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Dedicated to the Protection, Preservation and Management
of Cultural and Natural Parks and Reserves
Through Research and Education

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THE GEORGE WRIGHT FORUM

Volume 14



1997



Number 1

Benjamin Hunter Thompson, 1904-1997	2
<i>Howie Thompson</i>	
Society News, Notes & Mail	8
Box Sixty-Five: Commentary	
Between Jihad and McWorld: Parks and the Question of National Identity	11
<i>David Harmon</i>	
<hr/>	
<i>Wildlife in Parks: Policy, Philosophy, and Politics</i>	
John Donahue, Guest Editor	
Introduction	15
<i>John Donahue</i>	
Managing Wildlife in the Parks: The Legal Basis	18
<i>Frank Buono</i>	
Wildlife Management in America's National Parks: Preparing for the Next Century	25
<i>Dan E. Huff</i>	
Our National Park Policy: Some Thoughts on Politics and the Role of Science	34
<i>John Freemuth</i>	
Embracing Human Values in National Park Management	38
<i>Allen T. Rutberg & Wayne Pacelle</i>	
Wildlife in Parks: Policy, Philosophy, and Politics	47
<i>John Donahue</i>	
<hr/>	
Mitigating Effects to Battlefield Landscapes: A National Park Service- U.S. Army Corps of Engineers Partnership	56
<i>Noel G. Harrison</i>	
Developing a Business Approach to Protected Areas Management	66
<i>Neil Munro</i>	
Book Review: <i>Science and Ecosystem Management in the National Parks</i>	76
<i>Ronald D. Hiebert</i>	
About the George Wright Society / Membership Form	80

On the Cover:

Yellowstone Bison. *Photograph courtesy of Yellowstone National Park.*

Benjamin Hunter Thompson, 1904-1997

This issue of THE GEORGE WRIGHT FORUM is dedicated to the memory of Benjamin Hunter Thompson, who died March 13, 1997, at the age of 92. Ben Thompson was the last remaining NPS colleague of George Wright, having co-authored with him the seminal first two issues of the monograph series "Fauna of the National Parks in the United States." More than this, Thompson was Wright's friend in life and keeper of his memory after his untimely death in 1936. Ben's lifelong ties to Wright were further signified through his marriage to Mathilda Jane Ray, the sister of George's wife, Bernice "Bee" Ray.

Benjamin Hunter Thompson was born in Cincinnati, Ohio, on June 29, 1904. He was one of five children born to Henry and Alice Thompson. His father was a minister and pastor of several congregations in the Presbyterian Church. The family moved to Peoria, Arizona, in 1911 and lived on a ranch managed by Ben's grandfather. His father worked on the ranch and occasionally conducted Sunday church services. Ben grew up in Peoria and worked on the ranch to assist his father. He went to a two-room schoolhouse for the first eight grades, and subsequently to Peoria High School from which he graduated in 1923. He worked for a year on a survey team in Los Angeles before entering Stanford University in the fall of 1924.

Ben helped cook and serve meals in the home of a generous couple in Palo Alto for room and board the first year, and he waited on tables in a campus dining room the remaining three college years to pay his way through school. During the summers he worked as a waiter in the Awahnee Hotel in Yosemite National Park. Ben developed a life-long love of the national parks during his summers in Yosemite. The grandeur of the park and the deep friendship he developed with George Wright, who was an assistant naturalist there at that time, were the origins of that life pursuit.

Thompson graduated with a Bachelor's degree in Philosophy in 1928 and received a Master's in Vertebrate Zoology at the University of California at Berkeley in 1932. While at Berkeley, he began working part-time for the National Park Service in the newly established wildlife survey office.

In 1932 Ben became a full-time employee of the NPS. The first couple of years of his career were divided between being a wildlife survey office biologist and a park ranger-naturalist at Yellowstone. The survey office was created by George Wright and included Ben and Joseph S. Dixon. George Wright's purpose in forming the office was to conduct preliminary surveys of the status of wildlife and to identify urgent wildlife problems in the national parks. In each park, effort was made to determine original and present wildlife conditions, identify causes of adverse changes, and recommend actions that would restore park wildlife to its original natural condition, insofar as possible.



Ben H. Thompson, *circa 1950*

Most of the national parks and several of the large national monuments then existing were studied in the first three years by members of the survey group. Special attention was devoted to ascertaining what was happening to rare and endangered species, such as the trumpeter swan; the conditions and carrying capacities for park elk and deer winter ranges; the causes of conflict between park visitors and wildlife, notably black and grizzly bears; and what could be done to achieve the desired harmony. The outcome of these efforts was the well-known "Fauna of the National Parks" series.

The first "Fauna" monograph (which was co-authored by Wright, Thompson, and Dixon), completed in May 1932 and published in 1933, was titled "A Preliminary Survey of Faunal Relations in National Parks." The approach taken by this study placed the authors at the cutting edge of ecological research in parks. They advocated such revolutionary practices as fixing park boundaries to include all the habitat required by important vertebrate species, leaving dead trees standing to provide nesting for birds, and discouraging the feeding of animals by visitors—all of which eventually became accepted tenets of park management.

The second "Fauna" monograph, "Wildlife Management in the National Parks," was co-authored by Wright and Thompson alone. It was completed in July 1934 and published in 1935. Of special interest in this publication are the two chapters contributed solely by Ben Thompson. In "A Wilderness-Use Technique" he considers the educational role of wilderness preservation in Yellowstone, how the "secret beauty of wilderness" can be "opened to the people and remain unspoiled"—a "thing so glorious that it threatens to be impossible." Ben gets at the question through a hypothetical example: What if a new road through the park were proposed, and in its surveyed path lay a nondescript lake, neither spectacular nor uncommon, but important nonetheless as bird habitat. Should the road go ahead and skirt the lake or be re-routed, at considerable expense, away from this sensitive area so that only the most motivated visitors could reach it by foot? Needless to say, Ben opted for the latter: no small declaration in a time when aesthetic considerations were paramount in the minds of NPS planners.

He extended this line of reasoning in "National Parks and Wilderness Use." Decrying the still-prevalent attitude that such predators as cougars ought to be eliminated from the wild to protect favored game species (e.g., deer), Ben went on to point out that "wild animals know nothing about the arbitrary boundaries which man draws on maps to indicate areas set aside for his different types of wilderness use [the sense here is of wild lands in general]. Animals wander back and forth, as seasons and quest for food dictate, across refuge or hunting ground, park or forest, as the case may be. What affects the deer or cougars in the environs will also affect them in the game sanctuary [e.g., a national park] itself." When cougars are being systematically slaughtered on the Kaibab Na-

tional Forest (as they were at that time) they will become scarce in Grand Canyon National Park. Obvious though this seems to us now, such considerations were by no means widespread then. The point, Ben concludes, is that "we cannot stress the value of one animal at the expense of another, for if we do our lopsided vision is reflected in poor management which wrecks the whole organic wilderness. Moreover, acquaintance with, or utilization of, the infinite variety of wilderness processes and creatures has far greater recreational potentialities than any sentimental addiction to a few, obviously harmless, pretty creatures." Here, in the space of two remarkable sentences, Thompson anticipates some thoroughly modern conservation concerns: the holistic functioning of an intact natural community, the spiritual utility of preserving biodiversity, and the move away from anthropomorphizing wildlife.

Aside from their valuable intellectual content, these chapters show Ben to be the possessor of a lovely, vigorous prose style. Here he sets the scene for "A Wilderness-Use Technique":

In northwestern Wyoming is a land guarded by mountains. It is a wilderness of forest, swamps, and lakes, broken by cliffs and lofty granite spires, and chiseled by crackling ice and the sunny dripping of water. Long river tentacles reach up to this high plateau from different oceans. In winter it is a land of heavy snow and sweeping sleet, and sometimes the night is whiter than day. Then the elk herds drift down from the sage and aspen valleys where the rivers go to warmer levels. The weasels turn white with little black tips, and the snowshoe rabbits have black-edged ears above muffed feet. Sometimes a great gray owl comes softly out of a wet sky. In spring it is a land of mist-blue forests and sparkling lakes. The summer haze begins to rise from the forest and makes the great mountains look like bluer shadows in a blue sky. Ocean birds come sailing in to nest in unseen swamps. There is the mute whistle of ducks, the call of geese, and the 'weer' cry of gulls. The marsh grass grows in seeping ground and the forest blooms; the pond lilies push their soft yellow lamps above water, and sage and lupine bask in the sun.

As important as George Wright's association was to his early career, it should not be allowed to overshadow Ben Thompson's considerable later accomplishments.

In 1934 Ben was transferred to the Washington office to continue the same work. He was appointed assistant to the director from 1935 to 1937, when he was selected to head the Land Planning Division. In 1945 Ben became assistant superintendent at Lake Mead National Recreation Area and remained there until 1947 when he returned to the Washington office as a special assistant to the director.

From 1951 to 1961 he was chief of the Division of Recreation Resource Planning, where he was responsible for the NPS's programs of national park system planning, recreation surveys, and cooperation with the states. During this time Ben played a major part in the formulation and promotion of the Mission 66 Program. The National Park System was in a precarious condition brought about by the lag in appropriations during and following World War II. Park facilities and infrastructures were in a state of disrepair and obsolescence. The Mission 66 Program was a ten-year project, initiated in 1956, which was designed to upgrade these facilities by 1966, the date of the NPS 50th anniversary. Mission 66 was well-received by President Eisenhower and Congress and resulted in significant annual increases in appropriations for the NPS during its duration. In October 1961 Ben was promoted to assistant director for resource planning. In December 1963 he was named assistant director in charge of resource studies. In December 1964 Ben Thompson retired from the National Park Service after 35 years of public service.

During his work with the NPS, Ben wrote numerous articles on national and state park subjects and collaborated or provided oversight on a variety of park and recreation reports and publications. Ben played an extensive part in the preparation of reports on *Recreation Use of Land in the United States* and *A Study of the Park and Recreation Problem of the United States*. However, the most notable and influential of the publications were the Atlantic, Pacific, and Gulf Coasts Recreation Area Surveys; the Great Lakes Recreation Area Survey; the Parks for America Survey; the Alaska Recreation Studies; and the Colorado River Basin Study. These documents and Ben's subsequent efforts were major factors that ultimately led to the inclusion in the National Park System of such park units as Cape Cod, Assateague Island, Padre Island, Channel Islands, and Point Reyes national seashores; Pictured Rocks, Sleeping Bear Dunes, and Indiana Dunes national lakeshores; Great Basin, Guadalupe Mountains, and Canyonlands national parks; Big Horn National Recreation Area; Ozark National Scenic Riverways; C&O Canal National Historical Park; and St. Gaudens National Historic Site. In previous years, Ben had played a significant role in the planning and establishment of Everglades, Olympic, Mammoth Cave, Big Bend, Kings Canyon, and Grand Teton national parks, and Sunset Crater and Wupatki national monuments. In addition to his influence in the expansion of the System, Ben was also responsible, among other things, for the strengthening of the Park Service science program. The scientific analysis and conservation of natural areas were Ben's life aim since his college days at Berkeley.

