developed in several ways.

- *Facilitated workshop*—The optimal situation is to convene an interactive session with the identified group, led by the person designated to write the narratives. This offers the greatest opportunity for the interaction of staff and others and is very efficient in the use of people's time. In general, such a workshop should take about half a day, plus time for preparation and follow-up. It requires the lead to consolidate the results of the workshop into a draft document, involves the selected group in review, and the narrative is finalized by the lead.
- *Remote facilitated process*—Travel ceilings and time may make it too difficult to assemble the optimal group in one room at one time. It is possible to structure a process that provides adequate background information to participants, involves several group phone calls and/or webinars, and similarly has the lead consolidate results into a draft, engage the group in review, and finalize the narrative.
- *Individual interviews*—Another approach is for the narrative lead to individually interview each of the identified interdisciplinary group members. This method is less efficient for the lead (experience has shown that individual interviews could take one to two hours each) and there is a loss of interaction and synergy that occurs in a group setting. This is a viable alternative where staff and other key participants are scattered, travel limitations are tight, and a workshop is not viable.
- *Combination*—A variety of techniques could be combined to get interdisciplinary participation in developing a wilderness character narrative. For example, it may be possible to assemble a core interdisciplinary group for a workshop and include other key participants through interviews. Experience with such interviews shows that interviews should be conducted prior to the workshop so this information can be included in subsequent discussion.

Steps for Developing a Wilderness Character Narrative

There are several steps for developing a wilderness character narrative with an interdisciplinary team and every park will be different in how they develop this narrative. In general, the steps would be:

1. Identify a leader for developing a wilderness character narrative—The leader should understand the concept of wilderness character and be able to facilitate a group through this process and write the narrative. This could be someone at the park, a wilderness fellow, a planner who will later lead a foundation workshop, or another person. The leader will have additional steps, described below.

2. Determine the scope if there is more than one wilderness unit or a combination of designated and other categories of wilderness—A fundamental decision will be whether wilderness units or areas of differing status will be lumped together in a single narrative, or if narratives for these different areas will be determined separately.

3. Ensure that all relevant staff participate—Because wilderness is interwoven through all resource areas of park management (e.g., interpretation, protection, facilities, natural resources, cultural resources, fire), it is important that all resource areas are represented in this effort.

4. Consider some outside perspectives—Without making this exercise overly complex, consider ways to get input from other agency staff, tribes, partners, or stakeholders. A wilderness character narrative is descriptive of the qualities of wilderness and its condition, but makes no decisions and is not subject to the rules of the Federal Advisory Committee Act. One simple way to get feedback is to let the public review and comment on a draft narrative in a newsletter or other public document. A park could (but by no means is required to) invite stakeholders to participate in the process, but care must be taken not to have too large a group or raise expectations for a large public meeting. Determine in advance if outside perspectives are to be incorporated and plan how to accomplish that effort.

5. Determine the format—After identifying who would be best to include in developing a wilderness character narrative, determine the best format for participation. A facilitated workshop is the ideal method for generating narratives because if an appropriate group can be assembled, it is very efficient, develops a common understanding of wilderness character, and benefits from synergy between group members. If a workshop is not possible, design a format of interviews, remote facilitation, or combination that will be inclusive of the identified participants.

Ideas on How to Get It Done

- Schedule a Wilderness 101 training with the Arthur Carhart National Wilderness Training Center and include a wilderness character narrative workshop within the agenda (a park lead would need to follow up).
- If the park is doing a park foundation document, schedule the completion of a wilderness character narrative through a workshop or facilitated process three to six months ahead of the foundation workshop (and consider having the foundation facilitator lead this exercise).
- Include a wilderness character workshop within a scoping or other early meeting for a wilderness stewardship planning process.
- Engage a wilderness fellow.

6. Ensure that all participants have a good and common understanding of wilderness character—All participants should review *Keeping It Wild* or hear a presentation by someone familiar with this publication. A workshop provides an opportunity for such a presentation, while a remotely facilitated process or interviews would require the leader to conduct a phone/PowerPoint session or direct people to wilderness character presentations available on http://www.wilderness.net. Typically, there is some uncertainty about how the concept of wilderness character applies to on-the-ground management because our understanding of this concept is quite new, so it is important to ensure participants have an opportunity to ask questions and discuss their concerns prior to beginning their work.

7. Decide whether to break into subgroups or have all participants together in one group—If there are sufficient people, typically more than about 12, it might be more efficient to divide the work among subgroups of 3 to 4 people for each of the qualities of wilderness character. In a workshop, let each group work separately, then share and discuss the results with the entire group to refine the results. In interviews or a facilitated process, assign each person in a subgroup to work on one of the wilderness character qualities. If there are fewer people, it is probably best to keep everyone together and working on all qualities. Sample worksheets are included in this appendix.

8. Identify the narrative elements for each of the qualities of wilderness character—First, each person expresses their feelings, perceptions, and gut reactions about what makes this wilderness a unique and special place. The narrative elements are purposefully based on feelings and not intellectualized thoughts to capture the experience, wisdom, and passion that participants have for this wilderness. Second, and this is the intellectual part, the set of initial narrative elements are considered as a whole and redundancies identified and removed, elements condensed and possibly moved among the qualities, and words refined to better reflect overall participants' feelings. This second step should result in a refined set of narrative elements for each of the qualities of wilderness character, thereby providing a fairly detailed picture of what is unique and special about each of the qualities of wilderness character in this wilderness. Sample worksheets are included in this appendix.

9. Identify the things that are known to or could degrade the narrative elements within each of the qualities of wilderness character—These things could include known threats that occur within the wilderness (internal threats), present and future threats that impact the wilderness from outside the boundaries of the area (external threats), administrative actions, allowed and permitted uses, or anything else. Even threats that are difficult to manage should be included (e.g., light and noise pollution). Sample worksheets are included in this appendix.

After the elements of the wilderness character narrative have been identified, as well as potential threats to these elements, the leader will need to provide additional direction to develop a wilderness character narrative. These additional steps include:

1. Write the wilderness character narrative—This step requires developing text that weaves together the narrative elements into a cohesive paragraph that describes what is unique and special about each quality of wilderness character for this wilderness. The things that degrade this quality also need to be written into this narrative, either woven into the text about each of the unique and special elements or as a separate paragraph. It is extremely important that the things that are degrading wilderness character are written in a neutral, objective tone that does not imply blame or neglect.

2. Write an "Overview" paragraph that introduces the wilderness character narrative—This overview sets the context for the wilderness character narrative, and would typically include statements about the legislation that designated the wilderness, the setting of the wilderness within the park, and any overarching statements about what makes this wilderness unique and special. Include a few sentences, such as those at the beginning of this appendix, that give the definition and purpose of a wilderness character narrative.

3. Solicit feedback from participants and revise the narrative—Once the draft wilderness character narrative is written, all participants in the process need to be given the opportunity to review and comment. It is also worth considering having a few key people in the park who did not participate in identifying narrative elements review the draft for accuracy and tone. The leader responsible for developing the narrative will then need to incorporate these comments and potentially hold additional meetings or phone conferences with certain people to refine the text.

4. Develop the final narrative—A wilderness character narrative should be evocative, descriptive, and accurate, finding a balance between either too "flowery" or too technical. It needs to convey that special sense of place. Consider including inspirational quotes about this wilderness from the legislative history or other sources. Its length is about 3 to possibly 10 pages, not a heavy tome.

5. Use the final narrative—Widely announce and circulate the wilderness character narrative among park staff. Promote its use in future park foundation documents, other related planning and compliance efforts, minimum requirements decisions, managing scientific activities in wilderness, and interpretation and education.

Appendix 2.2—Worksheet for a Wilderness Character Narrative Workshop

This worksheet is intended for a facilitated wilderness character narrative workshop where there are representatives from all park divisions at the workshop. Note that there will be separate worksheets for each of the five qualities of wilderness character.

Wilderness Name: _____

Date: _____

Names and position titles of workshop participant(s) filling out this worksheet:

_____

Which quality of wilderness character is this worksheet being used for (circle one)?

NATURAL UNDEVELOPED UNTRAMMELED

SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

OTHER FEATURES OF VALUE

Identify the narrative elements for each of the qualities of wilderness character—Each participant shares their feelings, perceptions, and gut reactions about what makes this wilderness a unique and special place. The narrative elements are purposefully based on feelings and not intellectualized thoughts to capture the experience, wisdom, and passion that participants have for this wilderness.

Unique and Special Elements	Notes

Worksheet for the Wilderness Character Narrative Workshop – Continued

Wilderness Name: _____

Which quality of wilderness character is this worksheet being used for (circle one)?

NATURAL UNDEVELOPED UNTRAMMELED

SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION

OTHER FEATURES OF VALUE

Identify the things that are known to or could degrade the narrative elements within this quality of wilderness character—These things could include known threats that occur within the wilderness (internal threats), present and future threats that impact the wilderness from outside the boundaries of the area (external threats), administrative actions, allowed and permitted uses, or anything else. Even threats that are difficult to manage should be included (e.g., light and noise pollution).

Things That Degrade These Elements	Notes

Appendix 2.3—Worksheets for Remotely Developing a Wilderness Character Narrative

The worksheets on the following pages are intended to facilitate developing a wilderness character narrative when a face-to-face workshop with all participants is not feasible. The worksheets could be filled in by a facilitator to record a phone or video conference with one or more people who are at a remote site, to record an individual on-site interview, or they could be filled in by staff at a remote site and then sent to a facilitator. The worksheets are intended to be used *after* participants have received a sufficient introduction to the concept of wilderness character through shared documents, remote presentations, and phone conferences.

This appendix is divided into sections. The first section shows on separate pages an example for each quality of wilderness character from Guadalupe Mountains Wilderness in Guadalupe Mountains National Park. The second section provides open worksheets for participants to identify unique and special elements, things that degrade these elements, and room for notes and suggested language.

Wilderness Character Narrative Worksheet

Wilderness: _____

Name of facilitator and interviewee(s): _____

_____

Date: _____

Quality of Wilderness Character: *Natural*

Definition of this quality: Wilderness ecological systems are substantially free from the effects of modern civilization

Indicators: Plant and animal species and communities, physical resources, biophysical processes

Examples of things that degrade this quality: Air pollutants, occurrence of nonindigenous species, altered water flow, extirpated or extinct native animals and plants, altered disturbance regimes

Example from Guadalupe Mountains Wilderness in Guadalupe Mountains National Park, Texas

Unique and Special Elements	Things that Degrade These Elements	Narrative
variety of native, endangered, and threatened plant and animal species	livestock grazing, invasive species, extirpation	"A variety of species within the park are listed as rare or endangered, such as the Mexican spotted owl and peregrine falcon, and many grasses are still recovering from the past effects of livestock grazing. Some animals that once were present in the park have been extirpated, such as the bighorn sheep and Mexican gray wolf. Several invasive species have been introduced, modifying natural species composition."
unique geologic resources	degradation by geologic tools, removal of samples	"The Guadalupe Mountains Wilderness provides a unique opportunity to explore and study a one-of-a-kind geologic resource, and actions that damage the resource demean this wilderness quality. The resource has suffered some, although limited, degradation by geologic tools such as rock hammers, and samples are periodically removed from the wilderness by both scientists and visitors. However, researchers are required to go through a stringent process in order to obtain a permit and must follow specific guidelines mandated by park managers."

Wilderness Character Narrative Worksheet

Wilderness: _____

Name of facilitator and interviewee(s): _____

_____

Date: _____

Quality of Wilderness Character: *Untrammeled*

Definition of this quality: Wilderness is essentially unhindered and free from the actions of modern human control or manipulation.

Indicators: Actions authorized by the federal land manager that manipulate the biophysical environment, actions not authorized by the federal land manager that manipulate the biophysical environment

Examples of things that degrade these elements: Spraying weeds, suppressing or lighting fire, introducing nonnative species, unauthorized actions such as predator control

Example from Guadalupe Mountains Wilderness in Guadalupe Mountains National Park, Texas

Unique and Special Elements	Things that Degrade These Elements	Narrative
The wilderness has been affected primarily by the forces of nature	Removal of nonnative species, native plant revegetation, prescription and suppression of fire	"The untrammeled quality of the Guadalupe Mountains Wilderness can be seen in the water-carved canyons, the track of a mountain lion, or in the delicate shoots of new grass emerging from a lightning charred landscape . . . the primary actions that degrade the untrammeled quality . . . include removal of exotic species, native plant vegetation, and the prescription and suppression of fire."

Wilderness Character Narrative Worksheet

Wilderness: _____

Name of facilitator and interviewee(s): _____

_____

Date: _____

Quality of Wilderness Character: *Solitude or Primitive and Unconfined Recreation*

Definition of this quality: Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation

Indicators: Remoteness from sights and sounds of people inside the wilderness; remoteness from occupied and modified areas outside the wilderness; facilities that decrease self-reliant recreation; management restrictions on visitor behavior

Examples of things that degrade these elements: Facilities that decrease self-reliant recreation; management restrictions on visitor behavior; the sights and sounds of people inside wilderness; the sights and sounds of occupied and modified areas outside the wilderness

Example from Guadalupe Mountains Wilderness in Guadalupe Mountains National Park, Texas

Unique and Special Elements	Things that Degrade These Elements	Narrative
Hiking available on an extensive trail system	User restrictions put in place by management, such as designating campsites and designating day-use-only areas	"Visitors can hike an extensive trail system and in most places explore what lies beyond them. Several user restrictions, however, can confine visitor opportunities for recreation. Limiting some trails to hikers only, designating campsites, and allowing only day use of McKittrick Canyon, along with prohibitions of visitor actions such as lighting a campfire, diminish this unconfined quality of wilderness."
Remote landscape and topography contributes to the feelings of solitude	Park affiliated and non-park affiliated development on wilderness vistas, noise from commercial aircraft	"The vast views of endless sky and impossibly distant horizons, secluded canyons, and secret springs elicit a liberating isolation from the urban world. . . . From many wilderness vistas, Highway 62/180 is a prominent feature, as are the visitor center, McKittrick Canyon Contact Station, Frijole Ranch, parking lots, and buildings within Pine Springs. Other developments not affiliated with the park also detract from one's sense of remoteness, ranging from urban centers and their lights to fences and wind turbines. Noise from commercial aircraft further serves as an intermittent reminder of happenings outside of wilderness."

Wilderness Character Narrative Worksheet

Wilderness: _____

Name of facilitator and interviewee(s): _____

_____

Date: _____

Quality of Wilderness Character: *Undeveloped*

Definition of this quality: Wilderness retains its primeval character and influence, and is essentially without permanent improvements or modern human occupation

Indicators: Nonrecreational structures, installations, developments; inholdings; use of motor vehicles, motorized equipment, or mechanical transport

Examples of things that degrade these elements: Nonrecreational structures, installations, and developments; inholdings; use of motor vehicles, motorized equipment, or mechanical transport

Example from Guadalupe Mountains Wilderness in Guadalupe Mountains National Park, Texas

Unique and Special Elements	Things that Degrade These Elements	Narrative
Remoteness as exemplified by relatively unobstructed views	Modern development for park use, such as a patrol cabin, signage, water tanks, and piping	"The remoteness of the Guadalupe Mountains Wilderness exemplifies the undeveloped quality. Visitors are allured by the relatively unobstructed views, both into the park from the surrounding Chihuahuan Desert, as well as from the mountain peaks outward. . . . Several areas within the wilderness do, however, contain modern development. The patrol cabin at Pine Top has been constructed for patrol use and visitor safety. Radio repeaters exist within the wilderness, although they are critical for ensuring safety. Signage can be found along the Permian Reef trail. . . . Several large water tanks and piping constructed by settlers can be found within the Bowl."

Wilderness Character Narrative Worksheet

Wilderness: _____

Name of facilitator and interviewee(s): _____

_____

Date: _____

Quality of Wilderness Character: *Other Features of Value*

Definition of this quality: Wilderness preserves other tangible features that typically occur in specific locations within a wilderness that are of scientific, educational, scenic, or historical value

Indicators: There are no predetermined indicators for this quality because the specific features must be identified separately for each wilderness and not readily fit within one of the other qualities. Examples include cultural resources and paleontological localities, and may also include National Natural Landmark sites if these are not included in the natural quality.

