



National Wilderness Steering Committee



Guidance White Paper Number 2

Issue: WHAT CONSTITUTES APPROPRIATE CONSERVATION AND RESTORATION ACTIVITIES IN WILDERNESS?

Date: February 2004

Introduction to the Issue

The re-establishment and maintenance of natural ecosystem components and processes on national park lands through intervention has become an increasingly important resources management function. This is reflected in National Park Service Management Policies (NPS 2001: 4.15, 4.4). The reasons for increasing intervention include: (1) Additions to the National Park System of units where natural ecosystem components and processes have been altered by past human activities; (2) increasing fragmentation of the natural ecosystems of which national parks are a part; (3) increasing pervasiveness of regional and global anthropogenic stressors such as contaminants, light and sound pollution, and climate change; (4) new scientific and technological advances that improve the likelihood of successful intervention; and (5) improved understanding of and appreciation for the relationship among elements and processes in fully functioning ecosystems.

The nature of conservation activities has included: Reintroduction of extirpated native plants and animals; recovery of species listed under the Endangered Species Act; removal or control of introduced species; control of native species where natural control mechanisms have been lost; restoration, by means of prescribed burning or mechanical thinning, of vegetative and fuel structures to that which would have occurred without fire suppression; restoration of hydrologic regimes; liming acidified waters.

National Park System lands that have been designated or are managed as wilderness (the Wilderness Act of 1964, P.L. 88-577) may nonetheless be anthropogenically altered systems, some to a great extent. These altered wilderness lands may benefit from the conservation and restoration activities described above, sometimes leading to more fully functioning natural systems and enhanced wilderness character over the long run. However, both short-term restoration efforts and long-term conservation activities can negatively affect wilderness character and conflict with the directive of the Wilderness Act that those lands be "untrammeled." Consequently, the relationship of NPS conservation activities to wilderness law and policy is complex. This paper provides guidance on determining how and when to proceed with conservation actions in wilderness.

Relevant Laws and Policies

The Wilderness Act

With regard to both the activities of ecological restoration and the long-term outcomes of those actions, the Wilderness Act has a number of apparently relevant passages (passages edited for space; emphases added):

Section 2 (c):

“A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its **community of life are untrammelled by man** An area of wilderness is further defined to mean ...land **retaining its primeval character and influence**, without permanent improvements..., which is protected and managed so as to preserve its natural conditions and which ...generally **appears to have been affected primarily by the forces of nature**, with the imprint of man's work substantially unnoticeable...”

Section 4 (a)(3):

“...the designation of any area of any park, monument, or other unit of the national park system as a wilderness area pursuant to this Act **shall in no manner lower the standards evolved for the use and preservation of such park, monument, or other unit of the national park system** in accordance with the Act of August 25, 1916, the statutory authority under which the area was created, or any other Act of Congress which might pertain to or affect such area...”

Section 4 (b):

“Except as otherwise provided in this Act, each agency administering any area designated as wilderness **shall be responsible for preserving the wilderness character of the area** and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character. Except as otherwise provided in this Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, **conservation**, and historical use..”

Section 4 (c):

“Except as specifically provided for in this Act,... there shall be no permanent road within any wilderness area designated by this Act and, **except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act**, ...there shall be no temporary road, no use of motor vehicles, motorized equipment or motor-boats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.”

National Park Service Management Policies

4.1 General Management Concepts:

Biological or physical processes altered in the past by human activities may need to be actively managed to restore them to a natural condition or to maintain the closest approximation of the natural condition in situations in which a truly natural system is no longer attainable. Prescribed burning and the control of ungulates when predators have been extirpated are two examples. The extent and degree of management actions taken to protect or restore park ecosystems or their components will be based on clearly articulated, well-supported management objectives and the best scientific information available.

4.1.5 Restoration of Natural Systems:

The Service will re-establish natural functions and processes in human-disturbed components of natural systems in parks unless otherwise directed by Congress. Landscapes disturbed by natural phenomena, such as landslides, earthquakes, floods, hurricanes, tornadoes, and fires, will be allowed to recover naturally unless manipulation is necessary to protect park developments or visitor safety. Impacts to natural systems resulting from human disturbances include the introduction of exotic species; the contamination of air, water, and soil; changes to hydrologic patterns and sediment transport; the acceleration of erosion and sedimentation; and the disruption of natural processes. The Service will seek to return human-disturbed areas to the natural conditions and processes characteristic of the ecological zone in which the damaged resources are situated. The Service will use the best available technology, within available resources, to restore the biological and physical components of these systems, accelerating both their recovery and the recovery of landscape and biological-community structure and function...

4.4.2 Management of Native Plants and Animals

Whenever possible, natural processes will be relied upon to maintain native plant and animal species, and to influence natural fluctuations in populations of these species. The Service may intervene to manage individuals or populations of native species only when such intervention will not cause unacceptable impacts to the populations of the species or to other components and processes of the ecosystems that support them,...