While Ben was still in the NPS he served with distinction on the Federal Inter-Agency Committee on Recreation, was treasurer and vice president of the National Conference on State Parks (NCSP), and chairman of the National Advisory Committee on Federal Recreation of the National Recreation Asso-

ciation. His extensive work with these organizations over the years resulted in enhanced coordination and cooperation among the NPS, other federal agencies, and the various state parks. He also acted in an advisory capacity to the state parks board with regard to park and recreation planning.

In 1965, after his retirement from the NPS, Ben was appointed associate executive director of the Hudson River Valley Commission. In that capacity, he provided oversight in the production of the *Report on Historic Sites and Buildings in the Hudson River Valley*. Subsequent actions taken by the commission and the state of New York resulted in greater protection of some of the structures presented in the report. Upon its completion, Ben was appointed executive secretary of NCSP. He worked part-time in this position until 1969, when he retired for the final time.

Ben and his wife Mathilda Jane (Janey) Thompson retired to their home in Glen Echo, Maryland. In the spring of 1977, they moved to Glenwood, New Mexico, and bought a house overlooking the San Francisco River near the Gila Wilderness. They established a number of friendships in Glenwood and spent many happy years there. Janey passed away in February 1992 and Ben moved to Denver, Colorado, in September 1996 when his health began to fail. He died six months later after a short illness.

During Ben's illustrious public career he was the recipient of several major awards. In 1957 he received the Pugsley Gold Medal from the American Scenic and Historic Preservation Society; in 1958, the Distinguished Service Award of the Department of the Interior; in 1964, one of the ten American Motors Conservation Awards in the professional category; and in 1965, a Distinguished Service Award by the American Institute of Park Executives.

Ben actively supported The George Wright Society from its founding in 1980. In fact, he wrote the very first article to appear in the pages of the FORUM: a biographical sketch of Wright. It was, and remains, the finest published account of Wright's brief life. "THE GEORGE WRIGHT FORUM is deeply indebted to Ben Thompson for the fine piece on Wright carried in this issue," wrote the editor, Jean Matthews. "Throughout his restrained tribute to Wright, Thompson's words imply the selfless dedication of an exceptionally winsome human being, intent on mobilizing the cream of the scientific talent then available and doing so in an orderly, useful way." Something of Ben's own personality is caught in this remark.

Ben Thompson is survived by, among others, his sons George Wright Thompson, Henry Ray Thompson, and Oliver Howie Thompson; his nieces Sherry Wright Brichetto, Pamela Wright Lloyd, and Mary Ann Lawrence; and a nephew, the Reverend William E. Mills.

— Howie Thompson

Society News, Notes & Mail

The 9th Conference Weathered Rather Well in March

About 580 persons attended the 9th Conference on Research and Resource Management in Parks and on Public Lands, March 17–21, in Albuquerque, New Mexico. From comments we've gotten here, it was well-received by attendees and the weather in Albuquerque hardly could have been improved upon during the entire week.

Three Awarded for Superior Performance

At the Awards Banquet held on Thursday evening of the Biennial Conference, March 20, awards were presented to three deserving individuals—

Receiving the award for his contributions to Cultural Resource Management was **Rowland Bowers**. On the plaque presented is "In Recognition of Rowland Bowers For His Demonstrated Leadership in Setting a High Standard for Cultural Resource Management Within The National Park Service and Throughout the Entire Federal Historic Preservation Program."

Russell E. Galipeau, Jr. was awarded the Natural Resource Management Award with a plaque reading "For His Demonstrated Leadership in Managing Natural Resources in the Wrangell-St. Elias National Park and Preserve Ecosystem, and in Building Working Relations with Other Agencies and the Local Community."

Receiving the Society's highest award, The George Melendez Wright Award for Excellence, was **Bruce M. Kilgore**, whose plaque reads "For His Major Contributions to The Science of Fire Ecology in Natural Ecosystems and for His Superior Abilities in Research Administration within The National Park System."

List of Conference Participants

We have a considerable number of conference participant lists. Anyone wishing a copy (or copies) please call or write—they're free while they last.

Conference Proceedings

Proceedings of the 1997 conference are scheduled to be available in the fall. At a later time this year we'll have details—such as price—so that those who did not attend may order copies. All those who attended the conference will automatically receive a copy since it was included in the conference fee.

Nominations Open for Two GWS Board Seats, 1998–2000

The 1997 Board election, which will take place this October, will be for the seats of two incumbent board members. John Donahue, Superintendent of George Washington Birthplace National Monument, and Richard W. Sellars,

Historian, Southwest System Support Office, are eligible for re-election to a second term of office. We are accepting nominations for those who wish to run in opposition to these two incumbents. Nominations are open through July 1, 1997. To be eligible, a nominee must be a GWS member in good standing; be willing to travel to Board meetings, which occur once or twice per year; and be willing to serve on Board committees and do other work associated with the Society. Travel costs and per diem for the Board meetings are paid by the Society; otherwise there is no remuneration. The procedure is: members make nominations for the ballot to the Board's Nominating Committee, which makes a selection from these nominations to determine the final ballot. (It is also possible for members to place candidates directly on the ballot through petition; for details, contact the GWS office.) To propose someone for candidacy (and it's perfectly acceptable to nominate one's self), send her or his name, mailing and e-mail addresses, and telephone and fax numbers to: Nominating Committee, The George Wright Society, P.O. Box 65, Hancock, MI 49930-0065 USA. All nominees will be contacted by the Nominating Committee to get background information before the ballot is determined. Again, the deadline for nominations is July 1, 1997. One other Board director, Elizabeth Smart, Chief Curator of California State Parks, completes her second term as an appointed director. It is perfectly acceptable for GWS members to recommend persons to fill appointed positions on the Board; however, the Board has "the last say."

**Seventh International Symposium on Society and Resource Management
May 27-31, 1998 • University of Missouri-Columbia**

This biennial symposium focuses on the contributions of the social sciences to understanding the environment and resource management. Activities include paper and poster sessions, panel and roundtable discussions, film sessions, and field trips. Hosted by the University of Missouri, the Symposium welcomes researchers, managers, academicians, policy specialists, and students interested in the human aspects of resource management. For information on participation, visit our website [<http://silva.snr.missouri.edu/issrm>] or contact: Dr. Sandy Rikoon, ISSRM Co-Chair, University of Missouri-Columbia, Rural Sociology, Sociology Building 108, Columbia, MO 65211. Telephone: 573-882-0861; fax: 573-882-1473; e-mail: ssrsjsr@muccmail.missouri.edu

**Conference Announcement: Wilderness Science in a Time of Change
May 17-22, 1999 • Missoula, Montana**

Since the first National Wilderness Research Conference in 1985, interest in wilderness has increased, international and societal definitions of wilderness have evolved, and wilderness science has improved. This conference will pre-

sent research results and synthesize knowledge and its management implications. This conference should result in a state-of-the-art understanding of wilderness related research. It will also improve our understanding of how research can contribute to the protection of wilderness in the 21st century. Considerable attention will be devoted to the ever-changing role of wilderness in society, and the need to better integrate diverse social and biophysical sciences.

Plenary sessions at this conference will explore:

- The values of the transactions between science and wilderness.
- The need to more precisely define what wilderness is, so that the scientific process can be more effectively applied to wilderness management.
- The implications of changing societal definitions of wilderness, increasing technological development and external pressures.

Concurrent sessions will strive to allow specialists within subdisciplines to focus on cutting-edge issues and provide opportunities for participants with diverse specialties to share their perspectives on broad interdisciplinary questions. Please anticipate a call for papers and further information later this year. Conference proceedings will be published. For more information about this conference, please contact: Natural Resource Management Division, Center for Continuing Education, The University of Montana, Missoula, MT 59812 USA, 406-243-4623, 888-254-2544 (toll-free), or ckelly@selway.umn.edu (e-mail).



Box 65: Commentary from the GWS Office and Our Members

Between Jihad and McWorld:

Parks and the Question of National Identity

When we look back at our century—fast slipping away from us now—and erect, in our minds, the milestones by which we will judge its history, the close of the Cold War has to rank as the most momentous political event since Hitler's defeat. The Soviet Union came to its end, not with a bang, nor even a whimper, but with ... with no sound at all. It simply dissolved, seemingly overnight. With it went an entire generation's way of looking at the world: the idea of good nations standing rock-solid against evil ones, the simplistic but handy metaphor of duelling superpowers calling the global tune, and, of course, hanging over and coloring it all, the prospect of nuclear war as filtered through that ultimate affront against logic: the idea that security could be had only through the threat of "mutual assured destruction."

When the Wall came down a few years ago, I was hopeful enough to believe that the result would be a bit of a respite from our global anxieties, that we would get to turn down the burners for awhile and get in a few years' worth of work building a more amicable global community. How naïve. It turned out that the Cold War, miserable though it was, did have the cardinal virtue of bestowing an intelligible structure on the politics of the planet. When it evaporated we had nothing comparable to put in its place, and in the void some of our species' worst parochial (some would say "tribal") tendencies came to the surface. Since then, as we all know, we have had Bosnia, Rwanda, and a hundred other lesser conflicts whose roots and dynamics seem hopelessly obscure to outsiders.

At the same time the pell-mell advancing front of technology and science has impugned our very notions of reality. Any ethical concerns we laypersons might have about where all this is taking us are of no concern to the technogeeks who imbibe the Internet: they revel in the lung-bursting speed of change in their virtual universe and sneer at the trepidations of the rest of us. The community of professional scientists is somewhat better; at least one gets the sense that they understand there might be ethical implications to their more controversial findings. But even here the reductionist compartmentalizing of modern scientific research tends to produce practitioners who cannot put their results into any sort of ethical context. So average folks are yanked from cell phones to cyberspace to sheep-cloning with no time to catch their breath. Instead of relieving anxieties, the end of the Cold War, coupled with the dizzying pace of technological change, has left us with a new world disorder to

sort out. In place of the Cold War's good-versus-evil dichotomy we now have a battle between those who wish to reinforce traditional cultural differences in the name of stability, and those who embrace change for change's sake as the new path to global harmony.