Examples of things that degrade these elements: Loss or impacts to all features identified in this quality

Example from Guadalupe Mountains Wilderness in Guadalupe Mountains National Park, Texas

Unique and Special Elements	Things that Degrade These Elements	Narrative
Statutorily protected historic structures related to past human use	Loss of statutorily protected cultural resources	"Hunter Line Shack, while clearly a development, is remnant of ranching history and is eligible for listing in the National Register of Historic Places, rendering it appropriate within wilderness."

Wilderness Character Narrative Worksheet

Wilderness: _____

Name of facilitator and interviewee(s): _____

_____

Date: _____

Quality of Wilderness Character: *Natural*

Definition of this quality: Wilderness ecological systems are substantially free from the effects of modern civilization

Indicators: Plant and animal species and communities, physical resources, biophysical processes

Examples of things that degrade this quality: Air pollutants, occurrence of nonindigenous species, altered water flow, extirpated or extinct native animals and plants, altered disturbance regimes

Unique and Special Elements	Things that Degrade These Elements	Notes and Supporting Details

Wilderness Character Narrative Worksheet

Wilderness: _____

Name of facilitator and interviewee(s): _____

_____

Date: _____

Quality of Wilderness Character: *Untrammeled*

Definition of this quality: Wilderness is essentially unhindered and free from the *actions* of modern human control or manipulation.

Indicators: Actions authorized by the federal land manager that manipulate the biophysical environment, actions not authorized by the federal land manager that manipulate the biophysical environment

Examples of things that degrade these elements: Spraying weeds, suppressing or lighting fire, introducing nonnative species, unauthorized actions such as predator control

Unique and Special Elements	Things that Degrade These Elements	Notes and Supporting Details

Wilderness Character Narrative Worksheet

Wilderness: _____

Name of facilitator and interviewee(s): _____

_____

Date: _____

Quality of Wilderness Character:
Solitude or Primitive and Unconfined Recreation

Definition of this quality: Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation

Indicators: Remoteness from sights and sounds of people inside the wilderness; remoteness from occupied and modified areas outside the wilderness; facilities that decrease self-reliant recreation; management restrictions on visitor behavior

Examples of things that degrade these elements: Facilities that decrease self-reliant recreation; management restrictions on visitor behavior; the sights and sounds of people inside wilderness; the sights and sounds of occupied and modified areas outside the wilderness

Unique and Special Elements	Things that Degrade These Elements	Notes and Supporting Details

Wilderness Character Narrative Worksheet

Wilderness: _____

Name of facilitator and interviewee(s): _____

_____

Date: _____

Quality of Wilderness Character: *Undeveloped*

Definition of this quality: Wilderness retains its primeval character and influence, and is essentially without permanent improvements or modern human occupation

Indicators: Nonrecreational structures, installations, developments; inholdings; use of motor vehicles, motorized equipment, or mechanical transport

Examples of things that degrade these elements: Nonrecreational structures, installations, and developments; inholdings; use of motor vehicles, motorized equipment, or mechanical transport

Unique and Special Elements	Things that Degrade These Elements	Notes and Supporting Details

Wilderness Character Narrative Worksheet

Wilderness: _____

Name of facilitator and interviewee(s): _____

_____

Date: _____

Quality of Wilderness Character: *Other Features of Value*

Definition of this quality: Wilderness preserves other tangible features that typically occur in specific locations within a wilderness that are of scientific, educational, scenic, or historical value

Indicators: There are no predetermined indicators for this quality because the specific features must be identified separately for each wilderness and not readily fit within one of the other qualities. Examples include cultural resources and paleontological localities, and may also include National Natural Landmark sites if these are not included in the natural quality.

Examples of things that degrade these elements: Loss or impacts to all features identified in this quality

Unique and Special Elements	Things that Degrade These Elements	Notes and Supporting Details

Appendix 2.4—Wilderness Character Narrative for Lake Clark Wilderness

Developed by Adrienne Lindholm with Lake Clark National Park and Preserve staff in 2011

Lake Clark Wilderness is *Kijik (Qizhjeh)*, a place where people gathered. First the mountains were gathered; brought north by the Pacific Plate and scraped off on the edge of the North American Plate. The colliding plates tore faults through the mountains and left weak spots where rising magma has formed a string of volcanoes. Older mountains on the western flank are eroded and rounded, becoming more recent and rugged east across the Alaska Range and ending at Cook Inlet in raw exposures of Jurassic sediments that shed fossils onto the beach.

Storms gathered over the mountains, brought to the region by North Pacific low pressure systems, cooled by Arctic highs. The mountains serve as a fulcrum for the air masses pushing and tugging each other across the park. Copious snows fill the cirques and valleys with glaciers. At least four major glacial advances have carved a cradle of lakes that form the headwaters of three major drainage systems and are the nursery for rearing the largest wild salmon run in the world.

Melting snow and rains gather to form a network of rivers flowing from the Alaska Range into three different seas. These rivers are the bloodstreams of the landscape, flowing from the first drop gathered on a leaf in the alpine, through cirques, over waterfalls, braiding through wide valleys, traversing large lakes and into arctic oceans. In return, salmon pulse upstream every summer; scarlet cells of protein, fats and nutrients that nourish the landscape, the bears and ravens, the people, and the next generations of salmon.

The Dena'ina gathered and spread throughout this region as well, forming an enduring connection to what we now call the Lake Clark Wilderness. What emerged from this relationship with the land is the Dena'ina language, spirituality, identity, and cultural connection to the land.

This narrative describes five tangible and measurable qualities of wilderness character at Lake Clark Wilderness: natural, solitude or primitive and unconfined recreation, untrammeled, undeveloped, and other features of value. These qualities provide the setting from which a suite of wilderness values are derived. One of the most important of these values is the connection the Dena'ina have to this place and the role it has played in shaping the Dena'ina culture. An essay that recognizes and celebrates this vital connection closes this narrative.

Natural: *Wilderness maintains ecological systems that are substantially free from the effects of modern civilization*

Lake Clark Wilderness is a dynamic landscape where forces of nature continue unfettered and whole ecosystems function. The park has four major ecosystems: Boreal in the northwest, Subarctic in the western Bristol Bay basin, a Maritime fringe on the Cook Inlet coast, and the Montane spine of the park.

This rich diversity provides a framework for natural functioning of spectacular ecosystems. The park holds two active volcanoes, vast icefield and glacier systems, and coastal salt marshes where brown bears gather to feed and breed. Complex riverine systems carry nutrients both up- and downstream. Ground water allows late freeze-up of sloughs and facilitates salmon spawning into early winter. Bears patrol the rivers as ice closes in, taking the last few salmon before heading up the mountain to hibernate. Throughout the park, complex predator and prey webs play out their evolving adaptations and patterns. Caribou herds swell and decline and grow again. Moose and sheep populations colonize new territory and retreat with weather and predator pressures. Shorebirds and waterfowl arrive with breakup, breed, nest, and return to wintering grounds. And over it all the storms sweep among the peaks, the lakes freeze and break up and berries bloom and ripen and, for thousands of years, people have gathered to harvest the returning salmon. Today, local residents continue to pursue a subsistence lifestyle dependent on resources including salmon, wildlife, berries, birch bark, and spruce. There are few remaining places in the United States where subsistence lifestyles are an active part of the ecological integrity.

Lake Clark's ecosystems are among the most dynamic in the world: tectonics, glaciers, volcanoes, intact wildlife and fish populations, and human activities. Dynamic landscapes, by their very nature, are capable of absorbing a wide range of changes while maintaining their fundamental functionality. The problem arises when the changes exceed the ecosystem's capacity to absorb them, driving the country to a different ecological state. Often these changes are forced by human activities. Multiple human activities interact with each other and with natural systems to produce unexpected consequences that the park cannot absorb. These activities cause a cascade of impacts that exceed natural buffering in the system and often result in completely different ecosystem processes. Major threats to Lake Clark's natural character at this time include impacts from climate change and external developments.

Climate change is already changing temperature and precipitation regimes in the region, resulting in longer growing seasons, shorter ice seasons, glacial retreat, warmer lakes, shrub and tree invasion into tundra (fewer berries and lichens), more lightning, and warmer and acidic oceans. External developments and associated activities are also changing Lake Clark ecosystems. Exploratory work brings many people and aircraft into the region, many of them flying through and now subsisting in Lake Clark. Predator control on two sides of the park impacts the natural predator/prey systems that are a hallmark of the area. Developments will probably change streams with major impacts to salmon runs throughout the park.

Solitude or Primitive and Unconfined Recreation: *Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation*

Unforgettably beautiful and unforgivingly rugged, Lake Clark Wilderness provides a setting where visitors can leave behind societal constraints in search of solitude, challenge, discovery, and renewal.

Largely void of recreational developments and management restrictions on visitor behavior, Lake Clark Wilderness is a place where it's possible to detach from modern life and become steeped in the timelessness of a landscape that hasn't been altered in hundreds of years. Such a place gives one's soul a chance to experience the unencumbered freedom that often corresponds with seeing wild country expand to the horizon.

Here a person can choose from a variety of activities and modes of travel, though whether one chooses to hike, climb, boat, ski, snowmachine, hunt, fish, or camp, visitors tend to experience the wilderness on the land's terms. Rapidly changing weather, rugged topography, and abundant wildlife force us to relinquish control over the land. The immensity of the landscape (large glaciers, waves of mountains, sweeping tundra plains) makes people feel small and insignificant, which can be both a profoundly humbling and empowering experience. It is these same qualities that provide an opportunity for a heightened awareness of the senses, evoke a connection with the larger community of life, and awaken a sense of mystery.

The sense of immersion in the landscape that one feels at Lake Clark is enhanced by the physical separation of the wilderness from urban centers and the fact that, practically speaking, a person can only get there by using an airplane. Inside the Lake Clark Wilderness, the feeling of remoteness is heightened by knowing it is a great distance to assistance should a person need it. Most forms of communication aren't reliable and weather can prevent aircraft from rescue. The sense of isolation enhances the feeling of being on one's own, and while it may feel disconcerting, part of the appeal is knowing that the Lake Clark Wilderness is a place where true challenge exists.

Lake Clark Wilderness combines remoteness with harsh weather, lack of infrastructure, and rugged geography (including an extensive network of crevassed glaciers, steep mountainsides carpeted in thick vegetation, swift cold rivers); this combination creates opportunities for personal growth, self-discovery, and the self-fulfillment that comes from overcoming obstacles. Without trails, bridges, designated campsites, markers, and public use cabins, visitors must rely on themselves. There are real consequences for mistakes. The physical and mental challenge is a positive aspect that forces people to live in the moment, pay attention, and participate in their present reality in a way that often isn't easy to do in everyday life.

Visitors get the opportunity to navigate the challenges associated with protecting food from weather and wildlife, staying dry, traveling through bear country, staying warm in extreme weather, figuring out how to cross rivers, avoiding falls down cliffs or slips into crevasses, and evaluating the hazards of active volcanoes, rock fall, and avalanches. It is these challenges and the promise of the corresponding rewards that attract people to the Lake Clark Wilderness.

There are a number of things on the horizon that could degrade opportunities for solitude or primitive and unconfined recreation. Unmitigated impacts of increased visitation, and increased availability and use of technology—from satellite phones to web cams to personal tracking devices—diminish solitude. Developments outside the park boundary including the prospective Pebble Mine, Chakachamna Lake Hydro Project, and Chuitna Coal Mine could degrade the feeling of remoteness.

A paradox exists with aircraft, which degrade the undeveloped quality and can be heard frequently in many parts of the wilderness. The ability to use aircraft to transport people into a remote setting is an integral part of the Alaska wilderness experience. In fact, the way people access wilderness can be part of the wilderness experience itself: the quick feeling of isolation when a plane takes off and leaves you there can enhance the feeling of intimidation and excitement of being truly alone in a vast landscape.

It may be necessary in the future for park managers to take actions that restrict visitor behavior or movement in the wilderness in order to protect natural or cultural resources or to reduce visitor conflict. Restrictions on where visitors can go and conditions on their use of the wilderness can negatively affect unconfined recreation. Similarly, visitor contacts and ranger patrols reduce the feeling of being alone and relying solely on yourself.

The park must also consider the tradeoff of recreational facilities such as trails, outhouses, and cabins that facilitate access and use of the wilderness, and/or help protect park resources, but that also diminish the self-reliant quality.

Untrammeled: *Wilderness is essentially unhindered and free from modern human actions that control or manipulate the community of life*

Lake Clark Wilderness protects a complex mosaic of landforms and ecosystems that continue to evolve from dynamic tectonic, volcanic, glacial, and climatic processes. The isolation, geography, and weather associated with the Lake Clark Wilderness make human influence difficult. If explorers from the 1800s returned to the region, they would see a similar landscape (with the exception of more vegetation and receded glaciers) and similar fish and wildlife as they did in the 1800s. It's one of the few areas in the world where ecological systems are not intentionally modified by the actions of our modern management.

The park resists wildlife manipulation, and wildlife habitat in the wilderness varies naturally based on complex interactions between recent physical (e.g., precipitation, temperature) and biological (e.g., insect outbreaks, plant disease) factors. Wildlife is free to move through the landscape and populations such as caribou that currently range outside the park are free to return and populate the area as before.

Water flows through intact ecosystems connecting mountain headwaters with tidally influenced streams. Lake Clark Wilderness protects critical habitat at the headwaters of the world's most productive red salmon fishery, which anchors the economy, ecology, culture, and history of southwest Alaska. Dynamic ecological processes continue as they have for millennia, unimpeded by park management.

There is a legacy of not taking management actions in order to maintain the untrammeled quality of wilderness character. The park's attitude in protecting magnificent landscapes from development reflects a culture of restraint and humility.

This legacy has an inspirational value to people in a larger public arena including those who may never visit but who take solace in knowing such protected places exist. It has also inspired the park's visitors, who seem to quietly come in without publicizing their arrival, float rivers, pick berries, and quietly leave with blueberry stains on their behinds. The legacy extends also to local residents and commercial operators who share a sense of responsibility for Lake Clark Wilderness as a land that is wild and free.

Forces largely beyond the control of park managers threaten to erode the untrammeled quality. Predator control efforts outside the park boundary threaten to manipulate natural predator/prey systems. Mining districts around the border of the park could introduce pollution to the water, air, fish, and wildlife. Climate change could create higher incidences of fire and perhaps a corresponding rate of suppressing fires in order to protect private property.

Undeveloped: *Wilderness retains its primeval character and influence, and is essentially without permanent improvements or modern human occupation*

Lake Clark Wilderness has an undeveloped feel despite numerous cabins and ruins throughout the park. The 37 installations in wilderness include equipment used to improve communication, aviation safety, and to monitor the park's volcanoes, climate, and geologic dynamics. In general, developments that occur in the Lake Clark Wilderness are barely noticeable across the landscape and do not include large structures such as prominent buildings or roads. It is unlikely that visitors will find any sign of contemporary human civilization such as mechanized equipment, signs, unnatural noise aside from airplane noise, and other modern artifacts. A mental and emotional freedom emerges from such settings where visitors experience nature essentially free of the reminders of society, and can feel part of this vast landscape.

There is a sense of mystery and the unknown that comes with a lack of development and lack of assigning English names to natural features. Visitors have the opportunity to feel like the first person to ever be there. Standing on a high point a person can look to the horizon and know there are no roads, no traffic. The undeveloped quality allows people to feel released from the grip of civilization.

The park actively preserves the undeveloped quality by administering its commercial services program in a manner that allows people with an existing connection to the place to continue to work here but without adding structures or facilities. In addition, while the park continues to make significant progress acquiring inholdings, there still exist numerous parcels within the park where development could occur.

A couple of paradoxes exist within the undeveloped quality. For example, structures and installations that support scientific inquiries or park communications degrade this quality but also provide essential information for park management. The data gained from many scientific installations are often our best indicator and assessment of the natural quality. Cultural resources such as historic cabins can negatively impact one's ability to feel free from the reminders of civilization and connect to the larger community of life; however, for others, the presence of that same cabin enhances the connection to place and the meanings associated with it bolster appreciation and enjoyment of the area (see "Cultural Resources" section below).

Other Features of Value: *Wilderness preserves other features that are of scientific, educational, scenic, or historical value*

Many specific features that are of exceptional cultural, historic, and scientific value are preserved because of their location within Lake Clark Wilderness.