4.4.2.2 Restoration of Native Plant and Animal Species

The Service will strive to restore extirpated native plant and animal species to parks whenever [stated criteria] are met.

4.4.2.3 Management of Threatened or Endangered Plants and Animals

The Service will survey for, protect, and strive to recover all species native to national park system units that are listed under the Endangered Species Act. The Service will fully meet its obligations under the NPS Organic Act and the Endangered Species Act to both pro-actively conserve listed species and prevent detrimental effects on these species.

4.4.4.2 Removal of Exotic Species Already Present

All exotic plant and animal species that are not maintained to meet an identified park purpose will be managed— up to and including eradication— if (1) control is prudent and feasible, and (2) the exotic species [possesses one or more stated attributes].

Reference Manual RM 41: Wilderness Preservation and Management

6.3.7 Natural Resources Management:

The principle of non-degradation will be applied to wilderness management, and each wilderness area's condition will be measured and assessed against its own unimpaired standard. Natural processes will be allowed, in so far as possible, to shape and control wilderness ecosystems. Management should seek to sustain natural distribution, numbers, population composition, and interaction of indigenous species. Management intervention should only be undertaken to the extent necessary to correct past mistakes, the impacts of human use, and the influences originating outside of wilderness boundaries. Management actions, including restoration of extirpated native species, altered natural fire regimes, controlling invasive alien species, endangered species management, and the protection of air and water quality, should be attempted only when the knowledge and tools exist to accomplish clearly articulated goals.

Appendix VI - Definitions:

Minimum Requirement Concept: The minimum requirement concept is a two-step process that documents 1) the determination as to whether or not a proposed management action is appropriate or necessary for the administration of the area as wilderness, and does not pose a significant impact to the wilderness resources and character; and, 2) the selection of the management method (tool) that causes the least amount of impact to the physical resources and experiential qualities (character) of wilderness.

Analysis and Guidance

In the wilderness community recently some have contrasted “natural” with “wild.” Both Cole (2000) and Landres et al. (2001) find a significant difference between these words, particularly as applied to wilderness, while Turner (1996) argues that “wild” precludes intentional human intervention. These authors emphasize leaving nature alone to manage itself. On the other hand, Graber (1985, 1995, in press) has argued, as did McKibben (1989), that the pervasive and insidious magnitude of human activity has largely rendered the distinction between “wild” and “natural” moot. This is particularly true in many of the small, eastern lands Congress has set aside as designated Wilderness. There is, for example, very little wild about Cumberland Island Wilderness on Cumberland Island National Seashore, which includes roads, motor vehicles, many introduced species, and several key species extirpated. Yet through time, if this were desired, alien species could be removed, natives species reintroduced, a natural fire regime re-started, and human construction removed. Similarly, some other small designated wildernesses, as well as larger ones adjacent to development, suffer substantial deviations from aboriginal wilderness character. They may require urgent intervention and long-term maintenance simply to

preserve what remains of their original native biodiversity, and sometimes what remains is quite irreplaceable. To put it another way, a case can be made that their value as managed reserves of biodiversity exceeds their value as “wilderness.”

The *appearance* (Sec. 2[c]) of wildness is in the eye of the beholder: An ecologist or scientifically educated naturalist sees anthropogenic alteration where someone not so schooled does not, while many conservation actions are quite obvious to the casual observer. The use of “untrammeled” in the Act refers to *intentional* control or manipulation of the “community of life” (Zahniser 1963, Scott 2001) but ecological consequences ensue regardless of the degree or distance of intention. Wilderness landscapes have always been and will continue to be subject to both natural and anthropogenic changes. The pace of landscape change in the United States and the rest of the world is accelerating. So is human appropriation and alteration of nature. Yet locally, although perhaps only temporarily, those changes can largely be stopped, even reversed, with sufficient knowledge and effort. The disturbances introduced by ecological restoration—the loss of wilderness character—need not represent permanent loss.

A way to evaluate the appropriateness of restoration and other conservation activities in wilderness: The outcomes of conservation activities can be considered to offer varying degrees of benefit to wilderness ecosystems, while the activities themselves impose varying magnitudes and longevities of compromise to wilderness character. Unavoidably, determining which actions should proceed and which should be avoided will be location specific and subjective. The following classification scheme is intended merely to help structure the analysis. It provides three artificial categories of conservation activities and examines the relative impacts and benefits of each. It is intended only as a guide.

Class I:

Short-term wilderness disturbance

Long-term wilderness character enhancement

This class of activity entails one-time reversals of anthropogenic changes that, once accomplished, are self-sustaining. Users of wilderness might well encounter restoration activities that would typically result in impacts to wilderness character lasting a season to perhaps several years. Often, these impacts include temporary markers such as flagging, or tags and radio-collars on animals. Some of this, such as dam removal, may require heavy equipment. Upon completion, however, traces of the restoration activity would be extinguished over a short period of time, while the benefits of “re-wilding” and naturalness to wilderness character would be long-term.