The contrast between the retrogressive and progressive extremes in current world affairs is the subject of a recent, very readable book by the American political scientist Benjamin R. Barber, titled *Jihad vs. McWorld* (New York: Times Books, 1995). His terms are, obviously, telegraphic for the sake of convenience, with "Jihad" (the Islamic term for a Holy War) connoting a passionate, inward-looking, dogmatic affirmation of identity in ancient ethnic, religious, and racial affiliations, as contrasted with the breezy, outward-looking, capitalist-driven "McWorld" where technology is celebrated and global differences gleefully erased. As Barber puts it:

The first scenario ... holds out the grim prospect of a retribalization of large swaths of humankind by war and bloodshed: a threatened balkanization of nation-states in which culture is pitted against culture, people against people, tribe against tribe, a Jihad in the name of a hundred narrowly conceived faiths against every kind of interdependence, every kind of social cooperation and mutuality: against technology, against pop culture, and against integrated markets; against modernity itself as well as the future in which modernity issues. The second paints that future in shimmering pastels, a busy portrait of onrushing economic, technological, and ecological forces that demand integration and uniformity and that mesmerize peoples everywhere with fast music, fast computers, and fast food—MTV, Macintosh, and McDonald's—pressing nations into one homogeneous global theme park, one McWorld tied together by communications, information, entertainment, and commerce. Caught between Babel and Disneyland, the planet is falling precipitously apart and coming reluctantly together at the very same moment (p. 4).

One of the ironies of this situation, as Barber goes on to thoroughly demonstrate, is that both Jihad and McWorld tend to corrode existing nation-states: Jihad through secessionist demands for independence and recognition of cultural distinctiveness, McWorld through its main instrument—the modern multinational corporation, which increasingly owes little or no allegiance to individual countries and whose power in many spheres (e.g., telecommunications) outstrips that of national governments.

What does all this have to do with parks? Plenty. We must remember that protected area systems are important social institutions, particularly at the national level, and as such have been used frequently as agents to consolidate national identity. Nowhere is this more apparent than in Canada, where in 1994 the national parks agency (then called the Canadian Parks Service, now again known as Parks Canada) joined a newly created Department of Canadian

Heritage, which itself was a not-so-subtle response to the Quebec secessionist movement. Canada's unique political system—a loose confederation of highly autonomous provinces, further dissected along the cultural lines of Anglophones, Francophones, and First Nations—has engendered perpetual debates about what it means to be Canadian. Faced with the real prospect of Quebec's departure hanging on the outcome of a 1995 referendum, the federal government grasped the symbolic importance of Canada's national parks and historic sites and enlisted them in the battle over the country's future. Although it's unlikely that this action alone had any important effect on the vote, the important thing is that recognition was given, and generally accepted, that protected areas are of national heritage significance and value to Canada, and should be promoted as federal symbols. (In the end, the secessionists lost the referendum, but by a razor-thin margin. The issue remains far from settled, with the possibility of additional referendums to come.)

Here in the USA, the rising debate over what constitutes our nationhood has called into question the continuing relevance of the time-honored "E pluribus unum" out-of-diversity-comes-unity theme. The response of the National Park Service (as mediated through Congress and outside interest groups) has been dramatic: over the past generation the bureau has made an attempt to broaden the National Park System to include urban recreation areas, park units whose significance resides in their association with specific ethnic groups, and sites that commemorate neglected facets of American history (e.g., Women's Rights National Historical Park). The inclusion of such areas as Maggie Walker National Historic Site, which commemorates the accomplishments of an African-American woman banker, testifies to this new direction. I daresay that Stephen Mather, the father of the National Park Service, never in his wildest dreams imagined that such a park would come to stand alongside Yellowstone: the conception of "national significance" (read: national identity) has changed that much.

Probably the most explicit statement of American identity in its national parks can be found at Mount Rushmore National Memorial, where the larger-than-life faces of four of the country's icons—Washington, Jefferson, Lincoln, and Theodore Roosevelt—are chiseled into a mountainside for all to see. The intended message is plain: these men built America, and their creation is going to stand as long as this granite does. We are invited to marvel unreservedly at this "shrine of democracy."

But democracy in today's America, declaring itself in all its untidy diversity, no longer superintends a unanimous interpretation. Not a few Native Americans and others sympathetic to them see Rushmore as nothing more than a desecration of the Black Hills, symbol of one of the grandest thefts in the history of the continent. On posters and T-shirts they have reinterpreted the Memorial with a fifth face, Sitting Bull's, peering above the others. The caption reads "Shrine of Hypocrisy" with a further legend: "Always remember—your

fathers never sold this land.” Such counter-assertions tend broadly toward the Jihad stream of political activity identified by Barber.

The McWorld side of the ledger is relevant to the question, too. National identity, indeed the very idea of nationhood, depends on fostering a positive connection to a real, coherent, graspable expanse of Earth; otherwise the fictions of invisible boundary lines drawn on flat pieces of paper become totally untenable. Yet we are witnessing the coming of age of a generation of young people for whom Nintendo, the Web, and saturation cable TV are second nature—in fact, more second nature than Nature itself. No one really knows how this will play out, but it’s clear that the various virtual realities being dished up are radically disconnected from any tangible on-the-ground sense of place. Indeed, as the very landscape becomes less regionally distinctive (another McWorldian consequence), more and more places fit Gertrude Stein’s famously caustic description of Oakland, California: “There isn’t any *there* there.” This emerging state of affairs has the potential to leave national-level protected area systems—predicated as they are upon ideals of national significance that must seem positively antique, if not downright baffling, to the average 20-year-old—in an increasingly marginal position.

The potential problem becomes even more acute when we look at those protected sites which are devoted to national history. In a future-oriented McWorld, all age groups, and not just youth, are tacitly encouraged to see the past as a foreign country (borrowing a phrase from David Lowenthal). To flog the example of Mount Rushmore one more time, in an era where proficiency at channel surfing is more widespread than a knowledge of history among the American populace, it is questionable how many tourists to the Memorial really grasp (either uncritically or not) the achievements of the men who look down so serenely upon them.

The Cold War is dead, and I for one am not in mourning. I’m not sure any of us would have chosen what has come forth to take its place, but, honestly, is anyone (other than politicians running for re-election) really ready to entertain the idea that humankind collectively chooses its path to the future? There are too many diversities, too much contingency; that’s what the Jihad-versus-McWorld debate is all about. In any case, however all these tangled questions work out, we can be sure that protected areas will be changed in the answering.

Dave Harmon is Deputy Executive Director of The George Wright Society. The views expressed in “Box 65” are those of the author and do not necessarily reflect the official positions of the GWS. *Reminder:* This column is open to all GWS members. We welcome lively, provocative, informed opinion on anything in the world of parks and protected areas. The submission guidelines are the same as for other GEORGE WRIGHT FORUM articles—please refer to the inside back cover of any issue.

Introduction

More than half a century ago George Wright sent the National Park Service down a path toward recognition and understanding of the discrete resources that make up our national park lands and waters. Today we continue the struggle to advance the knowledge necessary just to make any valid policy choices regarding the intricate and complex web of life we strive to manage. While accepting the sheer hubris of asserting any right or ability to manage the natural world at all, we must nonetheless persevere in our attempts to meet our land management mandates.

The National Park Service is an agency whose mandate is to preserve and protect in perpetuity. The agency has recently recognized the need for strategic planning and is moving forward within the context of the planning that our societal and governmental structures allow. An agency whose mandate is perpetuity, however, should plan in terms of centuries. Decades should represent the time frame allotted to accomplish their short-term goals. I understand how ludicrous this seems within the realities of a partisan and chaotic political world, but only by proposing grand visions can a bureaucracy transcend the petty and the mundane.

What are the things we wish to preserve for those who follow us? Among them is certainly the sight, the sound, and the feeling of knowing free-ranging wildlife. The song of the warbler or the sight of the wolf taking down a prey are a heritage as every bit as great as the pyramids or the acropolis. Perhaps they are greater still, since they are things we cannot create, but can only destroy or help to

preserve.

The great wilderness we strive to preserve, without the wildlife as we know it today, will seem an epic poem with only every other word extant. It will be a temple where we once spoke to the gods, but today are heard no more. That is why this issue of the FORUM opens a discussion of the single most endangered of all national park attributes: free-ranging wildlife populations.

For almost a century, we have attempted to match a philosophy based on managing wildlife as a renewable economic and recreational resource with a system that reveres its wildlife as treasures to be preserved for future generations. It has never worked well and this basic paradigm conflict will continue to focus unwarranted—as well as justified—criticism upon an agency that is simply trying to implement its own mission.

In light of the fact that many of us consider wildlife, as we know it, to be the single resource most at peril in the next century, I have gathered a distinguished group of forward-looking

individuals to spur us all into an intellectual discourse on this very subject. John Freemuth will share with us his views on policy formation and the place and validity of science in that process. Freemuth is a prolific writer on park preservation and land management issues. Like many of us, he has often wondered why many scientists believe their view is more than a tool for managers to use along with the other tools at their disposal.

Frank Buono, a retired National Park Service manager shares his thoughts on the evolution of laws regarding wildlife and analyzes where they may take us in the next century. Buono has spent much of his time with the agency as an instructor at the Albright Employee Development Center in Grand Canyon National Park. In that role he has inspired thousands of young Park Service employees with his rabbinical dissertations on environmental laws and issues.

Dan Huff, Assistant Director for Natural resources and Science in the NPS Intermountain Field Area, has two decades of experience in planning, compliance, resource management, research and science administration in the NPS. Huff provides an overview of the NPS views and experiences with these issues. His extensive experience and knowledge are matched by his determination to match the best from traditional wildlife management with the true needs of the agency.

Allen Rutberg melds his biological background in wildlife and habitat

protection with a genuine concern for animal welfare. His compatriot Wayne Pacelle, Legislative Director for the Humane Society of the United States, has proven to be an effective protagonist for views about animal rights and welfare. The views that they espouse are held by an ever-increasing segment of the American population. Their article defines a particular perspective of what is humane and what the public in the future may expect from humane wildlife managers.