Prehistoric sites and cultural artifacts lend a sense of timelessness to the Lake Clark Wilderness. Prehistoric sites represent past human and ecological interaction on ancient landscapes and relict lake shores. These sites contain fish and animal bones as refuse or as artifacts representing species hunted or gathered since the close of the last Ice Age. In rare cases, such as high elevation ice patch sites that are melting with global warming, organic artifacts are preserved, providing direct radiocarbon dates and a point in time for extraordinary bone and wood artifacts. Faunal remains in sites may contain proxy climate data that can be derived from their isotopes as well as DNA possibly distinct from what exists today. Cultural sites are windows into other worlds, worlds that no longer exist, and although they are invisible, we know that ancient footsteps crisscross our wilderness. The undeveloped and untrammeled character of the Lake Clark Wilderness allows us to discover and preserve these sites and artifacts and to imagine these other worlds without the disruption of inventions of modern humans.

Historic sites like the Proenneke cabin contribute to education and understanding of the rusticator era when many people like Dick Proenneke went into the country to carve out their own personal relationship with the wilderness. The Proenneke site represents the intrepid, pioneering spirit and the courage to follow the pull of one's own inner compass to immerse oneself in a rural environment free from developments and amenities.

In general, a number of things threaten cultural resources: loss of traditional knowledge, place names, stories, and traditional practices that are practiced on the landscape; off-airport landings on exposed areas with near-surface artifact scatters; vandalism; catholes excavated year after year at popular camping sites disturb vegetation cover as well as shallowly buried cultural sites; fire rings placed on surface or shallowly buried sites can move rocks from original prehistoric placement; and heat from campfires or wildland fires alters surface artifacts (the heat fractures the lithics) and introduces contaminant wood charcoal.

Specifically, overuse of the Proenneke site can break down the stream bank at the Hope Creek outlet, trample vegetation, and increase human waste. These impacts degrade the symbolic value of this important cultural site. The park will need to find the right balance of protecting this site and providing appropriate infrastructure to accommodate visitors.

A Dena'ina Perspective: Respecting Ełnena (Land)

The legacy of unseen footprints of the Dena'ina people has sustained the place now called Lake Clark Wilderness for centuries. The Dena'ina people of the Lake Clark area believe that everything has a spirit and should be treated with respect. We call this *'K'etniyi'* meaning 'it's saying something.' This is the power of nature's voice – an ancient connection to the spirit of the Dena'ina people. This is how we define wilderness. Our ancestors' beliefs for caring for the land has been simple – respect all living things; not taking more than you need, giving something back when you take – this can be a prayer, deep thoughtful respect or a small material item such as a safety pin. What has emerged from this relationship with the land is the Dena'ina language, spirituality, cultural connection to the land, and identity.

The land provides for us and we were taught to be respectful. This respect is not questioned and we are conscious that when we interact with nature, we are praying. We harvest our food from the land, we put up salmon every summer, we hunt for meat, and we pick berries. As we stoke the fire in the smokehouse full of drying salmon, this is prayer. As we pressure cook the meat from the black bear for canning, being careful not to waste any of the meat, this is prayer. As we pick berries this is done with prayer. The relationship with the land is filled with gratitude and respect, for we are nothing without the blessings of the land in which we were raised.

We recognize and feel the connection to weather and understand the importance of paying attention. Look to the tops of spruce trees; if there are a lot of spruce cones this means there will be a lot of snow. If there are a lot of white Hudson bay tea blossoms, this tells us that there will be a lot of salmon this summer. Just this fall before the lakes froze, a heavy fog came over the lakes – hovering over Sixmile Lake and up through Lake Clark. A Dena'ina elder watching through the window said, "A long time ago they used to say that when the fog came in over the lakes, this means that the fog is spreading the word over the lakes – the fog is sending the message that the lakes will be freezing soon."

Fish camp continues to be an important tradition of the Dena'ina people. The comparison used, when asked what fish camp is: It's like Christmas, only better. We are not paying a price for gifts or experiencing a fleeting moment of joy and celebration. We are preparing all year long for our few months of celebration. We are coming together as family and community and sharing the gratitude of putting up fish – fulfilling our spirits, minds, emotions, and bodies from the same source and practices our ancestors did. It's hard to put into words the feeling – the connection that ignites the spirit when it comes time for fish camp. It is an ingrained, unconscious movement that is felt when spring turns into summer. Fish camp is a communion with every aspect of putting up fish. It's a relationship that has been created from the time of birth, sensing when summer comes, it's time to go back to fish camp, it's the smell, the slime, it's nature – connecting back to the water, bringing relatives home, it's knowing you have fish for winter not only for your family but to share at potlucks and with relatives and friends. It's a spiritual igniter that restores this underlying excitement after a long winter. It's a part of life that is not questioned, whether we go to fishcamp or not. It's done every summer. It's the contented labor of splitting fish, of stoking the smoke house fire, and of taking care and pride in putting up fish the right way. This deep-rooted way of life cannot be measured, cannot be priced, and it can be easily overlooked by an outsider, because it's beyond the visual and the spoken.

Reflecting on the idea of wilderness, Michelle Ravenmoon noted, "I have learned to appreciate even the smallest interactions between animal and land. As a child, I would watch the spiders spin webs; they put unwearied effort into their webs. I learned a respect for the work put into a web and I took great care not to destroy webs just because they were in my path. I also learned to pay attention to when spiders spun webs because spiders seem to have an ability to predict when the wind would not blow and that was web-making time. By paying attention to the spiders, I learned a technique to predict the weather. I think many people look at wilderness and think that they need to see a bear or a moose for a true experience with nature, but it is through patience and mindfulness that the true experience takes place."

To some people, the word "wilderness" conjures thoughts that we are separate from nature, that the woods are unknown, untouched, perhaps mysterious, or even dangerous. This may create feelings of fear, excitement, adventure, longing for connection to nature . . . but when all thoughts of the individual components dissolve and we let go of the attachment or judgments we've given them, all we see is the beauty of the natural surroundings. We feel right at home, we want to care for and not take from the land, and we realize that we are not separate from nature but part of it. The wilderness and all that it encompasses is not a mystery; it is us and it is home. It's as familiar as looking in the mirror.

Many places in the Lake Clark Wilderness have Dena'ina place names developed over time through stories, events and experiences. It was not common to name a place after a person; natural places were left with a name that came from the experience and gifts it offered – *'Dilah Vena'* – fish swim in lake; *'K'dalghek'tnu'* – scraping noise (of antlers) stream; and *'Ch'kentałqeyitnu'* – someone throws spear stream. Over two thousand place names like this are spread across the region and each place holds meaning. It is important that the Lake Clark Wilderness encompasses these meanings and that we continue to honor the footprints of culture as integral to our contemporary idea of wilderness.

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Appendix 2.5—Wilderness Character Narrative for Olympic Wilderness

Developed by Christina Mills with Olympic National Park staff in 2012

The Olympic Wilderness is a paradox of time. It is a place of movement, change, and variation, but with an undercurrent of agelessness. There is an ancient, primeval quality about this place, and its presence abides as the drama of life unfolds.

Even the landscape itself is in transition. Within a relatively small span of space, the environment changes from sandy, rocky coast to verdant rain forest to rugged alpine peaks. Yet while these environs transition rapidly through a biological and elevational gradient, there is a timelessness to their existence. Waves have pounded this coast for millennia, and pillow basalt reminds us of when the Olympic massif was part of the ocean floor. Ancient red cedars dwarf both our perspective of ourselves and our place in history.

This place simultaneously houses some of both the fastest growing organisms as well as some of the oldest living organisms in the world. Here, life is always on the move, growing, changing, dying, and revitalizing. The cycle of life is rarely more markedly apparent than in the beached carcass of a decaying whale, or in the fast-growing Douglas-firs of the lowlands. Like the venerable red cedars, however, much of the life here is an enduring presence. The Olympic marmot and other endemic species are relics of thousands of years of isolated evolution.

For the diverse abundance of life in the Olympic Wilderness, water is the sustaining element, a vital force that is also constantly in flux. Whether water manifests itself in a torrential storm or in the ice of a brilliantly austere glacier, it is a powerful force. It be may be impalpably present in a shrouding fog, and then condense to its tangible form to drip from the leaves to the forest floor below. Water is the force that sculpts and shapes this landscape, and although its form changes, it is an ever-present element that has and will sustain the landscape in perpetuity.

As landscape, life, and water are mutable across the peninsula, so too have people lived and moved through this landscape. American Indians had permanent homes but moved among settlements with the seasons, fluctuating between the mountains in the summer and lowlands in the winter, and like the salmon, often journeyed up and down the rivers. People have been an enduring presence in this wilderness, inhabiting this peninsula for at least 12,000 years, and the relationship of people with this land has shaped both the spirit of the wilderness and the people themselves.

The following narrative describes the five qualities of wilderness character (natural, solitude or a primitive and unconfined type of recreation, undeveloped, untrammeled, and cultural resources) as they pertain to the Olympic Wilderness.

Natural: *Wilderness maintains ecological systems that are substantially free from the effects of modern civilization*

The Olympic Wilderness is characterized by its superlative diversity. It is so diverse, in fact, that its distinct ecosystems seem almost incongruous considering the relative size of the peninsula they occupy. Here, rugged mountains and glacial features coexist with damp rainforests and miles of coastline. But a closer look reveals their fundamental interconnectedness, which results in a truly unique array of inhabitants.

The Olympic Mountains trace their origins to the sea. Before their existence on the peninsula, sediments accumulated into shale and sandstone on the sea floor, and lava flowed through cracks to create seamounts, or subaquatic mountain ranges. As the Juan de Fuca plate collided with the North American plate, some of the sea floor scraped onto the continental plate and the force of the collision fractured, folded, and overturned rock formations, creating the jagged and irregular range we see today. Earthquakes rocked this volatile subduction zone, corroborating American Indian stories of shaking ground and devastating tsunamis. As the Ice Age descended on the peninsula, the shifting climate and sliding glaciers barricaded the Olympic Peninsula, increasing the isolation of the biogeographic island and imposing centuries of autonomous evolution on this mountain range.

Thousands of years of glacially and geographically imposed separation have made the Olympic Wilderness a paragon of genetic diversification. The most renowned example is the Olympic marmot, chromosomally and behaviorally different from its neighbors. This wilderness is home to 22 endemic species, including Olympic violet, Hulbirt's skipper, Tiger beetle, Olympic yellow-pine chipmunk, Olympic snow mole, and Olympic mudminnow. These species, among others, are found here and nowhere else in the world.

Along with these distinctly local inhabitants, one can find a remarkable combination of wildlife. Black bears and cougars reside alongside marmots, salamanders, sea lions, shorebirds, and diverse intertidal and riparian communities. Roosevelt Elk, one of the primary reasons the park was established, have lived here for more than 3,000 years. The tailed frogs found in streams are among the most primitive living frogs in the world, and more than 70 uniquely adapted local populations of salmonids live here.

The salmon is a vitally important species in this wilderness. Salmon migrate upstream from the ocean seeking places to spawn and in turn, provide food for more than 130 species of aquatic and terrestrial wildlife species. Twenty percent to forty percent of the phosphorous, nitrogen, and carbon in freshwater may be derived through carcasses of spawned salmon. However, introduced stock, overfishing, and impaired habitat have led to the loss of wild, native strains of fish and modified aquatic systems.

Several anthropogenic factors are impacting this extraordinary ecosystem, such as habitat fragmentation from logging on surrounding lands, the poaching of cedar, salal, and moss, and commercial fisheries that affect anadromous fish on their way to the wilderness. Wolves were extirpated in the early 1900s, with substantial effects on ungulates and vegetation. Mountain goats were introduced in the 1920s for hunting, and the establishment of the park in 1938 offered protection for the goat population. Mountain goat numbers soared, and although the population was greatly reduced in the 1980s, the park currently hosts about 350 goats that are damaging endemic and rare alpine plants.

While mostly found in frontcountry sites, a few nonnative invasive plant species are found within the wilderness, such as Canada thistle and Herb Robert. Most park nonnative plants are perennials that are particularly persistent and difficult to eradicate, and could potentially endanger endemic or sensitive plants. Visitors unaware of the consequences of their actions endanger wildlife by feeding animals or improperly securing food. Stepping on fragile high country vegetation can impact plant communities for a century or beyond, and harvesting or trampling intertidal organisms can damage marine nurseries, the critical seed banks of marine organisms. This wilderness, however, is remarkably resilient and resistant. Coastal and lowland plants quickly reclaim trampled vegetation and the stately old growth occupants are reminders that these forests have survived for hundreds of years.

The Olympic Wilderness has relatively high air quality, is designated as a Class I airshed, and experiences very little haze. The primary air and water pollutants come from Asia, but when the weather is clear, unspoiled views of the Olympics are spectacular.

Climate change is affecting temperature and precipitation regimes throughout the region and is manifesting in the Olympic Wilderness in the form of retreating glaciers, changing weather patterns, rising sea levels, and warmer temperatures. Climate change is a global issue, yet higher latitudes and elevations are warming the fastest, and glaciers are particularly indicative of regional change. As flora and fauna are shifting higher up the mountains to keep up with their habitat, and as sea levels rise, we may see a very different Olympic Wilderness in the future.

Because of its exceptionally diverse and resilient ecosystems, history of biogeographic isolation, and sensitivity to climate change in many areas, the Olympic Wilderness protects an exemplary natural laboratory and classroom. It adjoins five U.S. Forest Service wildernesses and one U.S. Fish and Wildlife Service wilderness. The Olympic Wilderness has been designated an International Biosphere Reserve, a World Heritage Site, and coastal portions of the wilderness are part of the Olympic Coast National Marine Sanctuary and the Washington Maritime National Wildlife Refuge. Educational and scientific opportunities abound to study salmon, old growth forests, canopies, mosses, lichens, and countless other aspects of this wilderness.

In 1971, Point of the Arches off the northwestern coast of the Olympic Wilderness was designated as a National Natural Landmark as it, “illustrates a pristine spectrum of environmental conditions from rocky tidelands to climax upland vegetation. The site is also an outstanding exhibit of sea action in sculpturing a rocky shoreline.” This prestigious national designation further confirms the remarkable natural quality of this wilderness.

Solitude or Primitive and Unconfined Recreation: *Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation*

The ecological diversity of the Olympic Wilderness provides an equally diverse array of opportunities. Visitors to the Olympic Wilderness can experience solitude, a deep connection with nature, discovery, revitalization, freedom from the pressures of society, or personal challenge and self-reliance.

Within a 5 hour drive of more than 5 million people, this wilderness is widely accessible, and the experiences can vary as much as the visitor themselves. Precipitous trails lead to majestic peaks that gratify those seeking loftier adventures. Massive glaciers and crevasses present technical routes that can challenge the most skilled climbers. Visitors can trek through the damp mossy rainforest, clamber over soft nurse logs, or stroll down the beach and discover sea stars nestled amongst the tide pools. This can also be a kind wilderness. It contains no poisonous snakes or grizzly bears and very few poisonous plants. Yet the elements and rugged terrain here offer an experience that is truly wild. Despite the accessibility to millions of people, opportunities for solitude abound. One can easily stumble upon a hidden nook and feel as if they are the first person to ever occupy this spot.

The clouds and vistas are a particularly remarkable presence in the Olympic Wilderness. On any given day, the clouds may be shrouding the mountaintops above or flooding the valleys, with solitary peaks piercing the ethereal swirls below. The clouds may be playful on a sunny day, or entirely enveloping, shrinking one's view of the world to immediate surroundings. Clouds or dense forests block out sights and sounds of civilization, creating a mantle of solitude. From the craggy highcountry, one can smell the yellow cedar and subalpine fir while watching raptors dive and wheel below. On a clear day, occasional sightings of Seattle and Victoria are reminders of the valuable opportunity to turn one's back on civilization and trek into the mountains to be immersed in the expanse of the wilderness.

Here, one can escape the constraints of society and discover the freedom of self-reliance. The vastness of this wilderness allows visitors to spend several days hiking in, out, or across, where they can forage berries, mushrooms, or shellfish, and sleep under spectacular dark night skies. On a given trip into the Olympic Wilderness one may hear a screamin catg, bugling elk, whistling marmots, birds, bears, pounding ocean waves, the drip of water from the tree canopies, or even the sound of the trees "talking."

People are deeply attracted to this wilderness, and many return year after year. They come to hike, camp, backpack, raft, fish, ski, or snowshoe, and new types of recreation continue to develop that may or may not be appropriate in a wilderness setting. As society progresses and access improves, increased numbers of people may impact opportunities for solitude. The presence of park staff is not an exception. Development is expanding into the foothills outside the park and continuing to dot the scenic vistas. Lights from surrounding urban areas affect the night sky, and overhead aircraft, whether commercial, military, or park sanctioned, are a periodic reminder of civilization. Increased research leads to increasing numbers of people and installations that impact solitude. Bridges, toilets, and technology reduce opportunities for self-reliance and personal challenge. Designated campsites, signs, and other recreational infrastructure protect valuable park resources but simultaneously confine recreational opportunities. In the future, it may become increasingly difficult to protect both opportunities for solitude and unrestricted, unconfined recreation.