Examples:

- Reintroduction of self-sustaining native species
- Extirpation of invasive alien species
- Restoration of natural fire regimes
- Restoration of natural hydrologic regimes

Class II:
Long-duration or recurring entry
Benefits and costs to wilderness character

Many ecosystems that include wildernesses suffer anthropogenic disturbances for which we lack the knowledge, the legal authority, or the financial resources to correct permanently at the present time. For example, introduced weedy plants often invade natural areas from adjacent lands, and require regular removal and frequent monitoring. Periodic liming of some eastern streams mitigates acid precipitation and permits continued survival of native fish and amphibians which otherwise would be entirely eliminated from the ecosystem—at least until the source pollution is eliminated. Pyrophytic ecosystems the lie adjacent to developed lands may no longer receive sufficient natural fire ignitions, or those ignitions are no longer socially acceptable; however, periodic managed ignitions may accomplish most of the objectives of maintaining the natural structure and composition of the native biological community. Small, anthropogenically isolated populations of large mammals, such as mountain sheep, may lack the demographic or genetic size for long-term viability. However, periodic infusions of additional animals can help assure survival. These nature-maintenance activities reflect the sad reality that many designated wildernesses, and other kinds of nature reserves, are simply too small or disconnected to sustain their full suite of ecosystem functions without intervention. The National Park Service manager must ultimately weigh the restoration benefits to the ecosystem against the impacts to other aspects of wilderness character.

Examples:

- Periodic control of persistent introduced species
- Indefinite extent of planned ignitions
- Reintroduced species requiring continuing support
- Mitigation of acidified waters

Class III:
Support of laws or NPS policies
Don't directly enhance wilderness character

These activities represent substantial impacts on wilderness character. They clearly violate the intent of the Wilderness Act. Some of these, such as control of pests, reflect the incapacity of some landscapes designated as wilderness to function as such either ecologically or politically. On the other hand, some severe interventions, such as the removal of native organisms for restoration elsewhere, illuminate the fundamental and unavoidable connections between many wildernesses and their surrounding, more modified landscapes. Ultimately, decisions in this category may require a public review for their resolution.

Examples:

- Habitat modification for endangered species

- Regulation of predator or prey numbers when an area is too small for natural regulation or natural controls have been lost
- Control of native pests or dangerous species to protect life or property outside wilderness.
- Removal of native organisms in support of restoration elsewhere.

None of the activities in any class is necessarily precluded by statute, regulation, or policy. However, when one is considering the activities listed in Class III that invoke *Section 4(c)* of the Wilderness Act, you must carefully weigh the benefits against the significant impacts on wilderness character, and consider whether the proposed restoration activity is sufficiently beneficial to outweigh those impacts. An excellent and comprehensive discussion of the management and restoration of wilderness ecosystems is provided by Franklin and Aplet (2002).

Literature Cited

- Cole, David N. 2000. Paradox of the primeval: Ecological restoration in wilderness. *Ecological Restoration* 18:2, 77-86.
- Franklin, Jerry F. and Gregory H. Aplet. 2002. Wilderness ecosystem. Pp. 263-285 in *Wilderness Management: Stewardship and Protection of Resources and Values*, 3rd Edition. Hende, John C. and Chad P. Dawson, eds. Golden, Colorado. Fulcrum Publishing..
- Graber, David M. 1985. Managing for uncertainty: national parks as ecological reserves. *George Wright Forum* 4:3, 4-7.
- Graber, David M. 1995. Resolute biocentrism: The dilemma of wildness in national parks. Pp. 123-135 in *Reinventing Nature?: Responses to Postmodernism Deconstruction*. Soulé, Michael E. and Gary Lease, eds. Washington, D.C. Island Press.
- Graber, D. M. 2003. Ecological restoration in wilderness: Natural versus wild in National Park Service wildernesses. *George Wright Forum* 20(3):34-41.
- Landres, Peter; Brunson, Mark W.; Merigliano, Linda 2001. Naturalness and wildness. the dilemma and irony of ecological restoration in wilderness. *Wild Earth* 10:4, 77-82.
- McKibben, Willam. 1989. *The End of Nature*. New York. Random House.
- Scott, Douglas W. 2001. "Untrammled," "wilderness character," and the challenges of wilderness preservation. *Wild Earth*. Fall/Winter 2001-2002. 11:4, 72-79
- Turner, Jack. 1996. *The Abstract Wild*. Tucson. University of Arizona Press.
- Zahniser, Howard 1963. Guardians not gardeners. *The Living Wilderness*. 83, 2.