As the guest editor, I have also contributed an article based on my combination of field experience with various species, review of wildlife projects across the National Park System, and my own personal perspective of NPS policy, history, and legislative mandates. I will not pretend that all points of view are represented herein. However, some who were invited were unable to participate, and the more traditional and critical views of the NPS wildlife policies and actions seem to have plentiful outlets for their opinions. This compilation of articles is intended to instigate discussion of more than one train of thought on this issue, and I am confident the following articles will accomplish that goal.

Our greatest desire for this issue of THE GEORGE WRIGHT FORUM is that it stimulate some debate that will perhaps lead to policy formulation and implementation—helping to preserve wildlife as we know it today in the coming centuries.

As the burgeoning human popu-

lation continues to move closer to the once-remote and pristine parks and forests, the issues involving wildlife, carrying capacity and wildlife movement corridors become increasingly important. As the human interaction with wildlife becomes more frequent, the conflicts between them will inevitably increase. This is not simply an issue for hunters, animal rights groups, or land managers, but for every person who wishes to leave behind a legacy rich in those things that make life worth living.

These lands, set aside as remnants of nature in its wild state, will become increasingly attractive to human populations sharing an ever-decreasing supply of raw materials. We cannot blame the people of the future if

they fail to preserve open space, and wildlife which is the critical measure of wilderness. If our heirs are forced to choose between their own survival and the survival of wildlife it will be the legacy of our failure to plan for the future. The time to plan for the twenty-first and twenty-second centuries is upon us now. Let's not let the people of the future down.

Stimulating honest intellectual debate about the rigors of conservation is the heart of THE GEORGE WRIGHT FORUM. I for one am certain that George Wright would be proud to know that a journal bearing his name continues to instigate debate about the very issues he cared most about. I am very proud to assist in that endeavor in some small way.



Managing Wildlife in the Parks: The Legal Basis

Introduction

In 1916 Congress charged the new National Park Service (NPS) with a mission to conserve, among other things, the wildlife in the areas under NPS control.¹ The Interior secretary's authority to manage the wildlife within the boundaries of the parks is so central to the NPS mission that one could hardly imagine a National Park System without such authority. Though challenged in the court, primarily by the states, the secretary's authority over wildlife has withstood all assaults.

The 1916 Organic Act of the NPS was not the first time Congress addressed wildlife on federal lands, or wildlife generally. In 1872 Congress established a vast preserve from federal lands in the Wyoming and Montana territories—Yellowstone National Park. As a public park for the benefit and enjoyment of the people, the area was closed by law to the wanton destruction and market hunting of fish and game.² Twenty-two years later, Congress prohibited all hunting in Yellowstone.³

Congressional power over wildlife raised little concern when such regulation applied to remote federal lands in the United States territories. It was a different matter when Congress began to enact laws that governed wildlife on any, including nonfederal, lands, within the boundaries of the states.⁴ The states were quick to contest such laws, convinced that the federal entry into the domain of wildlife management was constitutionally impermissible. The states rested their arguments on a theory of state owner-

ship of wildlife.⁵ In addition, the states, like the losing candidate for president in 1996, relied on a narrow reading of the Constitution's enumerated powers, and a broad interpretation of the Tenth Amendment.⁶ However, the states' legal challenges to federal authority over wildlife resulted in confirming such authority. The courts so vigorously expanded the federal authority over wildlife that Congress has acted in the last three decades to maintain a role for state wildlife management on federal lands. This is particularly true on federal lands, park or non-park, where hunting is authorized. Yet, even on such lands, Congress protects the federal authority over wildlife.

Moreover, as a result of the states' legal challenges, the doctrine of state ownership of wildlife is now dead.⁷ Nonetheless—as Supreme Court Justice Antonin Scalia said about another legal doctrine, the Lemon test—the state ownership doctrine, like some ghoul in a late-night horror movie, rises after being repeatedly

killed, and shuffles abroad through the halls of state fish and game agencies, occasionally frightening the more unwary NPS manager.

The Courts and Federal Authority Over Wildlife on Federal Lands

One of the first confrontations over the federal power to manage wildlife on federal lands involved the U.S. Forest Service. After carrying out a policy of eradicating predatory animals from the Grand Canyon Forest Reserve on the Kaibab Plateau in Arizona, the Forest Service created conditions ideal for an exploding, and then a starving, deer herd. It was a textbook example of an ecological disaster. The deer caused damage to the central resource for which the forest was reserved: timber. The Forest Service responded by turning its guns, recently aimed at coyotes and mountain lions, on the deer.

The state of Arizona arrested Forest Service employees who conducted the killing because they had not first obtained a permit from the Arizona authorities. The Supreme Court ruled that the Forest Service employees could kill the deer and did not need to obtain a permit or other permission from the state of Arizona. The reason was simple: the deer were destroying federal property, the forest reserve trees. The federal agency had the power to protect federal property and could do so without any interference from the state of Arizona.⁸

Four decades later a similar conflict arose, except this time in a national park context. The NPS conducted a study of deer within the

Carlsbad Caverns National Park in New Mexico. The NPS officials were interested in the dietary habits of the animals. The only way to determine the diet was to kill a number of the deer and study the contents of their stomachs. Immediately, the state of New Mexico raised the permit question. Asserting state ownership of wildlife, New Mexico demanded that the NPS obtain a permit from the state prior to killing the deer. New Mexico drew a distinction between the Forest Service killing of deer on the Kaibab in the 1920s and the NPS killing in Carlsbad in the 1960s. The former killing served to protect Federal property. The latter killing, at Carlsbad, did not. Because of this, New Mexico said, the NPS needed the permission of the state. New Mexico prevailed in the District Court. However, before the United States Tenth Circuit Court of Appeals, New Mexico was defeated.⁹ The Court found that:

Clearly the Secretary [of the Interior] has broad statutory authority to promote and regulate the national parks to conserve the scenery and wildlife therein "in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." 16 U.S.C. 1. Anything detrimental to this purpose is detrimental to the park. In addition to this broad authority, the Secretary is authorized "in his discretion" to destroy such animals "as may be detrimental" to the use of any park. 16 U.S.C. 3.... In the

management of the deer population within a national park the Secretary may make reasonable investigations ... to ascertain the number which the area will support without detriment to the general use of the park.¹⁰

The court went beyond the need for the federal agency to show injury to park lands and resources as a basis to kill wild animals. However, the court imputed that there needed to be a nexus between killing the deer and protecting the park from *potential* injury.

In the Carlsbad Caverns case, New Mexico raised a formidable-sounding argument. New Mexico asserted that the United States did not hold exclusive jurisdiction over the Federal lands within the park. (This was, and remains, true. The state of New Mexico has not ceded any part of its exclusive authority to the United States, under the Cession Clause of the Constitution.¹¹) New Mexico asserted that since the state owns the wildlife and has not shared its powers over state property with the United States, the NPS must be required to obtain a permit from the state.

The argument appears formidable and confuses NPS managers even to this day. However, in the Carlsbad Caverns case, the federal court dismissed the jurisdiction argument. The court said that "in protecting the park property, it is immaterial that the United States does not have exclusive jurisdiction over the lands within Carlsbad Caverns National Park."

Undeterred by the 1969 defeat,

New Mexico again raised the issue of authority over animals on federal lands in connection with a 1971 federal law. That year Congress enacted the Wild Free-roaming Horses and Burros Act.¹² This law protects wild horses and burros on Bureau of Land Management (BLM) and National Forest lands. The animals in question were non-migratory, non-game animals. The animals occupied lands that possessed no special designation and were (in the case of BLM) unserved public lands. New Mexico was convinced that these factors would support the contention that New Mexico, and not the United States, was the regulator of the animals under the estray laws of New Mexico. Unlike the situations in the court decisions of *Hunt* and *Udall* discussed above, the U.S. did not assert that the protection of federal property from injury formed the basis for federal management of horses and burros.

In response to New Mexico's suit, the Supreme Court in the case of *Kleppe vs. New Mexico* (1976) enunciated the broadest possible interpretation of the Constitution's Property Clause¹³ to date. The court found that the Congress need not enact laws regarding animals on federal lands simply to cure or prevent injury to federal lands by those animals. The court found that when the animals were on federal lands that the animals were subject to federal management and regulation as an object in themselves under the Property Clause. The court came close to, and then stepped back from, asserting a federal ownership over animals on federal

lands. The court said: "It is far from clear that ... Congress cannot assert a property interest in regulated horses and burros that is superior to that of the State."

Next the *Kleppe* court turned to the state's jurisdiction argument. New Mexico had again argued, as it did in 1969, that the United States was a mere proprietor of public lands, no more or no less than any other land owner. New Mexico argued that it did not cede any jurisdiction to the United States over unreserved public domain lands in the state.

The court demolished the state's jurisdiction argument, stating that New Mexico confused "Congress' derivative legislative powers ... with its [Congress'] powers under the Property Clause." "While Congress can acquire exclusive or partial jurisdiction over lands within a State by the State's consent or cession," the court continued, "*the presence or absence of... jurisdiction has nothing to do with Congress' power under the Property Clause*" (emphasis added).

Under the Property Clause, Congress exercises the power both of an owner and of a legislature over federal lands. That power is complete. The *Kleppe* court stated that "the complete power that Congress has over public lands necessarily includes the power to regulate and protect the wildlife living there."

Ten years later, in a subsequent minor case, *United States v. Moore* (1986), the NPS prevented the state of West Virginia from spraying a biological pesticide to kill black flies on the waters of the New River within

the New River Gorge National River. West Virginia asserted both ownership of the wildlife within the state, and then cited the lack of cession of jurisdiction to the United States as reasons why the NPS could not interfere with the state's actions. The U.S. District Court for the Southern District of West Virginia found the arguments "unpersuasive" and ruled against West Virginia.

The NPS sought to protect the black flies in New River Gorge as a necessary part of the ecosystem and therefore as an end in themselves. The *Moore* decision found support in *Kleppe*. *Kleppe* removed the need to show actual or potential injury to federal lands to support federal management authority over wildlife on federal lands. *Kleppe* made clear that Congress could enact laws protecting wild animals on federal lands as an end in themselves. The decision in *Moore* found that the Organic Act of the NPS was just such a law and that its protective mantle extended even to gnats.