Undeveloped: *Wilderness retains its primeval character and influence, and is essentially without permanent improvements or modern human occupation*

The Olympic Wilderness still possesses the spirit of the far edge of the continent. European Americans didn't arrive in large numbers until the late 19th century, and it was one of the last places in the country to be mapped by the U.S. Geological Survey. No roads bisect the mountainous core of the wilderness, and although humans have occupied this place for thousands of years, the hand of modern man is largely unnoticeable. On even a brief sojourn, a hiker can traverse a second-growth, previously managed area to old-growth Douglas-firs and western hemlocks, some more than 200 years old, and feel exceptionally small in the shadow of a giant western red cedar. The forests of the Olympic Wilderness exude an ancient, timeless quality and will continue to do the same after we're gone.

From the air, the Olympic Wilderness appears as an unscathed island in the midst of an altered landscape, highlighted by the evidence of adjacent logging, paving, or industrialization. Here, one can rejoin the community of life as part of an interconnected ecosystem, something greater than oneself.

Evidence of the interconnectedness of this wilderness is apparent in a sea fossil found on the mountaintops, indicating that this mountain was once a part of the floor of the ocean visible in the distance. A sea fossil on a mountain top is more than a geologic and visual connection; it is a reminder of the primeval spirit of this place that humbles human existence in the context of time.

Visitors to the high country are rewarded with expansive views and awe-inspiring vistas. Seattle and Victoria can occasionally be seen, although the vastness and grandeur of the Olympics seem to dwarf these human creations. On the coast, huge piles of driftwood lie in jumbled heaps, frequently redistributed by the tide, yet trash and debris can be found amongst the driftwood. Ranger stations and associated tent platforms, administrative cache boxes, research equipment, and other installations dot other areas of the wilderness. While ranger patrols, science, and research are imperative to responsibly managing wilderness, associated structures are evidence of modern human occupation and influence. Administrative use of motorized equipment and mechanical transport, though permitted when it is the minimum requirement, degrade the primitive nature of wilderness by reinforcing our ability to develop, occupy, and modify the land by our dominance.

Untrammeled: *Wilderness is essentially unhindered and free from modern human actions that control or manipulate the community of life*

The wildness and untamed nature of the Olympics was renowned for many years before, and was one of the reasons for, the area's establishment as a national park. It has been called wilderness long before its congressional designation as such, and its untrammeled quality was esteemed and emphasized even before the adoption of the term by the writers of The Wilderness Act. Prior to the 1938 establishment of Olympic as a national park, much of the area was managed by the U.S. Forest Service. The following quote from a 1929 Forest Service publication, Report on Olympic Forest Recreation Plan, discussing two potential but never constructed roads, highlights the untrammeled quality of the area: "The building of two such roads would be inimical to the generally accepted wilderness idea of the high Olympics as a whole, but would leave the proposed primitive area intact, so that immense territories of the mountain vastness would be left untrammeled."

To this day, Olympic Wilderness has remained largely unhindered and free from modern human control. Although American Indians have lived here for thousands of years and we do not fully comprehend the influence they had on the landscape, the Olympic Wilderness has seen relatively little major visible anthropogenic manipulation. Natural forces are dominant here, as glaciers continue to sculpt mountain peaks and waves relentlessly pound the coast. Wildfires clear and rejuvenate the landscape, contributing to the natural cycle of succession. Violent storms hammer the peninsula, and rivers surge with autumnal floods and gush milky blue with the spring glacial melt. Avalanches thunder down mountainsides, and ice forms in fissures, rupturing rocks into pieces. Despite human management, the tides will continue to ebb and flow, and the force of water will continue to erode, shape, and rejuvenate the landscape.

The cycle of life here continues largely unfettered. The park is improving this quality by ensuring the free movement of salmon through the rivers that have become arteries of nutrients and life to wilderness ecosystems. However, management actions that are undertaken to improve the natural quality often impact the untrammeled quality by manipulating the community of life. The suppression and ignition of fires, removal of nonnative species, revegetation and restoration projects, tagging and collaring plants and animals, and other manipulative research activities impact this quality.

Cultural Resources: *Ethnographic resources associated with American Indian tribes*

The place that is now called the Olympic Wilderness has been the homeland to tribes on the Olympic Peninsula for much longer than it has been considered "wilderness" in the current sense of the term. American Indians have lived on the peninsula for at least 12,000 years, and several tribes believe their people have been here since time immemorial. Eight tribes continue to recognize a relationship to the park based on traditional land use, origin, beliefs, and ethnographic landscapes: the Lower Elwha Klallam, Jamestown S'Klallam, Port Gamble S'Klallam, Skokomish, Quinault, Hoh, Quileute, and Makah. While native ties to the land are ancient and the setting aside of areas as designated wilderness is a modern concept, the continued relationship of the traditionally associated peoples and the values they associate with the land are integral to wilderness character.

Each tribe's relationship to the land is based on a great respect for the sentient spirit of plants and animals. For both terrestrial and aquatic beings, each species has its own chief and respective tribe, and this spirit chief must be placated before the species is utilized. Ceremonies were conducted to honor the animal chief in conjunction with the first salmon and first elk of the season. Special reverence and care was associated with the salmon run to ensure that nothing would contaminate it.

The spirit of the cedar tree was also particularly important to all area tribes, considered a "gift from the gods" by the Quileute. A Salish story says that the Great Spirit created red cedar in honor of a man who was always helping others: "When he dies and where he is buried, a cedar tree will grow and be useful to the people – the roots for baskets, the bark for clothing, the wood for shelter" (Stewart 1984:27). Cedars have been used for canoe making, as well as for mats, clothing, tools, baskets, rope, canoe sails, and shelters. The bark was used thoughtfully; only one or two strips were taken from each tree to refrain from causing harm to the cedar, and tribes often expressed contrition to the trees before stripping their bark. A variety of other plants are central to the culture and subsistence of peninsula tribes, including berries, bear grass, sea grass, eel grass, basket sedge, and others. These belief systems continue to today and reflect a tradition of interdependence and harmony with the environment we now call wilderness.

The Olympic Mountains have been and still are important to the tribes, traditionally used as a travelling thoroughfare, hunting grounds, and focal in the origins of significant events in tribal history. All eight tribes tell of a Great Flood, in which people tied their canoes to the tops of the mountain peaks. Sam Ulmer of the Lower Elwha Klallam reported that the canoes were moored to a mountaintop that broke off, "leaving the two points now visible at the ends of a saddle-like ridge in the Olympics" (Clark 1953:45). The peaks may refer to Mt. Carrie and Cat Peak, or Mt. Olympus. Blue Glacier on Mount Olympus is considered to be the home of Thunderbird by the Quileute and Hoh. While other tribes may consider Thunderbird's home in a different location, Thunderbird is celebrated as an entity of strength and power by all of the Olympic Peninsula tribes, and his spirit is often called upon to aid in pursuits, such as whaling. He causes thunder and lightning, and in a Hoh story, he causes ice to roll down the side of the mountains. For the Klallam, possessing a Thunderbird spirit was a source of wealth and power, as well as strength in war.

The area that is now the Olympic Wilderness is home to plants and animals, landscapes, and spiritual aspects that are fundamental to the culture of the surrounding tribes. The Skokomish believe that the sacred breath of life was blown into all living things at once, so that the same breath that created humans simultaneously created all living things. This belief illustrates the deep and elemental connection of the tribes to this place from the time of creation and in perpetuity.

References cited in this narrative:

Clark, Ella E. 1953. *Indian Legends of the Pacific Northwest*. Berkeley: University of California Press.

Stewart, H. 1984. *Cedar: Tree of Life*. Douglas & McIntyre, Vancouver, British Columbia.

Wray, Jacilee. 1997. *Olympic National Park Ethnographic Overview and Assessment*.

Appendix 2.6—Examples of Wilderness Stewardship Planning

The following examples are available at the time of the publication of the *Wilderness Stewardship Planning Handbook 2014.* Check for emerging, more current examples at the NPS Wilderness Character Sharepoint site at http://share.inside.nps.gov/sites/WASO/WSD/WC.

Table 14. Examples of wilderness stewardship planning, arranged alphabetically.

Plan	Notes
Apostle Islands *General Management Plan* *Wilderness Management Plan* *Environmental Impact Statement* August 2009	Example of combined general management plan and wilderness stewardship plan.
Black Canyon of the Gunnison National Park / Curecanti National Recreation Area *Draft Wilderness / Backcountry Management Plan* *Environmental Assessment* August 2011	Combines backcountry and wilderness stewardship for the two park units into one plan; includes a climbing management plan and addresses commercial services.
Death Valley National Park *Wilderness Stewardship Plan* August 2012	This effort has fully adopted wilderness character throughout the process and provides examples of tribal consultation, selection of measures, development of alternatives and cost estimates, and applying wilderness character mapping to planning.
Denali National Park and Preserve *Final Backcountry Management Plan* *General Management Plan Amendment* *Environmental Impact Statement* January 2006	The summary notes that this plan also serves as a soundscape preservation and noise management plan, wilderness management plan, and commercial services plan for the backcountry.
Gates of the Arctic National Park and Preserve *Draft Backcountry Management Plan* *General Management Plan* *Environmental Impact Statement* Internal Draft 2011	This plan includes wilderness character narratives, and integration of wilderness character.
Jimbilnan, Pinto Valley, Black Canyon, Eldorado, Ireteba Peaks, Nellis Wash, Spirit Mountain, and Bridge Canyon Wilderness Areas, Clark County, Nevada *Draft Wilderness Management Plan* *Environmental Assessment* April 2008	This is an interagency plan with Bureau of Land Management and addresses multiple wilderness units.
Joshua Tree National Park *Backcountry and Wilderness Management Plan,* *General Management Plan Amendment* *Environmental Assessment* January 2002	This plan combines wilderness and backcountry with a general management plan amendment, and has a significant climbing component.
Lava Beds National Monument *Wilderness Management Plan* *Environmental Assessment* November 2006	A straightforward wilderness plan that closely follows the 2004 Wilderness Stewardship Plan Handbook format and content. It generically incorporates the term wilderness character, but not the specific qualities.

Plan	Notes
Petrified Forest National Park *Wilderness Stewardship Plan / Environmental Assessment* February 2013	The plan describes the new wilderness stewardship framework and states that "Wilderness character is the framework's unifying element and the foundation of all management decisions proposed in the plan." The other features of value quality of wilderness character, relating to the park's paleontological resources, is identified.
Rocky Mountain National Park *Wilderness and Backcountry Management Plan* *Environmental Assessment* 2002	One of the first newer generation wilderness stewardship plans that was more than a visitor use plan.
Saguaro National Park *Comprehensive Trails Management Plan* *Environmental Assessment* 2009	This is not a wilderness stewardship plan, but has many aspects that are relevant for wilderness planning such as visitor use indicators and standards.
Zion National Park *Backcountry Management Plan* *Environmental Assessment* 2007	Backcountry plan with good examples of visitor use indicators and standards.

Appendix 3.1—Examples from Park Foundation Documents Incorporating Wilderness Character

This material is a supplement to chapter 3, which describes the foundation document components most relevant to wilderness character. As discussed in chapter 3, practitioners stress that it is very helpful to have developed a wilderness character narrative (see appendix 2.1) before a park foundation process, so that the narrative can inform the expression of park purpose and significance, interpretive themes, fundamental and other important resources and values, and other components of the foundation.

Purpose. If legislation specifically identifies wilderness or wilderness values, then wilderness should be incorporated into a park purpose statement. For example, in the case of Everglades National Park, wilderness was mentioned in the legislation establishing the park: "The said area or areas shall be permanently reserved as a wilderness, and no development of the project or plan for the entertainment of visitors shall be undertaken which will interfere with the preservation intact of the unique flora and fauna and the essential primitive natural conditions now prevailing in this area" (1934 Enabling Legislation). Thus the park purpose statement (2011 internal draft general management plan) reads as follows: "Everglades National Park is a public park for the benefit and enjoyment of the people. It is set apart as a permanent wilderness preserving essential primitive conditions, including the natural abundance, diversity, behavior, and ecological integrity of the unique flora and fauna."

If a park has no specific mention of wilderness in its enabling legislation, but does have designated wilderness, the congressional designation of wilderness is considered an element of enabling legislation and is therefore included in the park purpose statement, as in the following examples:

- One of the purposes of Apostle Islands National Lakeshore is to "Secure the benefits of an enduring resource of wilderness in Apostle Island National Lakeshore's Gaylord Nelson Wilderness for present and future generations of Americans." (Apostle Islands National Lakeshore General Management Plan 2004)
- One of the purposes of Saguaro National Park is to "Preserve and protect wilderness qualities such as solitude, natural quiet, scenic vistas, and natural conditions." (Saguaro National Park General Management Plan 2008)
- The purpose of Rocky Mountain National Park is to "Preserve the high elevation landscapes and wilderness character of the southern Rocky Mountains, and to provide the freest recreational use of and access to the park's scenic beauties, wild life, natural features and processes, and cultural objects." (Rocky Mountain National Park Foundation Statement 2012)

Purpose statements are concise and do not elaborate much on wilderness character, but they can help set the stage for wilderness character by identifying wilderness character qualities (e.g., the natural quality of Everglades National Park or the solitude of Saguaro National Park).

Park significance. Parks with designated wilderness should recognize wilderness or wilderness character within the set of significance statements. Examples include:

- *Everglades National Park Internal Draft General Management Plan (2011)*
  Everglades National Park is nationally and internationally significant because it comprises the largest subtropical wilderness reserve in North America. The park contains vast ecosystems, including freshwater marshes, tropical hardwood, pine Rockland, extensive mangrove estuaries, and seagrasses, which support a diverse mix of tropical and temperate plants and animals.
- *Bandelier National Monument Foundation (2008)*
  The Bandelier Wilderness provides opportunities for visitors to easily access primeval conditions and experience views, air quality, night sky, natural soundscapes, solitude, and healthy ecosystems in the context of a prehistoric cultural setting having thousands of archeological sites.

Note that the Everglades significance statement (which predates the *Keeping It Wild* framework) could be strengthened by tying its cultural resources within wilderness to the significance of wilderness. Try to express the key qualities of wilderness character that are inherent in a specific wilderness in one or more significance statements. Significance statements that simply use the words wilderness or wilderness character may not adequately convey the uniqueness of a particular wilderness area.

Fundamental Resources and Values. If wilderness or wilderness character has been identified in the purpose or significance statements, the fundamental resources and values component will typically recognize one or more qualities of wilderness character. The description of the identified resources and values should be more specific about the quality or qualities of wilderness character than significance statements. Examples include the following:

- *Bandelier National Monument Foundation (2008)*
  - Bandelier's wilderness is a natural environment closely tied to communities and contemporary Pueblo peoples. The high density of archeological sites within a designated wilderness is an area considered remote and untrammeled by contemporary standards. Untrammeled landscape wilderness is accessible, yet remote.
- *Apostle Islands National Lakeshore General Management Plan (2004)*
  - Wilderness qualities (high degree of naturalness and primitive recreation opportunities) including the phenomenon of re-wilding (lands that were settled, logged and quarried are naturally returning to their former condition).
  - Sense of discovery associated with viewing and learning about the historic and continuing relationship between humans and the natural resources of the land.
  - Sense of adventure and challenge where "lake is the boss."
- *Canyonlands National Park Foundation (2012)*
  - Primitive aspects / wilderness character, night sky / soundscapes.

- *Rocky Mountain National Park Foundation (2012)*
    - Wilderness character—Ninety-five percent of Rocky Mountain National Park is designated as wilderness, and this vast and steep landscape strongly exemplifies the qualities that comprise wilderness character. The largely pristine and primitive landscape provides opportunities for personal challenge and a natural haven for flora and fauna to thrive.

Interpretive themes. If wilderness or wilderness character has been identified in purpose or significance statements, interpretive themes should incorporate key messages on wilderness character. Examples include:

- *Apostle Islands National Lakeshore General Management Plan (2004)*
    - After being altered by centuries of exploitation, the Apostle Islands' environment is regaining its wilderness characteristics.
- *Bandelier National Monument Foundation (2008)*
    - The Bandelier Wilderness, rich with evidence of long human habitation yet a seemingly timeless natural landscape, offers rare opportunities for exploration, inspiration, solitude, and reflection on how "wildness" relates to human use of the land.
- *Canyonlands National Park Foundation (2012)*
    - Wilderness: Traveling into the backcountry of Canyonlands National Park can provide an opportunity for solitude in a location where natural systems and the feelings of wilderness predominate.

The first two examples were created before *Keeping It Wild* was available and adopted. For new efforts, it will be desirable to be more specific about wilderness character. In addition, the words *wilderness characteristics* (in the Apostle Islands example) and *wildness* (Bandelier) lack authoritative definitions and should be avoided (see table 1 in chapter 1). The terms *wilderness character* and *qualities of wilderness character* should be used instead.

Special mandates and administrative commitments. This component should identify the applicable categories of the park's wilderness (whether designated, potential, eligible, potential, proposed, or recommended) and briefly indicate the required management approach established in NPS policies. The status, size, and extent of each area should be described. An example is:

- *Petrified Forest National Park Foundation (2006) – Designated Wilderness*
  Petrified Forest National Wilderness Area was the first designated wilderness area in the national park system. It was designated by Congress on October 23, 1970 (84 Stat. 1105). The wilderness area within Petrified Forest National Park is composed of 50,260 acres (about 54% of the park) and consists of two separate units. The Painted Desert unit in the northern segment of the park comprises 43,020 acres, and the Rainbow Forest unit in the southeast segment of the park comprises 7,240 acres.

Appendix 3.2—Examples of General Management Plans (GMPs) and Wilderness Character

General management plans have many places to integrate wilderness character, as noted in chapter 3 of the *User Guide*. Below is a list of some of the parks with wilderness resources that have relatively recently completed a general management plan or have a general management plan or general management plan amendment underway. Approved plans are typically found on park web sites and other documents can be found archived on the NPS PEPC site.

- Apostle Islands National Lakeshore General Management Plan (2004)
- Assateague Island National Seashore General Management Plan (underway)
- Everglades National Park General Management Plan (draft 2011)
- Gates of the Arctic National Park and Preserve General Management Plan Amendment (underway)
- Great Sand Dunes National Park and Preserve General Management Plan and Wilderness Study (2007)
- Isle Royale National Park General Management Plan (1998)
- Olympic National Park General Management Plan (2008)
- Saguaro National Park General Management Plan (2008)
- Zion National Park General Management Plan (2001)

Goals and Objectives in General Management Plans

Goals and objectives are typically part of the introduction of the general management plan and important for articulating what a park intends to achieve. This example of a GMP goal and objective statement is noteworthy because it goes beyond a simple statement about preserving wilderness character and begins to express the qualities of wilderness character, even though it was developed before *Keeping It Wild* was published and adopted.

- Apostle Islands National Lakeshore General Management Plan (2004)
  The National Park Service manages the Gaylord Nelson Wilderness for the use and enjoyment of the American people in such a manner that leaves the area unimpaired for future use and enjoyment as wilderness. Wilderness characteristics and values are retained and protected so that visitors continue to find opportunities for solitude and primitive, unconfined recreation, and so that signs of people remain substantially unnoticeable. Natural processes, native species, and the interrelationships among them are protected, maintained, and/or restored to the extent possible, while providing opportunities for their enjoyment as wilderness. Cultural resources such as archeological sites, cultural landscapes, and structures that have been included within wilderness are protected and maintained using methods that are consistent with preservation of wilderness character and values. Present and future visitors enjoy the unique qualities offered in wilderness, including the experiences of solitude, remoteness, risk, challenge, self-sufficiency, discovery, and observation of an untrammeled ecosystem. The values of the Gaylord Nelson Wilderness are understood by the public (through education in wilderness ethics and use) and by park staff (through learning management skills) so that both will promote and preserve these values. Park operations and wilderness functions are coordinated in the park to manage and protect natural and cultural resources in wilderness and preserve wilderness character.

Appendix 4.1—Principles to Foster Wilderness and Cultural Resource Integration

In many cases, integrating wilderness character and cultural resources occurs easily. However, in some cases there is confusion and misunderstanding on the part of both wilderness and cultural resources staff. And in other cases there is a misperception that cultural resources management and preservation is incompatible with wilderness and its stewardship. This appendix provides background information on cultural resources and then a set of principles to foster better communication and coordination between wilderness and cultural resources staffs.

As described in the section on cultural resource management in chapter 4, planning is necessary to foster informed discussion between wilderness and cultural resources staff. Interdisciplinary teams are best suited to describe the relationship of wilderness character and cultural resources in park foundations, wilderness character narratives, and other planning processes. Because of the number of cultural resource laws and required consultation with state historic preservation offices, and tribal historic preservation offices or representatives, the park's cultural resource manager or cultural resources staff from a regional office or an archeological center should be involved in wilderness stewardship planning as part of the interdisciplinary team. Similarly, park staff representing wilderness should be involved in developing park cultural resource management plans to help identify actions that may degrade wilderness character. For example, in developing a wilderness stewardship plan, cultural resources and wilderness staffs should work together to identify cultural resources within the wilderness, and then through established processes (such as section 106 and minimum requirements analysis) determine the appropriate preservation prescription for cultural resources that also preserve wilderness character. And in developing cultural resource management plans, as well as in identifying inventory needs, cultural resources and wilderness staffs should work together to identify cultural resource management actions that may impact wilderness character and try to develop strategies that improve wilderness character, such as through the use of hand tools, as well as steps to mitigate any negative impacts.

The Diversity of Cultural Resources and Cultural Resource Laws in Wilderness

Cultural resources represent the human experience of our nation and preservation of these resources is one of three primary objectives of the NPS mission. These resources can be tangible and place-based, occurring in a single, small area (e.g., a rock art panel) or over a large area (e.g., a cultural landscape or historic district); tangible and historically based (e.g., correspondence related to a wilderness designation in a park's archive) or intangible (e.g., the spiritual significance of a landscape to an American Indian Tribe); and all may overlap one another and contribute to understanding the setting of a wilderness.

All NPS wildernesses have associated cultural resources. Cultural resources that are actively managed by the National Park Service are defined as archeological sites, historic structures, cultural landscapes, ethnographic resources, and museum collections. Many tribal entities place significance on cultural resources as defined by the National Park Service, but can also have different perspectives and relationships to these resources that are unique to their culture.

The importance of spiritual values, traditional practices, traditional and historic stories, and all other intangible cultural resources in a wilderness may be acknowledged, respected, and generally described in the wilderness character narrative (see chapter 2 and the Lake Clark wilderness character narrative in appendix 2.4) and park foundation documents. These intangible cultural resources, however, may be difficult if not impossible to measure, typically derive from a time before the Wilderness Act and the concept of wilderness character, and may not be meant to be shared with others. Park staffs, including wilderness staff, therefore need to be aware of the importance of intangible cultural resources so they can be appropriately considered in park interpretation, planning, and management, but it may not be appropriate to include them in wilderness character monitoring or in other public documents.

In addition to the 1916 National Park Service Organic Act, numerous other laws protect cultural resources on all federal lands, including wilderness areas, including but not limited to the National Historic Preservation Act (as amended), the Archeological Resources Protection Act, the American Antiquities Act, the Historic Sites Act, the Native American Graves Protection and Repatriation Act, the Abandoned Shipwreck Act, the American Indian Religious Freedom Act, and the National Environmental Policy Act. While many of these laws were passed subsequent to the passage of the Wilderness Act, reference to the American Antiquities Act of 1906 and the Historic Sites Act of 1935 in section 4(a)(3) of the Wilderness Act sets an important standard for the "use and preservation of parks, monuments, or other units of the national park system." As described in chapter 4, cultural resource protection is explicitly noted in the enabling legislation for some monuments, parks, and wildernesses.

Principles to Foster Better Communication

Because integrating cultural resources with wilderness character has not yet been articulated in policy or planning documents, the following principles are offered to provide a beginning point or foundation for discussion and planning between wilderness and cultural resources staffs. These principles go from general to specific and must be considered as an entire set.

1. Preserving cultural resources and wilderness resources are equally important park management objectives.
2. Wilderness designation can benefit cultural resources by protecting them from modern human development and activity that could destroy them or diminish their integrity.
3. Cultural resources can benefit wilderness by allowing visitors to understand and feel connected to the vital and varied relationships between people and nature.
4. The passage of the Wilderness Act and the concept of wilderness represent significant contributions to the history of our nation. The history of wilderness is an important historic theme along with other historic or ethnographic themes that a wilderness or sites within a wilderness may represent.
5. All applicable resource protection laws and regulations must be followed inside wilderness, unless explicitly stated otherwise in law.
6. Cultural resources are an integral part of an area's wilderness character when these resources are specified in the enabling legislation of the wilderness unit.

7. Cultural resources that are not specified in the enabling legislation of the wilderness unit may still be part of the area's wilderness character. Pursuant to law and policy, parks must go through an inventory and planning process to determine which cultural resources are significant and establish objectives for managing them.
8. In all cases, the goal is to understand and respect the integrity of both cultural and wilderness resources and to then determine the appropriate management action. These management actions should be considered as both wilderness stewardship and cultural resource stewardship objectives, be developed in tandem, and be reflected in both wilderness stewardship and cultural resource stewardship plans. Proposed management actions that would negatively impact either cultural resources, wilderness resources, or both, must be resolved on a case-by-case basis.

In addition, broad guidelines to foster better communication between cultural resource and natural resource staffs were developed by the Advisory Council on Historic Preservation (http://www.achp.gov/achpcultnatpolicy.html) to promote "an approach to resource management and conflict resolution on federally owned public lands that achieves balance between natural and cultural values."

Selected excerpts from these guidelines may also help discussion between wilderness and cultural resource managers:

- Identify potential conflicts early.
- Differentiate between real and perceived conflicts.
- Recognize that competing values involve competing constituencies.
- Broaden understanding of all affected resources.
- Recognize that acknowledgement of barriers is a first step toward problem solving when cultural and natural values compete.
- Consider a full range of feasible alternatives when cultural and natural values interrelate.
- Use an integrated approach to environmental compliance requirements.
- Consult with Indian tribes and native Hawaiian organizations on the full range of cultural and natural values.

Appendix 4.2—An Example of Preserving Cultural Resources and Wilderness Character

This appendix excerpts the May 31, 2012, minimum requirements analysis conducted by staff at Zion National Park (ZION) for cultural resource preservation actions on cabins in the Zion Wilderness. The excerpts below only show a portion of step 1 of the minimum requirements analysis; these excerpts were selected to show the interplay between cultural resources and wilderness character, and they have been reformatted from the original minimum requirements analysis to condense them.

Project Title and Description: Middle Fork Taylor Creek Cabin Maintenance

"Three historic cabins are located along the Middle Fork of Taylor Creek and are recorded as archaeological sites 42WS1795, 1797 and 1799. Currently, all three cabins are still standing but are deteriorating. The cabins are an excellent representation of pioneer use and habitation of lands that are now managed by Zion National Park. There are no other examples of this type of cultural resource within the park and few examples exist in the geographic region of southwest Utah. Preservation of these cabins is in keeping with the National Park Service Organic Act, 'to conserve the . . . historic objects . . . therein' while also in keeping with the definitions under the Wilderness Act, recognizing that wilderness, 'may also contain . . . features of . . . historical value,' and in §4 (a) (3), 'the [Wilderness] Act shall in no manner lower the standards evolved for the use and preservation of . . . unit[s] of the national park system in accordance with the Act of August 25, 1916' (the NPS Organic Act). There is no intent to reconstruct these historic structures to return them to their former function or to an adaptive use. The aspect that these cabins are no longer inhabitable and their once-modified surroundings are being reclaimed by the forces of nature supports the wilderness definition of, 'man himself is a visitor who does not remain,' but just on a slightly extended temporal scale when one considers the time period from original construction to abandonment.

"This proposal has three primary goals: 1) maintaining historic integrity of each structure; 2) continued use of these unique cabins for interpretation and education thereby providing a safe venue for researchers and the public to be informed of the early 20th century human occupation and use of these magnificent canyons; and 3) to create media products that promote the project as a model of appropriate cultural resource preservation in a wilderness setting in ZION.

"In 2011 the cabins were visited by historic preservation experts to determine treatment needs within the parameters of minimum efforts to achieve the greatest preservation results (with the goal being up to 50 years of extended lifespan). Details of proposed preservation actions are described below for each of the two cabins located in wilderness.

"The work itself will be taking place in July and August and will take approximately 2–3 weeks of field work at the cabins. All of the work will be done with hand tools. In wilderness areas the work will not use any motorized equipment with the possible exception of a battery powered nail gun due to the repetitive force strain on the cabins if regular hammers are used to drive nails. Trees will be cut from the local area using an axe and crosscut saw. Live trees may be cut and used for the cabin only if there is no other alternative and if the cutting the tree would further the goals of maintaining and improving forest health. Stumps will be cut to the ground so that they are not visible. The exact number of trees that will be cut has yet to be determined but it will range between 3–6 trees.

"Crew size will be determined on an as-needed basis but will follow the guidelines set for wilderness standards. For initially hauling in gear for work, a large crew of 12 people, if available, will be used to bring the gear in and out. Any unused material or excess material will be removed at the end of the project. The work on the cabins will be done by a small crew of people who will hike in and out each day."

Step 1 Analysis: Determine if any administrative action is necessary.

A	Describe Options Outside of Wilderness—Is action necessary within the wilderness?	Yes
	Explanation: The Larsen and Fife cabins were built in the 1920s. In 2009 this area was designated as Zion Wilderness. The cabins are deteriorating and if the cabins are to be preserved in their original locations, that location lies within wilderness.	
B	Describe Valid Existing Rights or Special Provisions of Wilderness Legislation—Is the action necessary to satisfy valid existing rights or special provision in wilderness legislation that allows consideration of the section 4(c)-prohibited uses?	No
	Explanation: The legislation designating Zion Wilderness did not cite any special provisions to the Wilderness Act. The proposed action is not part of any valid existing right within Zion Wilderness.	
C	Describe Requirements of Other Legislation—Is the action necessary to meet the requirements of other laws?	Yes
	The following laws pertain to the proposed action: • Antiquities Act (1906) and regulations at 43 CFR 3 (16 U.S.C. 431, 432, 433; P. L. 59-209 (June 8, 1906))—Provides for the protection of historic resources. • NPS Organic Act (1916) (16 U.S.C. 1)—"which purpose is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." • Historic Sites Act (1935) and regulations at 36 CFR Part 65 (49 USC 303, P. L. 100-17, 1987. Previously section 4(f) of 49 USC 1653 (f))—declared "a national policy to preserve for public use historic sites, buildings, and objects." • National Historic Preservation Act (1966) as amended and regulations at 36 CFR 60, 63, 65, 78, 79, and 800 (16 U.S.C. et seq.; P. L. 89-665 (October15, 1966); P. L. 96-515 (December 12, 1980); title XL of P. L. 102-575 (October 30, 1992))—declared a national policy of historic preservation. • National Environmental Policy Act of 1968 (P.L. 91-190; 31 Stat. 852)—declared a federal policy to "preserve important historic, cultural, and natural aspects of our national heritage." • Archeological and Historic Preservation Act (1974) (16 U.S.C. 469-469c; P. L. 93-291)—consists of amendments to the Reservoir Salvage Act (P. L. 86-532; June 27, 1960) made in 1974 by P. L. 93-291 and in 1978 by P. L. 95-625; provided for the preservation of significant scientific, prehistoric, historic, and archeological materials and data that might be lost or destroyed as a result of federally sponsored projects. • The Secretary of the Interior's Standards for the Treatment of Historic Properties (1995) in 36 CFR chapter 1, part 68—to set forth standards for the treatment of historic properties. Important Note: To prevent multiple interpretations of terminology, "preservation," as described in this minimum requirements analysis, comes from the treatment as defined in The Secretary of the Interior's Standards for the Treatment of Historic Properties.	