Congressional Action to Maintain a State Role

After the court defeat in *Moore*, West Virginia turned to its senior senator, Robert Byrd, who included language in legislation to authorize the spraying in the New River. This is one example of congressional counterbalancing of federal court decisions that have supported federal agency powers over animals on federal lands. Congress has acted several times to prevent a total federal assumption of authority over wild ani-

imals on federal lands.

A most notable example is the Federal Land Policy and Management Act (FLPMA), the Organic Act of the BLM.¹⁴ In that law, Congress made clear that the secretary, through the BLM, was not to supplant the traditional authority of the states in regulating the taking of wild animals. FLPMA says that "nothing in this Act shall be construed as authorizing the Secretary concerned to require Federal permits to hunt and fish on public lands or on lands in the National Forest System and adjacent waters or as enlarging or diminishing the responsibility and authority of the states for management of fish and resident wildlife." However, FLPMA makes clear that the secretaries of Interior and Agriculture have the authority to close all or parts of the public lands or national forests to hunting and fishing. Such a decision does not require the consent of the state.

Existing and Potential Future Conflicts with States in "Hunting Parks"

Congress has designated over 50 areas in the National Park System where hunting is authorized. In those parks, such as the Mojave National Preserve, where the enabling act provides for hunting under state law, Congress has made clear that the NPS may limit where and when hunting may occur on federal lands for public safety, administration of the area, or other reasons. Further, the NPS may do so without the consent of the state of California.¹⁵ The power to close all or part of a federal area to hunting

is a Property Clause power, and Congress may authorize such actions without regard to whether the state of California has ceded some or any of its jurisdiction to the United States.

The most likely flash point for conflict is not over a state attempting to allow hunting in an area of a park that the NPS has closed to hunting. Instead, conflict most likely surrounds state "game management" practices. The NPS interprets the Organic Act mission "to conserve wildlife" in a series of policy documents. Those policy documents lay out the methods by which the NPS manages the federally protected wild animals of the parks—methods often at odds with state fish and game practices. NPS law and policies, for example, prescribe the removal of pernicious non-native species, and dangerous and destructive animals (see 16 U.S.C. 3), and prohibit the introduction of non-native animals. NPS policies specifically forbid the "artificial manipulation of habitat to increase the numbers of a harvested species above natural levels, except where directed by Congress."¹⁶

Many state fish and game agencies seek to introduce non-native fish to natural lakes in a park, or exotic pheasants for upland game bird hunting. State fish and game agencies may seek to reduce natural predator populations in a game management area, or perhaps establish a herd of African antelope on federal lands in a park. All such actions would conflict with the policies by which the NPS carries out its Organic Act mission regarding wildlife. Even if the park

were under “proprietary federal jurisdiction,” the state action would conflict with the NPS’ interpretation of the Organic Act responsibility, and the NPS would (it is to be hoped) seek to enjoin the state.

Conclusion

The jurisdiction that the United States holds over federal lands is “immaterial” to the power of Congress to legislate with regard to the lands and the animals on the lands. The United States may own lands and have no share of the state’s jurisdiction over the lands. Yet, in such cases, where the U.S. jurisdiction is “proprietary,” the United States owns the lands not just as a mere proprietor but as a “sovereign.” The authority of federal agencies to carry out federal laws that govern federal lands and the animals on the lands does not rest upon the level of jurisdiction ceded by the state to the United States, but instead upon federal ownership of the lands. Were it otherwise, we would be fifty nations, rather than one, and federal land management decisions would be at the mercy of each state.

The federal courts have consistently upheld the power of the Congress to enact laws that govern wildlife. The courts have found that the federal power over wildlife rests upon at least three enumerated powers in the United States Constitution:

the Treaty Power, the Interstate Commerce Clause, and the Property Clause.

The NPS Organic Act of August 25, 1916, is a federal wildlife law and one example of Congress’ power under the Property Clause. In carrying out the powers enumerated by the Constitution, the Congress may enact laws, and federal agencies discharge such laws, free from any interference by the states.¹⁷ Federal land management is subject to the laws of the state only where Congress has clearly and unambiguously so provided.¹⁸ “The general constitutional principle is that by virtue of the Supremacy Clause, states cannot regulate Federal agency activities.”¹⁹

We need not ignite a federal-state war over wildlife. The federal government long ago won the war to manage wild animals on federal lands, parks, and unreserved public domain lands. The NPS and the states should work as harmoniously as possible, particularly in a park where Congress has authorized hunting under state law. However, the NPS need not feign that it possesses no authority or responsibility over the wild animals within park boundaries. This path is misinformed and could result in the loss of one of the characteristic features that distinguishes the lands in the National Park System from all others.

Endnotes

1. The Act of August 25, 1916 at 16 U.S.C. 1 *et seq.* states that the NPS “shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and by such measures as conform to the fundamental purpose of the said parks, monuments and reservations, which purpose is to conserve the scenery and the natural and

historic objects and the *wild life* 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” (emphasis added).

2. 16 U.S.C. 21 and 22.
3. 16 U.S.C. 26.
4. For example, the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711).
5. A principle upheld by the Supreme Court in the case of *Geer v. Connecticut* (1896).
6. The Tenth Amendment states “The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.”
7. The Supreme Court declared the doctrine of the state ownership of wildlife to be a “nineteenth century legal fiction” in the 1977 case of *Douglas v. Seacoast Products, Inc.* and also in *Hughes v. Oklahoma* (1979).
8. *Hunt v. United States* (1928).
9. *New Mexico v. Udall* (1969).
10. *Ibid.*
11. Article I, Section 8.
12. 16 U.S.C. 1331-1340.
13. Article IV, Section 3. “The Congress shall have power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States....”
14. 43 U.S.C. 1701 *et seq.*
15. 16 U.S.C. 410aaa-46(b).
16. *NPS Management Policies*, Chapter 4, Page 7.
17. State laws govern federal agency actions or the management of federal lands only where Congress had waived sovereign immunity. In such cases, state laws govern federal agencies, no matter what jurisdiction the United States holds, including exclusive jurisdiction.
18. Official Opinion of Attorney General, June 23, 1980.
19. Opinion of San Francisco Department of the Interior Field Solicitor Ralph Mihan, December 26, 1991.

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Wildlife Management in America's National Parks: Preparing for the Next Century

It is felt that ... the Park Service no longer knows what its purpose is nor that of the Park System it manages.

Ronald Foresta, 1984

There seems to be a growing trend of discomfort with National Park Service (NPS) management of wildlife¹ among prominent professionals of the wildlife management genre. I say *seems to be* as there has long been a conflict between the “determinists”² and the “hands-off parkies.” The recent publication by Frederic Wagner et al. (1995), *Wildlife Policies in the U.S. National Parks*, may simply reflect the long-term conflict, but may also signal a steep upturn in the willingness of academics and wildlife professionals to criticize the NPS publicly. Future debates and forums on NPS wildlife management policies scheduled for 1997 and beyond will aid in determining the actual tenor within professional ranks.

In reality, the hands-off approach to wildlife management has only been in vogue since the late 1960s, and then only in the larger parks such as the System's icon Yellowstone National Park. Faced with growing public awareness and controversy over large-mammal population culling operations, and stimulated by new science documenting intrinsic, density-dependent population regulation factors in ungulate populations, NPS stopped culling elk (*Cervus elaphus*) and bison (*Bison bison*) in Yellowstone in 1968 and began a three-decade experiment in natural regulation. Elk and bison populations have risen steadily throughout the period in spite of

hunter harvest and aggressive control actions just outside the park boundaries. So the hands-off approach applies only to the lack of direct population control within park boundaries. Hunting, capture, and slaughter have been practiced in adjacent portions of the seasonal home ranges of Yellowstone ungulates.

Management of large migratory mammals varies in other national parks of the Rocky Mountains and Great Plains. At Glacier and Rocky Mountain National Parks and Dinosaur National Monument, for example, management of ungulates (elk in particular) closely follow the Yellowstone model. At Grand Teton National Park, however, a congress-

sionally mandated public elk hunt³ is conducted within park boundaries. The general goal of Grand Teton elk management is to maintain a herd size compatible with the carrying-capacity-derived objective for the park's winter range and the U.S. Fish and Wildlife Service's National Elk Refuge just south of the park. Most of those elk which spend the summer in the park spend the winter in the refuge; it was established in 1912 to mitigate the loss of traditional elk winter range to agricultural development in Wyoming's Snake River Valley.

At Theodore Roosevelt, Wind Cave, and Badlands National Parks in the Dakotas, large ungulates are regularly herded into handling facilities and culled to maintain herd size compliant with carrying capacity of park ranges. Boundary fences surround Theodore Roosevelt and Wind Cave and portions of Badlands. Herd size targets for elk (Theodore Roosevelt and Wind Cave), bison (all three), and horses⁴ (Theodore Roosevelt) are set and adjusted on the basis of regular range condition surveys.

Generally speaking, hunting is considered a non-conforming use of National Park System units. Only where expressly mandated in park enabling legislation (as in Grand Teton National Park) is hunting considered congruent with NPS policy. Hunting is allowed, and managed, in many National Park System units, including a number of National Seashores, National Monuments, National Recreation Areas, and Na-

tional Riverways. It is, perhaps, unfortunate that much of the perception of the public, and a growing number of wildlife professionals, regarding wildlife management in the national parks is based predominately on the Yellowstone paradigm. In fact, the NPS exercises a wide continuum of approaches to wildlife management, ranging from the hands-off natural regulation approach in Yellowstone, through the unhunted yet carefully manipulated ungulate populations described, to actual cropping through public hunting within the boundaries. Many programs are conducted in complete cooperation with local state game and fish agency personnel with NPS and state employees sharing hunting regulation enforcement responsibilities both in and outside park boundaries.

It is likely that if we examined NPS unit management programs for large mammals on the basis of a dozen or so criteria, we would find that there are probably no two exactly alike within NPS. We would probably see a small grouping of the largest parks near the Yellowstone end of the continuum, but there would be a variation among them involving some level of subsistence hunting and Native American traditional use. So, it is relatively clear to this writer that the Servicewide *Management Policies* (National Park Service 1988) simply reflect the wide range of wildlife management approaches required of NPS by legislation and statute. Only where not precluded by specific legislation (or general legislative language

deferring NPS management to state or other policies and statutes), do the NPS policies apply. And, even then, the Servicewide policies may be abrogated through due process.