D	Describe Other Guidance—Is the action necessary to conform to direction contained in agency policy, unit and wilderness management plans, special recovery plans, or agreements with tribal, state and local governments or other agencies?	Yes

The following policies, plans, and agreements pertain to the proposed action:

- Zion National Park General Management Plan (2001)—desired condition for cultural resources: "Zion's cultural resources are protected and the integrity of the park's cultural resources is preserved unimpaired. Park visitors and employees recognize and understand the value of the park's cultural resources."
- NPS Management Policies 2006 – 6.3.8, "Cultural Resources"—The Wilderness Act specifies that the designation of any area of the park system as wilderness "shall in no manner lower the standards evolved for the use and preservation of" such unit of the park system under the various laws applicable to that unit. Thus, the laws pertaining to historic preservation also remain applicable within wilderness but must generally be administered to preserve the area's wilderness character. The section goes on to state, "Cultural resources that have been included within wilderness will be protected and maintained according to applicable laws and policies governing cultural resources using management methods that are consistent with the preservation of wilderness character and values."
- NPS Director's Order 28: Cultural Resource Management (1998)—The NPS will comply with the substantive and procedural requirements described in The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. Additionally, the National Park Service will comply with the 1995 (revised in 2008) Servicewide Programmatic Agreement with the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers.
- NPS-28: Cultural Resource Management Guideline (1998)—specific guidance for the management and protection of historic properties (as defined in 36 CFR 800) within the National Park Service.
- NPS Director's Order 28A: Archeology (2004)—It is NPS policy to ensure that archeological resources under its stewardship are conserved, protected and managed to prevent the impairment of archeological resources or their values.

Important Note: According to the National Historic Preservation Act, the term "historic properties" is a collective term for all entries in the National Register of Historic Places. In other words, the term "historic properties" includes any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in the National Register of Historic Places. The three Taylor Creek cabins are historic properties, as per the National Historic Preservation Act, that have been formally recorded as archeological sites that date to an historic time period and are therefore *historic era* archeological sites.

E	Wilderness Character—Is action necessary to preserve one or more of the qualities of wilderness character including: untrammeled, undeveloped, natural, outstanding opportunities for solitude or a primitive and unconfined type of recreation, or unique components that reflect the character of this wilderness area?	
	Untrammeled: Although the action of preserving an historic human construct in wilderness is a human manipulation, it is not a trammeling or manipulation of the ecological system within the wilderness. Harvesting 3–6 trees is a human manipulation, however, at this scale has no effect on the overall untrammeled wilderness character.	No
	Undeveloped: The action of preserving an historic human construct in wilderness, although unoccupied, is considered a permanent improvement as long as the current and future preservation actions persist. However, the action does not increase or decrease the background number of structures that existed in the wilderness area at time of wilderness designation. Cultural resources on the land prior to wilderness designation represent human relationships with the land and are not considered developments.	No
	Natural: The action of preserving an historic human construct in wilderness is not the result of and does not lend to natural conditions.	Yes
	Solitude or a primitive and unconfined type of recreation: The action of preserving an historic human construct in wilderness adversely affects the opportunity for solitude during the preservation process but would have no effect on opportunities for solitude or primitive or unconfined recreation upon completion.	No
	Other unique components that reflect the character of this wilderness: The cabins were formally recorded and documented in 1984 and determined to be regionally significant. The cabins are eligible for listing in the National Register of Historic Places in accordance with 36 CFR part 60-National Register of Historic Places, §60.4 Criteria for Evaluation: "The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association; and Criteria (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or Criteria (d) that have yielded, or may be likely to yield, information important in prehistory or history." If the cabins are not restored and they continue to deteriorate, the park will lose an historic resource that illustrates an important time in the history in the area, an important construction style, and the information potential of human behavior and use of the landscape.	Yes
F	Describe Effects on the Public Purposes of Wilderness—Is action necessary to support one or more of the public purposes of wilderness (as stated in section 4(b) of the Wilderness Act) of recreation, scenic, scientific, education, conservation, and historical use?	
	Recreation: The action of preserving an historic human construct in wilderness has no effect on the public's ability to recreate in the wilderness.	No
	Scenic: The action of preserving an historic human construct in wilderness may be considered by some to be a scenic blight within a wild area, while others would consider the cabins as lending rustic charm to the scenic quality of the landscape.	No
	Scientific: The action of preserving an historic human construct in wilderness contributes no scientific data to the existence or management of the wilderness area.	No
	Education: The action of preserving an historic human construct in wilderness contributes to the public understanding of homestead construction techniques and materials of the early 20th Century.	Yes
	Conservation: The action of preserving an historic human construct that predates the designation of the wilderness area supports the public purpose of conservation of historic objects therein as identified under the NPS Organic Act, and § 4 (a)(3) of the Wilderness Act that states that the Wilderness Act shall in no manner lower the standards evolved for the use and preservation of units of the national park system in accordance with the NPS Organic Act.	Yes
	Historical Use: The two cabins were built in the late 1920s by professors at a local college who wished to study appropriate land management and prevent over grazing. The cabins were determined to be regionally significant (with Southwest Utah as the region) representing the vernacular architecture of those who homesteaded the area. Other similar cabins in Zion National Park as well as the local area have degraded and collapsed.	Yes

Step 1 Decision: Is Any Administrative Action Necessary in Wilderness?

Answer: Yes. "The cabins were formally recorded and documented in 1984 and determined to be regionally significant. The cabins are eligible for listing in the National Register of Historic Places in accordance with 36 CFR part 60-National Register of Historic Places, §60.4 Criteria for Evaluation: 'The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association; and Criteria (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or Criteria (d) that have yielded, or may be likely to yield, information important in prehistory or history.'

"If the cabins are not restored and they continue to deteriorate, the park will lose an historic resource that illustrates an important time in the history in the area, an important construction style, and the information potential of human behavior and use of the landscape.

"Wilderness offers all people the opportunity to fully and deeply experience the natural world, and according to Wallace Stegner, feel 'competent to belong in it.'[1] The highly rustic condition and appearance of these cabins helps each visitor to establish a human-to-nature connection with the landscape and understand the contributions of those who survived in the once and current 'wild' places through their own labor and ingenuity. Such connections are crucial to foster and promote Wilderness stewardship, particularly today, as technology further separates us from our natural environment. These rustic cabins help us to remember that Wilderness is a part of us and we are a part of it, too.

"Encounter rates along the Middle Fork of Taylor Creek Trail currently exceed standards created through the 2007 Zion Wilderness / Backcountry Management Plan. All efforts made to interpret the cabins and their historic value should be made off site. For example, additional hikes to the cabins by interpretive rangers should not occur. Information concerning the historic value and preservation efforts could be added to the park website as long as the information does not provide specific locations."

1. Stegner, Wallace. 1960. Wilderness Letter. Wilderness.org/content/wilderness-letter

Photos:
NPS/Russ Cash,
Zion Wilderness,
Zion National Park

Figure 6. Fife Cabin in Zion National Park before restoration (top) and after (bottom) following close communication between cultural resource and wilderness staff to both preserve the cabin and wilderness character

Appendix 5.1—Indicators, Measures, and NPS Data Sources for the Qualities of Wilderness Character

Qualities, indicators, and possible measures in this appendix are from *Keeping It Wild* (Landres and others 2008). This appendix includes the column "Monitoring Questions" for consistency with *Keeping It Wild*, although some users may find that this column is not necessary. Also, because *Keeping It Wild* did not include the other features of value quality, the monitoring questions provided for this quality in the table below were developed by the NPS Wilderness Character Integration Team for this *User Guide*. Park staff need to verify if the national and regional data sources listed in this appendix are available and appropriate for the park and their intended use. In addition, many parks have their own data.

Table 15. Indicators, measures, and NPS data sources for the qualities of wilderness.

NATURAL QUALITY			
Monitoring Question	Indicator	Possible Measures	Likely NPS Data Sources
What are the trends in terrestrial, aquatic, and atmospheric natural resources inside wilderness?	Plant and animal species and communities	Abundance, distribution, or number of indigenous species that are listed as threatened and endangered, sensitive, or of concern	NPS Integration of Resource Management Applications (IRMA) NPSpecies database http://science.nature.nps.gov/im/datamgmt/IRMA.cfm State agencies and other partners (e.g. NatureServe data) U.S. Fish and Wildlife recovery records for listed species
		Number of extirpated indigenous species	NPS IRMA NPSpecies database State agencies and other partners (e.g. NatureServe data) U.S. Fish and Wildlife recovery records for listed species)
		Number of nonindigenous species	Veg Map inventory data I&M monitoring data; NPS IRMA NPSpecies Database National Forest Inventory and Analysis (FIA) data Fire Monitoring Handbook (FMH) plot records or FEAT/FIREMON Integration (FFI) data http://www.frames.gov/portal/server.pt/community/feat_firemon_integrated_(ffi)/483 Nonindigenous Aquatic Species database http://nas.er.usgs.gov/
		Abundance, distribution, or number of invasive nonindigenous species	Alien Plant Control and Monitoring (APCAM) database for gross infested acres Nonindigenous Aquatic Species database LANDFIRE Uncharacteristic Vegetation data
		Number of acres of authorized active grazing allotments and number of animal unit months (AUMs) of actual use inside wilderness	Park data
		Change in demography or composition of communities	LANDFIRE data I&M Veg Monitoring Data

NATURAL QUALITY			
Monitoring Question	Indicator	Possible Measures	Likely NPS Data Sources
What are the trends in terrestrial, aquatic, and atmospheric natural resources inside wilderness?	Physical resources	Visibility based on average deciview and sum of anthropogenic fine nitrate and sulfate	• National IMPROVE data http://views.cira.colostate.edu/web/
		Ozone air pollution based on concentration of N100 episodic and W126 chronic ozone exposure affecting sensitive plants	• National EPA AIRS data http://epa.gov/airdata/aqsdb.html • National CASTNET data http://epa.gov/castnet/javaweb/index.html
		Acid deposition based on concentration of sulfur and nitrogen in wet deposition	• National NADP/NTN data http://nadp.sws.uiuc.edu/
		Extent and magnitude of change in water quality	• I&M monitoring data
		Extent and magnitude of human-caused stream bank erosion	• I&M monitoring data • Trail monitoring data
		Extent and magnitude of disturbance or loss of soil or soil crusts	• I&M monitoring data • Trail/campsite monitoring data
What are the trends in terrestrial, aquatic, and atmospheric natural processes inside wilderness?	Biophysical processes	Departure from natural fire regimes averaged over the wilderness	• LANDFIRE Ecosystem Alteration Departure Index http://www.landfire.gov/ • Local Fire Regime Condition Class maps available from local Fire Management Office
		Extent and magnitude of global climate change	• LANDFIRE Uncharacteristic Vegetation Map http://www.landfire.gov/ • Species shift data from local or regional sources (check with Department of the Interior (DOI) Regional Climate Science Center to see what is available at http://www.doi.gov/csc/index.cfm)
		Area and magnitude for pathways for movement of nonindigenous species into the wilderness	• NPS IRMA NPScape • GIS analysis of pathways and vectors adjacent to wilderness (roads, trails, trailheads, waterways, and other common pathways)
		Area and magnitude of loss of connectivity with the surrounding landscape	• NPS IRMA NPScape • GIS analysis using landscape ecology tools (e.g., FragStats at http://www.treesearch.fs.fed.us/pubs/3064)

UNTRAMMELED QUALITY			
Monitoring Question	Indicator	Possible Measures	Likely NPS Data Sources
What are the trends in actions that control or manipulate the "earth and its community of life" inside wilderness?	Actions authorized by the federal land manager that manipulate the biophysical environment	Number of actions to manage plants, animals, pathogens, soil, water, or fire	• Minimum requirements analyses • WFMI records and/or fire narratives (DI-1202 or ICS209 forms) for fire incidents • National Fire Plan Operating and Reporting System for prescribed fire and fuel treatments • Alien Plant Control and Monitoring (APCAM) database for nonnative plant treatments • Other park specific data sources
		Percent of natural fire starts that received a suppression response	• WFMI records for fire incidents (check with fire management officer for access to database at http://www.nifc.blm.gov/) and/or fire narratives (DI-1202 or ICS209 forms)
		Number of lakes and other water bodies stocked with fish	• Minimum requirements analyses • State wildlife agency records for game species • U.S. Fish and Wildlife Service records for threatened and endangered recovery species
	Actions not authorized by the federal land manager that manipulate the biophysical environment	Number of unauthorized actions by agencies, citizen groups, or individuals that manipulate plants, animals, pathogens, soil, water, or fire	• Law enforcement data systems (e.g., case incident reports)

SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION QUALITY			
Monitoring Question	Indicator	Possible Measures	Likely NPS Data Sources
What are the trends in outstanding opportunities for solitude inside wilderness?	Remoteness from sights and sounds of people inside the wilderness	Amount of visitor use	• Permit records, including number of permits, who issued them, where issued, type of use, number of people in party, trip itinerary
		Number of trail contacts	• Trail counters • Staff reports
		Number and condition of campsites	• Campsite monitoring records (see Carhart Visitor Use Management training for more details)
		Area of wilderness affected by access or travel routes that are inside the wilderness	• FMSS data • NPS IRMA NPScape
	Remoteness from occupied and modified areas outside the wilderness	Area of wilderness affected by access or travel routes that are adjacent to the wilderness	• NPS IRMA NPScape • Agency GIS data systems • Aerial photography • GIS analysis using landscape ecology tools (e.g., FragStats at http://www.treesearch.fs.fed.us/pubs/3064)
		Night sky visibility averaged over the wilderness	• National night sky visibility maps • Local data if available from the NPS Night Sky Program
		Extent and magnitude of intrusions on the natural soundscape	• Soundscape data from the NPS Natural Sounds Program
What are the trends in outstanding opportunities for primitive and unconfined recreation inside wilderness?	Facilities that decrease self-reliant recreation	Type and number of agency-provided recreation facilities	• FMSS data
		Type and number of user-created recreation facilities	• Local knowledge • Law enforcement data systems (e.g., case incident reports) • Aerial photography for some types of facilities (e.g., social trails)
	Management restrictions on visitor behavior	Type and extent of management restrictions	• Superintendent's Compendium • Backcountry/wilderness permit terms and conditions

UNDEVELOPED QUALITY			
Monitoring Question	Indicator	Possible Measures	Likely NPS Data Sources
What are the trends in nonrecreational development inside wilderness?	Nonrecreational structures, installations, and developments	Index of authorized physical development	• Local GIS data and FMSS for locations of communication installations, utilities, other rights-of-way, research installations, grazing infrastructure, etc.
		Index of unauthorized (user-created) physical development	• Law enforcement data systems (e.g., case incident reports)
	Inholdings	Area and existing or potential impact of inholdings	• NPS Regional Lands Office records (may consider splitting apart state sections from private inholdings, divide by parcels with road access and those without, and include mining claims)
What are the trends in mechanization inside wilderness?	Use of motor vehicles, motorized equipment, or mechanical transport	Type and amount of administrative and nonemergency use of motor vehicles, motorized equipment, or mechanical transport	• Extract from minimum requirements analyses
		Type and amount of emergency use of motor vehicles, motorized equipment, or mechanical transport	• Extract from minimum requirements analyses • Case incident reports for law enforcement and search and rescue operations • Fire incident narratives (DI-1202 and/or ICS 209 reports)
		Type and amount of motor vehicle, motorized equipment, or mechanical transport use not authorized by the federal land manager	• Case incident reports for law enforcement and search and rescue operations

OTHER FEATURES QUALITY			
Monitoring Question	Indicator	Possible Measures	Likely NPS Data Sources
What are the trends in the preservation of cultural resources integral to wilderness character?	Deterioration or loss of cultural resources integral to wilderness character	Number of unauthorized actions that result in disturbances to cultural resources (looting, trespass activities, noncompliance with National Historic Preservation Act)	• Citations, ARPA violations, Secretary's Annual Report to Congress (SRC), LOOT report in SRC, ASMIS and PMDS site condition reporting
		Number of authorized actions that result in disturbances to cultural resources (visitor and commercial use (e.g., catholes, trampling, hearths, aircraft landings); findings of adverse effect for projects and operations)	• Citations, ARPA violations, Secretary's Annual Report to Congress (SRC), LOOT report in SRC, ASMIS and PMDS site condition reporting
		Number of naturally caused disturbances (e.g., erosion, animal digging, floods, rising sea levels, fires, tree throws)	• Citations, ARPA violations, Secretary's Annual Report to Congress (SRC), LOOT report in SRC, ASMIS and PMDS site condition reporting
What are the trends in the preservation of paleontological resources in wilderness?	Human-caused loss of important paleontological resources	Number and severity of disturbances to paleontological resources	• NPS Geologic Resources Division's literature based paleontological resource inventory (accessed via IRMA system) • I&M monitoring data • Local data

Appendix 5.2—Example of Measures Identified at Lake Clark National Park and Preserve, Alaska

Table 16. Examples of measures identified at Lake Clark National Park and Preserve, Alaska.

UNTRAMMELED QUALITY	
Indicator	Measure
Actions authorized by the National Park Service that manipulate the biophysical environment	Number of permits the National Park Service issues that authorize collection of plant, animal, or physical resources, or collaring of wildlife
	Number of actions taken to eradicate invasive species
Actions not authorized by the National Park Service that manipulate the biophysical environment: Modern human control over wolf and bear mortality	Change in harvest limit by State of Alaska for intensive management of wolves and bears in GMU 17B, 19B, 9B

NATURAL QUALITY	
Indicator	Measure
Plant and animal species and communities: Modern human control over timber resources	Escapement of salmon on the Newhalen River
	Sheep abundance
	Moose abundance
	Bear abundance
	Bald eagle abundance
	Abundance, distribution, or number of invasive nonindigenous species
Biophysical processes: Extent and magnitude of climate change	Glacial extent, area of ice or percent change
Physical resources	Length of growing season
	Environmental contaminants / persistent organic pollutants
	Airborne contaminants from stair step moss
Subsistence	Subsistence salmon harvest for Port Alsworth and Nondalton

UNDEVELOPED QUALITY	
Indicator	Measure
Nonrecreational structures, installations, and developments	Number of structures, installations and developments in wilderness
	Number of criminal cases of unlawful trail building
Inholdings	Number of nonsubsistence developments on inholdings
	Number of acres of nonfederal lands the National Park Service acquires
Use of motor vehicles, motorized equipment, or mechanical transport	Number of hours of NPS airplane flight time per year
	Number of hours of NPS helicopter flight time per year

SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION QUALITY	
Indicator	Measure
Solitude: Remoteness from sights and sounds of people inside the wilderness	Amount of visitor use: Number of user days (served by CUA holders)
	Number of special use waivers issued for party size
Solitude: Remoteness from occupied and modified areas outside the wilderness	Acres of wilderness affected by sights and sounds outside the wilderness
Primitive Recreation: Facilities that decrease self-reliant recreation	Number of miles of trails in wilderness
Unconfined Recreation	Number of management actions in wilderness that restrict visitor behavior (where you can go, how many can go there)

Appendix 5.3—Worksheet to Prioritize Measures

As park staff begin identifying measures to track trend in wilderness character, they will most likely identify more measures than are feasible to monitor. This appendix provides a worksheet to help staff determine which measures are the highest priority.

Four criteria are used to rank each potential measure in the worksheet: significance, vulnerability, reliability, and feasibility. These criteria have proven to be readily understood and useful, but park staff can select any criteria that are most effective for their park. These criteria are defined as:

- *Significance*—The degree to which the measure is directly related to the quality of wilderness character and is relevant and useful to park staff in the management of that quality.
- *Vulnerability*—Both the current and near-term (within 10–15 years) level of risk or threat to a quality of wilderness character.
- *Reliability*—Whether the measure can be monitored accurately with a high degree of confidence and would yield the same result if measured by different people at different times.
- *Feasibility*—How practical it would be to monitor the measure.

There are two steps to using the worksheet. First, assign points to the first two criteria (significance, vulnerability) as follows: high = 3 points; medium = 2 points; low = 1 point. Staff can use whatever point ranking they want, but we have found this system to work efficiently. Any measure that scores "low" in both categories for a combined 2 points can be dismissed at this point. Second, assign points to the second two criteria (reliability, feasibility) for all measures that received 3 or more points.

Feasibility is treated differently than the other criteria. Many measures will have been identified according to the availability of existing data sets (see the section "Identifying Measures" in chapter 5). For those measures that do not have existing data sets, assign numerical scores based on how much additional effort they will require to monitor. Factors such as cost, time, and staffing will come into play. This category uses a slightly different point system that forces an either/or decision, which provides another point in the ranking process where some measures can be readily dismissed. If a measure can be reasonably monitored considering the limitations imposed by cost or availability of staff time, it is assigned 1 point; if not, it is assigned 0 points and dismissed.

After all the measures have been assigned points, there will most likely be a natural cut-point that allows staff to separate the lower- from the higher-scoring measures. Sometimes there will not be a clean cut-point and park staff will face the difficult task of culling lower scoring measures. Decisions about which measures to use should not be based entirely on these numeric scores, but should also be tempered by professional judgment—the numeric score is only a tool to help make the decision.

Once staff prioritizes potential measures it is crucial to look at the entire set of final measures being considered and ask, "Is this set of measures adequate for tracking change in wilderness character for our park?" Or, more simply, "Is anything missing from this list that should be there?" If the answer is "yes" then staff can move forward to identify data sources for the measures. If the answer is "no" then staff will need to identify what quality of wilderness character is not adequately represented and identify additional measures to fill this gap.

Worksheet to prioritize potential measures of wilderness character _____ **Wilderness** _____ **Date**

Names of people and their positions filling out this worksheet:

In each row, write the potential measure in the left column under the appropriate indicator. Add or delete rows as needed. Use the criteria and ranking guide below to create an overall score for each measure. If the combined score for criteria A + B is ≤ 2, stop and do not score criteria C and D. Those measures with the highest overall scores should be the highest priority for tracking trend in wilderness character.

A. Level of significance (the measure is highly relevant to the quality and indicator of wilderness character, and is highly useful for managing the wilderness):

High = 3 points, Medium = 2 points, Low = 1 point

B. Level of vulnerability (measures an attribute of wilderness character that currently is at risk, or is likely to be at risk over 10–15 years):

High = 3 points, Medium = 2 points, Low = 1 point

C. Degree of reliability (the measure can be monitored accurately with a high degree of confidence and would yield the same result if measured by different people at different times):

High = 3 points, Medium = 2 points, Low = 1 point

D. Degree of feasibility (the measure is related to an existing effort or could be monitored without significant additional effort):

High = 1 point, Low = 0 point (if 0 is given, do not use)

POTENTIAL MEASURE	Criteria for Prioritizing Potential Measures				OVERALL SCORE
	A. Significance	B. Vulnerability	C. Reliability	D. Feasibility	
Untrammeled Quality					
Indicator: Authorized actions that manipulate the biophysical environment **Measure:**					
Indicator: Unauthorized actions that manipulate the biophysical environment **Measure:**					
Natural Quality					
Indicator: Plant and animal species and communities **Measure:**					
Indicator: Physical resources **Measure:**					
Indicator: Biophysical processes **Measure:**					

Worksheet to prioritize potential measures of wilderness character _____ **Wilderness** _____ **Date**

Names of people and their positions filling out this worksheet:

POTENTIAL MEASURE	Criteria for Prioritizing Potential Measures				OVERALL SCORE
	A. Significance	B. Vulnerability	C. Reliability	D. Feasibility	
Undeveloped Quality					
Indicator: Nonrecreational structures, installations, or developments **Measure:**					
Indicator: Use of motor vehicles, motorized equipment, or mechanical transport **Measure:**					
Indicator: Inholdings **Measure:**					
Solitude or Primitive and Unconfined Recreation Quality					
Indicator: Remoteness from sights and sounds of people inside the wilderness **Measure:**					
Indicator: Remoteness from occupied and modified areas outside the wilderness **Measure:**					
Indicator: Facilities that decrease self-reliant recreation **Measure:**					
Indicator: Management restrictions on visitor behavior **Measure:**					
Other Features of Value Quality					
Indicator: **Measure:**					

Appendix 5.4—Example of Worksheet Used to Prioritize Measures from Guadalupe Mountains Wildernes

The following is an example of a worksheet used by Guadalupe Mountain National Park (GUMO) in developing a program to track change in wilderness character in the Guadalupe Mountain Wilderness. In this example, some of the measures may have ranked high in importance, but due to lack of reliable data, were not used (e.g., departure from natural fire regime, global climate change). In the initial screening, some categories were overly broad (e.g., air quality, water quality) and not true measures. They were subsequently refined into more specific measures (e.g., sum of anthropogenic fine nitrate and sulfate, highest eight-hour average ozone concentration, acid deposition for air quality and dissolved oxygen) because data for these measures already existed. At Guadalupe Mountain National Park, a Student Conservation Association Wilderness Fellow (part of NPS Together Wild initiative) used the worksheet and then consulted with the park's wilderness coordinator and resource management staff. Revisions were made to some of the measures and some were dropped after these discussions. Although several measures were ranked high and ultimately were used, they did not require significant amounts of additional field time for monitoring as the data had already been gathered as part of the park's resource management program. Individual parks may choose to select only the highest ranking measures to streamline the number of measures used, or they may decide to use all of the higher-ranking measures for which data already exists. In the case of Guadalupe Mountain National Park, if only the highest-scoring measures were used (9's), some measures that staff considered key to determining impacts to wilderness character (e.g., number of nonindigenous species, visitor use numbers, and administrative use of motorized equipment or mechanical transport for nonemergency purposes) would have been dropped. Because the data for these measures already existed, GUMO staff decided to include them.

Worksheet to prioritize potential measures of wilderness character **Guadalupe Mountains** **Wilderness** **2010** **Date**

Names of people and their positions filling out this worksheet:

In each row, write the potential measure in the left column under the appropriate indicator. Add or delete rows as needed. Use the criteria and ranking guide below to create an overall score for each measure. If the combined score for criteria A + B is ≤ 2, stop and do not score criteria C and D. Those measures with the highest overall scores should be the highest priority for tracking trend in wilderness character.

A. Level of significance (the measure is highly relevant to the quality and indicator of wilderness character, and is highly useful for managing the wilderness):

High = 3 points, Medium = 2 points, Low = 1 point

B. Level of vulnerability (measures an attribute of wilderness character that currently is at risk, or is likely to be at risk over 10–15 years):

High = 3 points, Medium = 2 points, Low = 1 point

C. Degree of reliability (the measure can be monitored accurately with a high degree of confidence and would yield the same result if measured by different people at different times):

High = 3 points, Medium = 2 points, Low = 1 point

D. Degree of feasibility (the measure is related to an existing effort or could be monitored without significant additional effort):

High = 1 point, Low = 0 point (if 0 is given, do not use)

POTENTIAL MEASURE	Criteria for Prioritizing Potential Measures				OVERALL SCORE
	A. Significance	B. Vulnerability	C. Reliability	D. Feasibility	
Untrammeled Quality					
Indicator: Authorized actions that manipulate the biophysical environment **Measure:** Number of species removal projects	3	1	2	1	7
Indicator: Authorized actions that manipulate the biophysical environment **Measure:** Number of prescribed burns	3	2	3	1	9
Indicator: Authorized actions that manipulate the biophysical environment **Measure:** Percentage of natural fire starts suppressed	3	2	3	1	9
Indicator: Unauthorized actions that manipulate the biophysical environment **Measure:** Number of human-ignited fires	3	1	3	1	8

POTENTIAL MEASURE	Criteria for Prioritizing Potential Measures				OVERALL SCORE
	A. Significance	B. Vulnerability	C. Reliability	D. Feasibility	
Natural Quality					
Indicator: Plant and animal species and communities **Measure:** Number of threatened, endangered, and species of concern	2	1	2	1	6
Indicator: Plant and animal species and communities **Measure:** Number of extirpated indigenous species	2	1	3	1	7
Indicator: Plant and animal species and communities **Measure:** Area treated for invasive species	3	2	2	1	8
Indicator: Plant and animal species and communities **Measure:** Number of nonindigenous species	2	2	3	1	8
Indicator: Physical resources **Measure:** Visibility based on average deciview and sum of anthropogenic and fine nitrate and sulfate	3	3	3	1	10
Indicator: Physical resources **Measure:** Visibility based on average deciview and sum of anthropogenic and fine nitrate and sulfate	3	2	3	1	9
Indicator: Physical resources **Measure:** Change in water quality	3	2	1	1	7
Indicator: Physical resources **Measure:** Change in geological specimen abundance	2	1	1	0	4
Indicator: Physical resources **Measure:** Percent of dune spatial extent	3	1	1	1	6
Indicator: Physical resources **Measure:** Caves and karst condition	2	2	1	0	5
Indicator: Biophysical Pocesses **Measure:** Departure from natural fire regime	3	3	2	1	9
Indicator: Biophysical Pocesses **Measure:** Global climate change	3	3	2	1	9

POTENTIAL MEASURE	Criteria for Prioritizing Potential Measures				OVERALL SCORE
	A. Significance	B. Vulnerability	C. Reliability	D. Feasibility	
Undeveloped Quality					
Indicator: Nonrecreational structures, installations, or developments **Measure:** Number of nonrecreational developments	**3**	**1**	**3**	**1**	**8**
Indicator: Nonrecreational structures, installations, or developments **Measure:** Unauthorized nonrecreational developments	**1**	**1**	**2**	**1**	**5**
Indicator: Use of motor vehicles, motorized equipment, or mechanical transport **Measure:** Administrative nonemergency use of motor vehicles, motorized equipment, or mechanical transport (number of minimum requirements documents)	**2**	**2**	**2**	**1**	**7**
Indicator: Use of motor vehicles, motorized equipment, or mechanical transport **Measure:** Administrative emergency use of motor vehicles, motorized equipment, or mechanical transport	**2**	**1**	**3**	**1**	**7**
Solitude or Primitive and Unconfined Recreation Quality					
Indicator: Remoteness from sights and sounds of people inside the wilderness Measure: Amount of visitor use	**3**	**2**	**3**	**1**	**8**
Indicator: Remoteness from sights and sounds of people inside the wilderness Measure: Signs of visitor presence	**3**	**1**	**1**	**1**	**6**
Indicator: Remoteness from occupied and modified areas outside the wilderness Measure: Viewsheds	**3**	**3**	**1**	**0**	**7**
Indicator: Remoteness from occupied and modified areas outside the wilderness Measure: Night sky visibility	**3**	**2**	**2**	**1**	**8**
Indicator: Remoteness from occupied and modified areas outside the wilderness Measure: Noise pollution	**3**	**2**	**1**	**0**	**6**
Indicator: Facilities that decrease self-reliant recreation Measure: Agency provided recreation facilities (tent pads &recreational signs)	**3**	**1**	**3**	**1**	**8**
Indicator: Management restrictions on visitor behavior Measure: Number of management restrictions on visitor behavior	**3**	**3**	**2**	**1**	**9**
Other Features of Value Quality					
Indicator: Loss of statutorily protected cultural resources Measure: Disturbances to cultural resource	**2**	**1**	**1**	**1**	**5**

Appendix 5.5—Data Sources Generally Available in the National Park Service

Table 17. Data sources generally available in the National Park Service. Note that this table is highly dynamic and subject to change over time. Data sources are arranged based on their source.