It is clear, or it should be, that the history and evolution of the National Park System indicate no compelling direction by the president, the secretary of the Interior, or Congress to cut the National Park System units from common cloth. The *Management Policies*, and subsequent guidelines, do provide the common threads which bind the system together in a non-uniform, yet cohesive amalgam. And the Redwood National Park Act (16 U.S.C. 79a-79q [1988], 82 Stat. 931, Pub. L. 90-545), and its amendments, clearly prohibited derogation of the values for which park units were established *except* where expressly provided for by Congress. I would propose that my preface statement from Foresta (1984) reflects less what the Park Service knows, and more about the lack of knowledge of the National Park System by its most outspoken critics.

Clearly, the National Park System is not a mirror-image of the National Wildlife Refuge System charged with preservation and enhancement of specific trust species. Nor is it a collection of representative habitats of American biota replete with native biodiversity preservation mandates. The System does, by default, represent a wide range of native habitat types, but this is more a by-product of the political history of its growth than

a discretionary choice.⁵ There is no pervasive NPS mission to include all representative samples of any published American wildlife habitat classification system, and, thereby, protect the entire American fauna. There is little bureaucracy in place to unify (or even coordinate) wildlife management approaches within and across NPS field areas, much less Servicewide. The NPS employs only a few professional⁶ wildlife biologists and has no Servicewide organizational structure to support wildlife management professionalism, share information on advanced techniques and new science, and coordinate the many approaches to wildlife management seen throughout NPS.⁷

This situation probably reflects the opposite of Foresta's contention. The Park Service does know it is not a wildlife management agency and, in fact, it has no core profession.⁸ The incredible variety of natural and cultural resources entrusted to the NPS, combined with its dual mission mandate for visitor enjoyment, ensures the interminable debate over organizational structure and priorities. Wildlife issues ebb and flow as reflected in the administrative history of NPS. George M. Wright was named chief of NPS's first Wildlife Division in 1933, following four years of pioneering work funded with his own personal wealth. The division barely outlasted Wright's unfortunate early demise in 1936. Various offices with the term "wildlife" in the title have come and gone since 1916. Most likely, NPS simply finds itself *between*

wildlife divisions in 1997.

So, what should NPS do to get a jump-start on sustainable wildlife management in the 21st century? First, we can agree that there will certainly be wildlife to manage. There is some threat to a wide variety of species from human economic and demographic development, but there is a much larger species complement that is steadily growing, acclimating to humans, and readily adapting to a plethora of altered states in and around American national park units. Some species occur at all-time-high population levels in a number of units. NPS's specific missions toward declining species⁹ and encroaching aliens are insidious, but that discussion is beyond the scope of this paper. In considering general wildlife management direction for NPS, I will start with the recommendations from the "Future Directions" chapter from Wagner et al. (1995).

First, is the recommendation for more *explicit management goals*. The authors claim that NPS management policies and guidelines should begin with explicit, forceful statements of the important social values that the System serves and the associated, broad goals set to satisfy those values. As I pointed out earlier, the wide variety of specific legislative mandates for unit management actually preclude the development of explicit, forceful management objectives for all System units. The development of the *Management Policies* (National Park Service 1988) reflected a desire to characterize the variety of man-

dates and enlist default policies which would represent the lofty ideals of national park management, and which could be enforced if not precluded by unit-specific mandates. The type of guidance envisioned by Wagner et al. would require new Servicewide legislation establishing commonalities of purpose and direction. Many existing NPS units would never have been created had they been forced into the mold proposed by these authors. It is unlikely that either the Administration or Congress will feel compelled to frappé the National Park System units into clones of Ecosystem Oz anytime soon in the next century, if ever. Indeed, the variety of purpose and portent found in the units of the National Park System today are critical in the system's public and political support.

This is not to imply that better, more ecologically based management objectives should not be developed at the unit level. As park ecology unfolds through scientific investigation and experiment, more explicit objectives are possible and desirable. Evolution of Servicewide objectives cannot be expected to occur at the same rate and will require more science in many parks before widely applied generalizations will be politically acceptable.

Next, Wagner and his co-authors attacked goal setting at the park level. Although they reviewed no NPS general management plans (GMPs), they stressed the importance of extensive and open public involvement. And although they admitted they do not

have a good overall sense for the extent of NPS public involvement processes, they cited an obscure reference (Anunsen 1993) to document that public input may at times be tightly controlled and orchestrated. Certainly, NPS readers can attest to the usual achingly lengthy public involvement processes in which they have been involved regarding GMPs and National Environmental Policy Act (NEPA) compliance documents. Too bad for readers of *Wildlife Policies in the U.S. National Parks* that the authors did not thoroughly research the NPS planning process.

The authors continue by noting that goal setting should *not* be considered a purely scientific process and that park management goals should not be primarily "science-driven" unless that is the societal preference. This claim offers an interesting conflict in that the same authors later suggest that NPS needs far more park-specific, ecologically defined policies. The authors call for the creation of scientific advisory panels from the professional ecological community for purposes which would include:

Specifying the detailed, quantitative ecological characteristics for which park ecosystems would be managed. These characteristics are described to include the structure and function of whole ecosystems in parks where preservation of such systems was the adopted goal.

I cannot imagine a model of an entire ecosystem's structure and

function representing a reasonable management goal, replete with quantitative ecological characteristics. And even if it were possible to amass a reasonable facsimile of an ecosystem on paper (or hard drive), I find it unlikely that clear-cut intercession protocols could be developed for discrete ecosystem variables, across all trophic levels, which would be expected to yield predictable ecological conditions. Today's science cannot predict reliably the "natural variation" within a single trophic level on a long-term basis with no deterministic management at all! The best we can perhaps do is to manipulate a single ecological component or function and monitor carefully the presumed¹⁰ effects on another limited set of ecosystem components and functions anthropogenically determined to be of high significance. Often it is impossible to separate significance to human values from significance to ecosystem integrity.

The authors go on to cite Brussard (1991) who recommended active management of national parks for biodiversity because it will do a better job of retaining a full complement of species and communities a century from now. But NPS policy does not define a full complement of species and communities as a static management objective for national parks. Instead, the policies (National Park Service 1988) require the NPS to protect natural environments evolving through natural processes minimally influenced by human actions.

Therefore, maximum biodiversity has never been a management goal for national park units. In fact, managing for biodiversity is fraught with technical as well as operational difficulties. For example, which aspects of biodiversity should be managed for? How about within-species genetic diversity? How far should a prudent steward go to introduce subspecies, races, varieties, etc., or enhance the process of speciation, to bolster that diversity, even though the transplanted variants have never been known to inhabit park ecosystems? Or, should we manage for species richness? Again, we ask the question of degree. If all native ecosystem components are present, do we dare go farther? And what if one or more natives¹¹ are extinct; do we fill their niches with experimental surrogates?

Wagner and his co-authors continue with a discussion of the *whys*, *whens*, and *hows* of management. Here it becomes clear what the real rub truly is. The authors are incensed with the traditional NPS concept of *naturalness* and its use as an icon in NPS wildlife management policy. And it is here that my own concerns over the years (Huff 1989) begin to resonate with a limited few of those expressed by the authors of *Wildlife Policies in the U.S. National Parks*. But there is a world of difference in our respective perceptions. The Wagner authors would have the NPS charge headlong into actively managing plants and animals in most, if not all, national parks to comply with societally generated objectives for the

ecosystem. I would simply ban the use of the term "natural" and all its derivatives from NPS policy, guidelines, and management plans. Yellowstone's "natural regulation" policy would become its "ecological regulation" policy and the concern for "naturalness" would be replaced with a concern for "ecological integrity." But we can't stop here because according to convention, ecological integrity refers to the presence of all native ecosystem components and functions (Norton 1992). Therefore, we have to contend with term "native." Nateness implies presence at some specified time in the past and, in NPS parlance, refers to the condition of being present *without* the deterministic actions of another specific ecosystem cohort, *Homo sapiens*. Early in the century, this latter concern seemed insignificant, since aboriginal Americans were deemed to have had insufficient technology to have influenced their faunal cohorts. Today, we have computer models that show how, under specific circumstances, a single species of predator may drive a prey species to extinction, or close enough to stimulate significant ecosystem effects. It logically follows that aboriginal humans could have had even greater influences on ecology of the continent well before European humans showed up. So we dump the term *native* and all its derivatives, too.

And we start over with a simpler concept. National parks are given the chance to start evolving with the species present through a reasonable

reference period (say a thousand years¹²) (Huff and Varley 1996), rather than a point in time prior to the influences of European humans. We do not have to claim this would represent a "natural" condition; only that it represents NPS management policy. Ecological evolutionary forces are then protected over time, with the exclusion, to the extent possible, of deterministic influences by all contemporary humans. The value to science would be enormous. Nowhere else in this country, and in few places in the world, is evolution of ecosystems without human intrusion being protected. How better to measure the influences of our actions elsewhere, than to have the closest thing humanly possible to an experimental control! And all we have to do is cast out a few antiquated terms which are mired in mysticism and pseudo-science. This new policy could, however, only be applied to the few *natural regulation* parks described earlier. Legislated *determinism* would preclude unfettered evolution in most NPS units.

In planning for national park wildlife management for the next century, we should begin with an important axiom. We must avoid a tendency toward *ex post facto* evaluations of historic policies. In managing early Yellowstone, for example, the NPS first eliminated the ecological influences of Native Americans on the landscape. Then we (the NPS) eliminated the impacts of recently arrived Euroamericans, the market hunters. Next we eliminated the "bad ani-

mals"—the predators. Then we controlled populations of the "good animals"—the herbivores. Then we stopped controlling populations of all native animals. We later began adding back the species we earlier eliminated. Now we're partially controlling some of those herbivores, again, at the park boundaries. The point here is that societal values evolve and policies for management of public resources follow suit. Even if we had every datum we could imagine needing for a given management decision, that decision will still have a finite life. Conclusiveness of our supporting science increases the longevity of our decisions, but it does not make them immortal. Therefore, assuming earlier policies which have since been countermanded were *wrong* is a fallacy. They were right *then* based on contemporary values and science. They are, likewise, wrong *now* primarily because of the evolution of American values.