Name	Purpose	Organization	Source
Wildland Fire Management Information	DOI system records all fire ignitions in a park, either management ignited or natural starts from the National Interagency Fire Center (NIFC)	NIFC	Fed
Wildland Fire Decision Support System	All federal land management agencies system records all wildfires, fire use fires, but not prescribed fires	NIFC	Fed
National Fire Plan Operations and Reporting System	Identifies and reports fuels treatments including prescribed fire	NIFC	Fed
National Oceanic and Atmospheric Administration	Atmospheric data on climate, weather, oceans, and coastal, and fisheries resources	NOAA	Fed
U.S. Geological Survey	Science Center Reports, publications from the Department of the Interior	DOI	Fed
Natural Resource Conservation Service	Soil, water, air, plants, and animal data, focus on private land owners and conservation	NRCS	Fed
U.S. Environmental Protection Agency	Reports on environmental quality, air, water, radiation, toxicology, and other data	EPA	Fed
Planning, Environment, and Public Comments System	Project tracking and management; team collaboration and communications for compliance processes; and increasing public involvement by use of the Internet	NRSS	NPS
Abandoned Mines Database	Database containing information about abandoned mines	NRSS	NPS
Geologic Resources Inventory	Database of park geologic resources inventory (metadata and products being incorporated into IRMA system)	NRSS	NPS
Soil Resource Inventory	Database of soil resources in parks (metadata and products being incorporated into IRMA system)	NRSS	NPS
Integrated Resource Management Applications	Web-based system for documenting, uploading, searching, and retrieving documents, data sets, species and taxonomic information, etc.; includes records previously contained in NPS Data Store, NatureBib, NPSpecies, and other databases	NRSS	NPS
Natural Sounds Database	Database containing soundscape monitoring data	NRSS	NPS
Night Skies Database	Database containing information about night sky resources	NRSS	NPS
Nature & Science (Nature and Science)	Website that provides information on natural resource stewardship, conservation, education in national parks, and protection of park natural resources	NRSS	NPS
Research Permit and Reporting System	Servicewide E-gov system solution supporting the application, permitting, and reporting processes associated with the NPS Scientific Research and Collecting Permit	NRSS	NPS
Public Use Statistics Office Reporting System	Supports the collection and reporting of public use visitation data	NRSS	NPS
NPS Water Rights Docket Files (Dockets)	Stores documentation for water rights / water uses in park units	NRSS	NPS

Name	Purpose	Organization	Source
STORET Water Quality Database	Interagency water quality database developed/supported by the U.S. Environmental Protection Agency to house local, state, and federal water-quality data; Water Resources Division operates a copy of STORET for archiving NPS water-quality data	NRSS	NPS
Inventory and Monitoring Networks	The 32 NPS I&M networks inventory and monitor the condition of priority natural resources to determine status and trends in selected indicators of park ecosystems; provides data to better understand condition of park resources	I&M	NPS
NPS Web Mapping System (NPMap)	Servicewide GIS system	NRSS	NPS
Management Information System-Master Deed Listing (MIS-MDL)	Data base of inholdings and non-NPS lands within parks	Lands	NPS
LandsNet	Mapping interface with MIS-MDL	Lands	NPS
TracksNet	Geo-referenced GIS layers mapping interface with MIS-MDL	Lands	NPS
Incident Management and Reporting System	Servicewide program to catalog and manage law enforcement (LE) and search and rescue incidents. May have location codes for incidents (management actions) in wilderness	LE	NPS
Archaeological Sites Management Information System	Database for the basic registration and management of park prehistoric and historic archeological resources	CRM	NPS
List of Classified Structures	Report and inventory of historic structures, with condition assessments done every five years	CRM	Park
Cultural Landscape Inventory (CLI)	Report and inventory of cultural landscapes, with condition assessments done every five years	CRM	Park
Historic Structures Report (HSR)	Park specific study of the history of structures	CRM	Park
Annual Financial Report	Park generated annual report, schedule M may include statistics on concessions contracts, including the number of wilderness entries	Commercial Services	Park
Commercial Use Authorization Annual Report	Web-based annual report, generated by parks, compiled by WASO Commercial Services, may include information on authorized entries into wilderness	Commercial Services	Park
Department of Natural Resources	Environmental quality monitoring, resource reports and studies	State	Partner

Appendix 6.1—Strategic Questions to Answer in Developing a Wilderness Character Map

There are several strategic questions that drive the entire process of building a wilderness character map. Answering these questions at the beginning of the process will allow a park to move forward in a more efficient way without having to go back and revisit these issues as they develop the map. These questions are listed approximately from general to specific. Potential answers, developed by other parks as they answered these questions (as of the time of the publication of this *User Guide,* answers to these questions have been developed by Death Valley National Park, Olympic National Park, Buffalo National River, Saguaro National Park, and Denali National Park and Preserve), are offered below the explanation of each strategic question.

1. Why is the park building a wilderness character map and how will it be used?

There are many different reasons and each will drive the selection of measures and data sources that strongly affects the map.

Potential reasons include:

- Assess the effects of different plan alternatives on wilderness character.
- Establish a baseline to assess future trend in wilderness character.
- Evaluate cumulative impacts across all the qualities of wilderness character.
- Improve internal staff communication about wilderness and wilderness character.
- Improve external communication between the park and the public.
- Identify different zones within the wilderness to aid allocating resources and establishing thresholds for impacts.

2. Should the park strictly follow the qualities and indicators from Keeping It Wild?

The park could add other indicators if those from *Keeping It Wild* do not adequately capture something important.

All the parks that developed a wilderness character map have used the indicators from *Keeping It Wild* and so far no parks have added additional indicators, although they all reserved the right to do so if deemed necessary to capture an important element of the wilderness that wasn't adequately accounted for in *Keeping It Wild.*

3. Should the park include the "other features of value" quality of wilderness character?

The park could include measures for the other features of value quality of wilderness character, such as cultural resources and paleontological resources, or other measures as appropriate.

Staff at all the parks have expressed interest in including this quality but have not developed specific measures, so while conceptually this quality has been included no park has actually developed spatially explicit layers to include it. There are also serious concerns about making such data available in a map that could be seen by the public.

4. Should the park try to incorporate intangible measures (such as spiritual or symbolic values, or visitor experiences)?

Wilderness character could include intangible and experiential aspects, so the park could try to incorporate these into the map, although the park would most likely need to develop new protocols to do this.

None of the parks that developed a wilderness character map have tried to develop and incorporate intangible measures. There are several reasons for this, including the lack of an ability to adequately quantify any intangible measures in a way that could be mapped, and the desire to not map spiritual values of traditionally associated people. All parks acknowledged that intangible values were important but such information would only be used internally by park staff for planning purposes to ensure that management activities didn't compromise these values.

5. Should the map show only degradation to wilderness character?

This is primarily a technical issue of distilling many different types of data into a single spatial product. All parks want to show the positive effects of management actions on wilderness character but showing these on the same map that depicts degradation of wilderness character masks what is happening. For example, if herbicides are used to treat nonnative, invasive plants, the natural quality would improve and the untrammeled quality would degrade—the positive and degrading effects cancel each other out on the map.

All the parks that developed a wilderness character map chose to use one map to show degradation of wilderness character and a separate map to show positive management actions that have improved wilderness character. All the parks were interested in correlating where management actions had been taken with the degradation map to show how wilderness character had improved because of management actions. All the parks were interested in exploring whether both positive actions and degraded conditions could be shown on one map by using shading or different fills to show positive, negative, and net changes, but to date no such composite map has been developed.

6. Should the park use the same measure in more than one quality?

Most measures could be included in more than one quality. For example, the data point for the presence of a management-created barrier in a stream to prevent nonnative fish from moving upstream could be included in any of four qualities (the barrier disrupts water flow and so degrades the natural quality; building the barrier degrades the untrammeled quality; the presence of the structure degrades the undeveloped quality; seeing the structure degrades the solitude quality).

In general, all parks chose to use a measure under what park staff felt was the single most appropriate quality because of concerns about overemphasizing a particular measure if it was included in more than one quality. However, all parks decided that different types of data for a single measure were appropriate to use in different qualities. For example, the physical structure of artificial water sources (guzzlers) in Death Valley were shown as degrading the undeveloped quality, and the area around the guzzlers was shown as degrading the natural quality because of the multiple effects on flora and fauna caused by the increased ungulate presence. All parks reserved the right to include a measure in more than one quality and then weight the measure differently in the different qualities.

7. Should the park weight the qualities or just weight the measures within each indicator?

The Wilderness Act does not state that any one aspect of wilderness is more important than any other, even though the on-the-ground reality is that some things cause greater impacts than others and the establishing legislation for some wildernesses may place greater emphasis on one aspect of a wilderness.

All the parks that developed a wilderness character map chose to weight the qualities equally, the indicators under each quality equally, and only identify weights for the measures under an indicator.

8. Should the park include measures that they do not have data for?

No park will have data for all the things that degrade wilderness character, even for some of the most important things such as climate change or loss of connectivity with the surrounding landscape, so how should these situations be treated?

All the parks that developed a wilderness character map chose to include measures that were deemed crucial or of such importance that they wouldn't pass the red-face test if they weren't included, even when data for such measures did not exist or were not sufficiently reliable to be used. These measures were included under their appropriate indicator, weighted along with the other measures under that indicator, but not included in the mapping process. By including them and weighting them, such measures could be easily incorporated into the map when the data become available, and they have been identified as of high priority for future data collection efforts when resources become available.

9. Should the park create separate wilderness character maps for different units, or for designated, recommended, and eligible wilderness?

There are many different configurations of wilderness across the National Park Service and each park will need to decide if they want to create one map or separate maps.

Buffalo National River decided to create different maps for its three spatially separated wilderness units, but all three maps would be created using a single protocol and weighting scheme. Denali National Park and Preserve decided to create one map for designated and eligible wilderness, and include both park and preserve lands in this map.

10. Should the park create different wilderness character maps to reflect different seasonal patterns?

This strongly depends on the park and the seasonality in use and impacts.

Denali decided to create different maps to reflect summer and winter patterns because use and impacts are so different between these two seasons.

11. What is the spatial resolution for the map?

Spatial data come in a variety of different resolutions, from 1 square meter up to many square kilometers.

Parks have used either 30-meter or 100-meter resolution, depending on the data availability and the size of the park. Some parks used 30-meter resolution even though they had 10-meter data because 30-meter resolution was adequate for the purposes of the wilderness character map.

12. How far back in time will data be used in creating the map?

Ideally, data are available back to the date when the wilderness was established, but rarely will a park have such data. Instead, the first time the wilderness character map is created will become the de facto baseline, and parks will need to decide how far back in time to use data if it is available.

All parks decided that the year the wilderness character map is created will define its baseline for evaluating future change. However, parks have used a variety of approaches to whether they will use data from prior years. Buffalo National River decided to use the current year as its baseline for the map but would use data from prior years if appropriate and data were available. Denali National Park and Preserve decided to go back up to five years for the untrammeled quality, depending on data availability, and go back as far as possible for the other qualities, as data availability allows. Denali also decided to create a "retrospective" wilderness character map using professional judgment back to the time of wilderness designation to use in estimating change to wilderness character since it was designated wilderness.

Appendix 6.2—Weighting of Measures Used in Developing a Map of Wilderness Character at Death Valley National Park

The following examples are the measures and weighting for the qualities of wilderness character used to develop the wilderness character map at Death Valley National Park. Weights within an indicator total 100. Asterisks under the Measure column denote that currently there are no data for this measure but it was deemed sufficiently important to include and weight.

Table 18. Weighting of measures used in developing a map of wilderness character at Death Valley National Park.

NATURAL QUALITY		
Indicator	Measure	Weight
Plant and animal species and communities	Land cover	50
	Nonnative plants	25
	Nonnative animals	25
Physical resources	Ozone (air quality)	5
	Wet deposited nitrate and ammonium (air quality)	10
	Mining sites	30
	Springs	35
	Night sky – deviation from natural	20
Biophysical processes	Grazing	30
	Guzzlers	15
	Fire regime (FRCC)*	25
	Climate change*	30

SOLITUDE OR PRIMITIVE AND UNCONFINED RECREATION QUALITY		
Indicator	Measure	Weight
Remoteness from sights and sounds of people inside the wilderness	Travel time submodel	70
	Viewshed submodel	30
Remoteness from occupied and modified areas outside the wilderness	Over-flights	25
	Soundscape	20
	Night sky – dark sky index	35
	Visibility (air quality)	20
Facilities that decrease self-reliant recreation	Trails	20
	Visitor facilities	80
Management restrictions on visitor behavior	Camping restrictions	20
	Closed to visitor use	80

UNTRAMMELED QUALITY		
Indicators	Measure	Weight
Authorized actions	Suppressed fires (natural ignitions)	20
	Weed treatments	20
	Burro removals	20
	Installation of mine closures / bat gates	20
	Manipulation of landscape that alters water flow*	20
Unauthorized actions	Poaching incidents*	100

UNDEVELOPED QUALITY		
Indicator	Measure	Weight
Nonrecreational structures, installations, and developments	Installations (including guzzlers and fences)	55
	Unauthorized installations/debris	10
	Borrow pits	35
Inholdings	State inholdings with road access	15
	State inholdings with no road access or held for wildlife	5
	Private inholdings	60
	Unpatented inholdings	20
Use of motor vehicles, motorized equipment, or mechanical transport	Off-road vehicle trespass	60
	Administrative uses	40

Appendix 6.3—Quickstart Overview of the Wilderness Character Monitoring Database

The overview below is intended only to provide the most basic information for using the Wilderness Character Monitoring Database. For more in-depth information see the Wilderness Character Monitoring Database Users Guide at the NPS Wilderness Character tab under the Wilderness Stewardship Program Sharepoint site at http://share.inside.nps.gov/sites/WASO/WSD/WC.

Opening the Database

- There are three files required to use the database:
  - User interface file (WildernessCharacter_UI.mdb)
  - Database file (WildernessCharacter_data_blank.mdb)
  - Look-up table file (Wilderness_lookup.mdb)
- Double-click on the user interface file. It will prompt you to connect your backend files (the database file and the look-up table). Once connected, the user interface file will remember the location of these backend files and will automatically connect you to them. If, however, you need to change backend files, you can manage these connections at any time by going to the Utilities tab on the home page of the database and choosing Connect data tables.
- If a pop-up window opens requesting you to disable macros, click *OK.* Then, when the message pops up with the security warning, click *Options* and re-enable macros.
- If you cannot open the user interface file, you probably need to set the location of the files in the Trust Center. Follow these steps:
  - Put all the database files into a new folder on the desktop.
  - Click on the upper left-most corner of the screen, the circle.
  - Click on *Open Access Options* at the lower right.
  - Click on the Trust Center to open it.
  - Click on *Trust Center Settings.*
  - Click on *Trusted Locations* on the left side of the screen to open it.
  - Click on *Add New Location.*
  - In the new window that opens, click on *Browse,* then find your folder with the database files in it, and then click on this folder, then click *OK.*
  - Back in the Add New Location window you should see the folder, then click *OK.*
  - Click *OK* in the Trusted Locations window.
  - Click *OK* in the Trust Center window.

Initial Set-up

1. Select Wilderness

- You must choose at least one wilderness area from the list. You can return at any time and select additional wilderness areas, if desired. Baseline year refers to the year that you complete a baseline assessment of wilderness character and is the year from which trend is measured for comparison.

2. Select Measures

- After you have chosen a wilderness area, click *Select Measures* to add the measures you will monitor. You will be prompted to indicate user and wilderness area; then you can either add new measures or edit existing measures.
- *Add New* allows you to add a new measure. Choose which Quality / Monitoring Question / Indicator the measure will fall under, and a Measure Definition screen pops up. Enter the name and definitions of the new measure.
- Enter *at least* one measure for every indicator question.

3. Weight Measures

- When you are finished selecting measures, you need to weight the relative importance of each measure within its indicator.
- If you have just one measure for an indicator the weight of the measure should be 100%.
- If you have multiple measures for an indicator, and you do not know the relative importance of the measures, weight the measures equally under the indicator so that the measures total 100%. For example, if you had four measures, each measure would receive a weight of 25%.
- If you have multiple measures for an indicator, and you have a reason to weight the relative importance of the measures unequally, you may do so, as long as the total weight of all measures combined equals 100%
- The total weight of all measures under an indicator must equal 100%. If the measures total 100% the weight number will be green. If the measures do not total 100% the number will be red.

Data Entry

1. Enter/Edit Data Values

- Once you have completed the initial setup you can begin entering data values. Choose *Enter/Edit Data Values,* then click on *Add New.* Select the measure that you would like to enter data for. When viewing the list of measures, if the measure needs data and is past due or needs to be initially filled, the text will be red under "Year of Measurement Value: Next:". If the measure needs to have data in the current year, the text will be yellow.
- You will be prompted to enter the measure value and the condition of the measure, the trend in the measure, and the quality of the data. You may comment on any of these entries.
- If this is not the first time you have entered data for the particular measure the previous data entries are displayed at the bottom of the window for reference.
- Closing the window saves the new values and returns you to the home main page.

2. Quality Control / Trend Calculation

- To complete a quality assurance review, choose *QA Checks/Calculate Trends.* Next, choose which year to evaluate. The Quality Assurance page will highlight where you have missing or incorrect information (highlighted in red) for that year and will redirect you to where you can fix the problem(s).
- Once problems have been fixed, and trends have been manually calculated for all measures, you can click the *Calculate Trends* button and the trends will be calculated for all levels (Indicators, Monitoring Questions, Qualities, Character).

3. Reporting

- To generate a report, click *Trend Report,* and choose the wilderness and year that you would like to generate the report for.
- You can only generate a report for a year that has passed its quality assurance check and has had its trends calculated.

Tools

Copy Data. You may copy measures, measure weights, and measure values from one wilderness to another if you want these to apply to different wildernesses that are under your jurisdiction.

Import National Data. In the future the database will have a function that will allow you to import data collected at the national level for specific measures into your database.

Keeping It Wild in the National Park Service: A User Guide to Integrating Wilderness Character into Park Planning, Management, and Monitoring.

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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