Which way will national park wildlife management trend in the next century? The protectionists and determinists are strong, but opposing forces in today's constituency. I'm guessing each will have victories in specific cases. As for the past, we've most often done the right things as measured against contemporary values, but we've often used the wrong words to describe our decision processes. The concept of "naturalness" is under strong attack and will probably not hold up long into the 21st century. I suggest we start with some common-sense revisions to our Ser-

vicewide and park-specific policies, clearly iterate our purposes (and they can, and should, be different in different units), build the scientific basis for those purposes, monitor our results, adjust our management approaches appropriately, continue to professionalize¹³ our staff, provide some level of Servicewide coordination and support for wildlife management,¹⁴ and then we should be relatively immune from most criticism—excepting, of course, critiques of a political, religious, or philosoph-

ical nature; or from scientists who interpret data differently than we do; or from other land managers skeptical or envious of our resources, mission, or popularity; or from zealous “environmentalists” or animal protectionists; or from commodity interests wishing to get their hands on park resources; or from park concessionaires wishing to enhance their profitability; or from park neighbors who may always perceive an impact from park management policies. Shouldn’t be *toooo* difficult, eh?

[The opinions expressed in this paper are the author’s own and do not represent the official position of the National Park Service.]

References

- Anunsen, C.S. 1993. Deception in the Olympics. *Animals’ Agenda*, January-February, 25-27, 42.
- Brussard, P.F. 1991. The role of ecology in biological conservation. *Ecological Applications*, 1:6-12.
- Foresta, R.A. 1984. *America’s National Parks and their Keepers*. Washington, D.C.: Resources for the Future.
- Huff, D.E. 1989. Introduction to the role and effect of fire in the Greater Yellowstone. *The George Wright Forum* 6(3), 12-16.
- Huff, D.E., and J.D. Varley. 1996. Natural regulation revisited: the case for Yellowstone’s northern range. Paper presented at the 81st Annual Meeting of the Ecological Society of America, Providence, Rhode Island.
- National Park Service. 1988. *Management Policies*. Washington, D.C.: U.S. Department of the Interior, National Park Service.
- Norton, B. 1992. A new paradigm for environmental management. Pp. 23-41 in *Ecosystem Health*, R. Costanza et al. (eds.). Washington, D.C.: Island Press.
- Wagner, F.H., R. Foresta, R.B. Gill, D.R. McCullough, M.R. Pelton, W.F. Porter, and H. Salwasser. 1995. *Wildlife Policies in the U.S. National Parks*. Washington, D.C.: Island Press.

- ¹ In this paper, the discussion of "wildlife" will generally be limited to the native ungulates, most of which are considered "game" species in the states in which they are found in free-ranging populations.
- ² Those land/resource managers who manage toward deterministic (e.g. explicit, exclusive, and quantitative) resource conditions.
- ³ The hunt is actually referred to as a population reduction action and applicants from the public are randomly selected and sworn in as temporary park rangers for the purpose of killing elk.
- ⁴ Horses are, obviously, non-native biota but their management is mandated in legislation creating the park.
- ⁵ The result of which is a fairly widespread distribution of units throughout the congressional districts.
- ⁶ That is, professionally trained (i.e., "degreed") in wildlife management or ecology, certified by The Wildlife Society, active in extra-curricular professional fora or societies or both, and published in the wide array of scientific, technical, and popular literature addressing the profession of wildlife management.
- ⁷ As it does for water resources, air quality, and geologic resources.
- ⁸ I define "core profession" as one which has a career ladder from the lowest-ranking professional position in the bureau to the bureau's chief executive (e.g., "Director"). Examples include wildlife/fisheries biology for the U.S. Fish and Wildlife Service, range conservation for the Bureau of Land Management, hydrology for the Bureau of Reclamation, geology for the pre-Biological Resource Division" (alias "National Biological Service") U.S. Geological Survey, forestry for the U.S. Forest Service, and veterinary medicine for the Animal and Plant Health Inspection Service.
- ⁹ Including federal and state "listed" species and candidates.
- ¹⁰ Cause-and-effect relationships will be obscured by our inability to establish "controls" in real-world situations.
- ¹¹ As defined in the biota of some acceptable "reference period."
- ¹² Which seems reasonable since we have good data on the biota through that period for many units and could develop it for many others.
- ¹³ Including "parity" with other agencies in the professional wildlife management area. For example, the U.S. Forest Service employs GM-15 "Directors of Fish and Wildlife" in each regional office, GS-12/13 wildlife biologists in almost every national forest, and still generally defers wildlife management on USFS lands to state game and fish agencies.
- ¹⁴ Which could include technical support in the areas of wildlife capture and immobilization, wildlife diseases, population dynamics modeling, carrying capacity determination, census techniques, habitat management, population enhancement and control, species reintroductions, Servicewide wildlife data management, interagency coordination, management of public hunting programs, policy development and application, and legal advice including liaison with Regional and Washington solicitors.

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Our National Park Policy: Some Thoughts on Politics and the Role of Science

A place is nothing in itself. It has no meaning, it can hardly be said to exist, except in terms of human perception, use and response.

Wallace Stegner, 1989

The National Park Service (NPS) often ranks at the top of lists which purport to show the most admired U.S. federal agencies. The reasons for this have never been definitively “proven,” yet it is not difficult to conclude that they center on feelings about the worth of national parks, and on positive experiences with field-level NPS employees. Given the high rankings, it might be easy to conclude that NPS has a lot of control over the direction of national park policy. Yet such is not the case. This essay will seek to explore why this might be so.

The Institutional Context

The U.S. Constitution parcels out political power among three branches of government. It does so because the authors of the document had a profound distrust of locating power in one place. Hence our political system is fragmented and open, and there are many institutional rivals to NPS autonomy over park policy. Interest groups, as most in NPS know all too well, use any point of access (such as the courts, members of Congress, and executive branch appointees) they can to influence park policy-making, whether those groups be the National Parks and Conservation Association, or park concessionaires.

More importantly for NPS, there is *no* mention of the public bureaucracy in the U.S. Constitution, at least in language that would be understood as

referring to the enormous institution of modern government with its important discretionary powers of public policy-making. This gap means that there is no clear consensus in American political theory about the proper powers and roles of a large section of the modern American state, a section which has come to be known as the “fourth branch of government” and which is as significant as Congress or the courts.

To put this observation somewhat differently, this theoretical confusion leads us to ask what the best way is for NPS to understand and defend the legitimacy of what it does in the name of park policy? This question deserves some consideration as the bureau moves with the rest of government into the post-election period. The legitimacy question is

important because of the nature of the U.S. political system. It is, unfortunately, not enough for us to assert that whatever NPS does is in itself legitimate, because of the numerous examples of other actors successfully "overruling" the bureau.

The Power and the Limits of Expertise

The model of legitimacy which has great appeal to professionals within NPS centers on the role of expertise. NPS decisions have legitimacy in this model because NPS knows the most about the parks, and has been given that authority by Congress. Congress created both the parks and NPS, then delegated the day-to-day management responsibility to the bureau. The bureau uses its professional judgment (hence discretion) on how to manage the park system. This model works well, to a point. NPS is at the top of the most admired federal bureaus, due in part to what the public associates with NPS, but also because NPS must be doing many things right. Yet, as mentioned above, there are many NPS decisions which are not left to the bureau; there is not complete deference to the bureau's expertise because of that expertise.

The expert model has its roots in the conservation movement of the Progressive Era as summarized by Samuel Hays:

Conservationists were led by people who promoted the "rational" use of resources, with a

focus on efficiency, planning for future use, and the application of expertise to broad national problems. But they also promoted a system of decision-making consistent with that spirit, a process by which the expert would decide in terms of the most efficient dovetailing of all competing resource users according to criteria which were considered to be objective, rational, and above the give-and-take of political conflict (Hays 1980:7).

The agency which best personified this era in natural resources is the U.S. Forest Service. Today, however, even that agency cannot rely on expertise to control its decisions. The reason, in part, is that there is such fundamental disagreement about the purposes of the national forests that the agency has no real room to move anymore. Indeed, many observers of federal land policy have come to the conclusion that the umbrella policy of "multiple use" does not serve either the Forest Service or the Bureau of Land Management well anymore. A number of proposals have surfaced, including land transfer, agency consolidation, policy decentralization and consideration of the state land-trust model as options worth consideration. NPS appears to have escaped much of the severity of this negative scrutiny, though it too has its critics. All this is to say that there is simply not much societal deference to expertise these days, and as a model for park policy-making it

does not appear to be enough.

Ecology and the Politics of Science

Further confounding the discussion is rise of a new optimism among some that several sciences, notably ecology and conservation biology, will somehow offer a way out of the dilemma. Here, as in the past, science serves as the underpinning of bureau expertise. The way out, however, depends on the role of science in public policy discourse. Science either can be viewed as a truth claim, or it can be viewed as more of a necessary but insufficient condition for public policymaking.

For example, my research into the politics and policy of visibility protection offers one case study of this latter role for science. It is hard to see how the Navajo Generating Station near Page, Arizona, would have had to install retrofit technology without the source identification work of the NPS Air Quality Division and others. But the work that went into identifying the power plant as a source contributing to visibility impairment at Grand Canyon could not "force" anything on its own. That required the teeth of the Clean Air Act and political coalition building. Yet, without the work of the air quality scientists and specialists, nothing would have happened either. Of some interest here is that this policy "success" relies on the park visitor's experience of a park resource.

What if we are discussing the protection of a park resource *from* people, however? Here, the role of sci-

ence remains the same. It is one thing to show through research the fragility of cryptogamic soil. It is another thing to use this "finding" as justification for large-scale exclusion of people from park units, unless the people themselves have accepted the necessity of some of that exclusion in the name of the resource and the visitor experience of the resource.

Of course, most resource and park managers, as well as scientists, would agree with that observation, in my experience. Yet if one follows some of the debate in say, the journal *Conservation Biology*, it is clear that something else is at work. There is an interesting argument about whether some in the conservation biology community know where they wish to end up with public policy, and are attempting to "find" the science to get there. Others in the debate urge caution, suggesting that such a course might well damage the credibility of sound conservation biology research.

We have been here before. Consider the current arguments over forest health. The Forest Service is asking the American public to trust it to manage the forests to make them more "healthy." The bureau notes that one reason the forests are not healthy is because of the many years of fire suppression. But wasn't it the Forest Service which spent years suppressing fire based partly on science and partly on telling the American public that only "they" could prevent forest fires? Now it admits that policy was in error. Can some in the public be blamed for being sus-

picious of claims of forest health problems, even if those claims are accurate?

The best example of this danger can be found in the words of conservation biology proponent Ed Grumbine: "We must avoid the *democratic trap* (emphasis mine) of giving equal weight to all interest groups: many would destroy biodiversity for economic gain" (Grumbine 1990, cited in Fitzsimmons 1996:220). Understandably, such a stance makes many people nervous about the real goals of some biodiversity advocates, even if most federal land managers strongly deny that they hold such views. Grumbine's position assumes the stance of ultimate "truth" which denies the need for democratic discourse.

Is There Another Option?

There may be a more useful way to think about managing parks, however, which can build on the expertise which NPS has. The 1916 Organic Act charges NPS to manage parks "for future generations." The clause gives NPS a focus which is different from all of the other actors who claim to have an interest, or

power, over agency policy. NPS can act in the name of park resources, and in the name of visitor experiences with a long term "public interest" perspective. But, NPS must speak in those terms, rather than solely in the language of expertise or of science. There is no guarantee that NPS perspectives on park management issues will prevail, but such a public interest perspective is different from a perspective which looks out for constituents or is based on political ideologies and agendas currently at play. The future generations who will visit the parks would become a benchmark for whom parks are managed today, and thus this long-term perspective can legitimately be inserted into debates over park management. Expertise and science remain necessary tools, however, in this debate. NPS could then present to its public(s) and other interests management decisions framed with a long-term perspective and designed to help those interests deliberate over choices NPS must make. This might, among other things, show those interested that managing our park system is not an easy task.

References

- Hays, Samuel. 1980. *Conservation and the Gospel of Efficiency*. New York: Antheneum.
- Grumbine, Ed. 1990. "What is Ecosystem Management?" *Conservation Biology* 8 (1990). Cited in Allan Fitzsimmons, "Sound Policy or Smoke and Mirrors: Does Ecosystem Management Make Sense?" *Water Resources Bulletin* (32:2), April 1996.

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Embracing Humane Values in National Park Management

Every year, tens of millions of Americans, and millions of non-Americans, visit units of the National Park Service (NPS). It is, without question, the best-known of the federal land management agencies, overseeing the operations of Yellowstone, Yosemite, Grand Canyon, and other parks recognized across the world. The agency's popularity is not just measured in terms of visitation, but also emulation. Nations throughout the world, embracing the American model of parks, have reproduced it, creating systems of parks for the purpose of preserving wildlife and allowing their citizens to enjoy these natural wonders.

The NPS, by barring in most units the taking of wildlife by sport hunters and trappers and by prohibiting (in general) the consumptive commercial extraction of resources from parks by mining, timber, and other interests, provides an explicit and implicit lesson to visitors in the value of a preservation ethic. The effects of climate and predation, the cycles of scarcity and abundance, and the other daily workings of intact ecological systems determine the fate of wildlife and wildlife populations, not intrusive human activities.

While the ideal of preservation and the priority placed on the working of natural processes are guiding principles for the NPS, the reality of human impacts complicates the management of parks. Humans have extirpated species from areas before the lands were designated as parks, robbing the present units of their complete composition of species and disrupting the balance of relationships

fine-tuned through the workings of evolution. In some units, humans have unthinkingly augmented species diversity, introducing exotics that harm native populations of plants and animals. Businesses have opened commercial operations on the periphery of parks, with the effects of these operations being felt within the boundaries of parks. And Congress has drawn park boundaries that do not conform to ecological boundaries, shortchanging and thereby short-circuiting the ebb and flow of natural processes.

The examples of harmful human impacts are as diverse and as numerous as are the units of the NPS. Parks in Hawaii confront the problems caused by feral pigs, damaging vegetative communities and the animals that depend upon them. Yellowstone National Park, the second largest unit in the contiguous 48 states, grapples with its insufficient size to accommodate the opportunistic movements of

bison. Small units in the East face interruptions of ungulate populations, which cause visible impacts on the understory offorests.

How can the NPS maintain fidelity to principles of hands-off management, but maintain protection of parks in biological communities adversely affected by human activities? The ideal of hands-off management is a goal for the NPS, but it is not a reality. For political, practical, and ethical reasons, the NPS actively manages wildlife every day.

Scientists working for the NPS can provide important insights about resolving management conflicts. But science does not give us answers: it gives us options. Decisions, grounded in scientific understanding, are guided by value judgments.

The NPS must continue to strive to maintain the workings of ecological systems and to protect species. But it must also strive to maintain humane standards for the treatment of animals. Wild animals are not just cogs in an ecological machine. Society has placed value on the protection of individual animals from human-caused harm. The NPS response to management imperatives requires a greater attentiveness to a humane ethic.

Below, we discuss a number of specific areas of NPS action where we believe application of humane policies is both ethically mandated and politically judicious.

Management of Exotic Species

Biological communities are dy-

namic. With or without human interference, species' ranges spread and shrink. Plants and animals colonize suitable habitat, spread, diminish, and disappear, depending on deterministic and random factors. Human activity has, of course, accelerated colonization as well as extirpation, and introduced species can have dramatic effects on local ecosystems (U.S. Congress, Office of Technology Assessment 1993). Nevertheless, a policy that views exotic species as uniformly unwelcome in national parks flouts biological and political realities, and invites conflict with humane ethics and with animal protection groups.

When Europeans colonized North America, they brought with them an enormous symbiotic biological community. From the Old World came domestic animals—cows, pigs, sheep, goats, dogs, and cats; commensals—brown rats, house mice, and a host of insects; disease organisms; crop plants; and a rich opportunistic flora that was already adapted to Old World agricultural practice (Crosby 1986). This community is here to stay, and, although the NPS may successfully exclude or eliminate some of the more dependent, conspicuous, rare, or slowly reproducing species from the national parks, it is an uphill battle. The national parks are not museum exhibits frozen in time, and they cannot be managed as such. Stasis is not a property of ecological systems.

Although firmly embedded in the culture, thinking, and policies of the

NPS (National Park Service 1988), the preference for native species over exotic species does not play a prominent role in shaping the public's views of animals. In our experience, the public understands the importance of protecting endangered and threatened species; values clean air, clean water, and a healthy landscape; values wilderness (and the national parks) for symbolic, aesthetic, and spiritual reasons; and values animals of many species for their own sake. We do not think these values will change readily, and NPS attempts to "educate" the public to support policies that devalue exotic species will meet with significant resistance and political backlash if these policies conflict with well-established public values. The backlash may worsen if the NPS tries to cloak value-driven policies as science-driven.

Management of exotic species may conflict with an animal welfare ethic in two ways. Most obviously, exotic species management may involve intruding on, harming, or killing wild animals. Within the context of a broad animal welfare ethic, such action can only be justified if it eases the suffering of the animals being managed, or if it is absolutely necessary for the protection of other wildlife or the systems that support wildlife. Another unacceptable aspect of management or (especially) elimination of exotic species from national parks is that it encourages the stigmatization of certain species. In its zeal to sell an eradication program to itself and to the public, the NPS may characterize

native species as desirable and "good," while exotic species are portrayed as undesirable, destructive, and "bad." From an animal welfare perspective, however, there are no bad animals, and any value system that demonizes animals is fundamentally destructive, especially if it emanates from a source that has as much public credibility as the NPS. All animals are worthy at least of our sympathy as creatures trying to survive and reproduce in whatever habitat they find themselves.

We elaborate in the context of two current species management controversies.

Wild horses. Evolved in North America, driven to extinction in the late Pleistocene by factors that may be at least partly anthropogenic, and reintroduced to the continent four or more centuries ago, wild horses (*Equus caballus*) exercise a strong hold on the American imagination (Berger 1986; Kirkpatrick 1994). As wildlife, they are extraordinarily adaptable, intensely and complexly social, and beautiful to look at. Moreover, North America is full of people who breed, ride, train, and are otherwise intimately involved with horses, and who possess deep personal feelings for these animals.

Recently, three East Coast national seashores have been grappling with management of wild horses: Assateague Island, Cape Lookout, and Cumberland Island. In each case, NPS resource managers have expressed concern that their resident wild horses are harming barrier is-

land ecosystems, principally through heavy grazing and trampling of dune grasses and marsh grasses (Assateague Island National Seashore 1995; Cape Lookout National Seashore 1996; Cumberland Island National Seashore 1996).

The wild horses of Assateague Island are arguably the most visible and best known in the country. In approaching its wild horse management problem, the park carried out or contracted for extensive research on horse impacts and on humane management techniques before beginning a management plan (Assateague Island National Seashore 1995; Kirkpatrick 1995). The approach chosen is both technologically innovative and extremely respectful of the welfare and social integrity of the horses. Since 1995, the park has been using a n immunocontraceptive vaccine (porcine zona pellucida, or PZP) to stop horse population growth and slowly reduce population size. The vaccine is remotely delivered, and thus no handling of the animals is required. The contraception program has been accompanied by an aggressive interpretive program designed to inform and reassure seashore visitors and the neighboring public (Kirkpatrick 1995). By any measure of public acceptability, this program has been a success: media attention has been almost uniformly positive, and the draft environmental assessment received only a handful of comment letters, all but one of which were supportive (Kirkpatrick 1995; M.A. Koenings, letter dated March 6,

1995).

The Cape Lookout program has been considerably more controversial. Cape Lookout has had to deal with an additional issue: equine infectious anemia (EIA) has been present among the park's horses, and the Veterinary Division of the North Carolina Department of Agriculture strongly urged the NPS to develop an EIA-free herd (Cape Lookout National Seashore 1996). Even before the EIA issue was raised, however, the park's plan evoked a strong negative response within significant segments of the public, especially among local horse breeders and the animal welfare community. Documentation of horse impacts on island ecological processes was, in our view, less than compelling. Moreover, the environmental assessment's preferred alternative called for the removal of more than half of the horses from the island, raising concerns that the viability of the herd would be threatened, and that the horses who would be removed might come to harm during handling or disposition. The controversy attracted significant media coverage, as well as the unfriendly attention of public officials outside the NPS.

Cumberland Island National Seashore is still developing its program, but the experience of Assateague Island and Cape Lookout is clear: if the NPS wants to actively manage wild horses, the justification must be clear and scientifically and ethically defensible, and the welfare of the animals must assume the high-

est priority.

Olympic mountain goats. Controversy exists over whether mountain goats (*Oreamnos americanus*) are native to Olympic National Park. A hiking club released a small group of goats into the park in the 1920s, but several historical accounts describe goat sightings on the Olympic peninsula prior to that release. Other accounts do not yield goat sightings (Moorhead and Stevens 1982; Lyman 1988; Houston et al. 1994). Suffice it to say that reasonable people may disagree about whether mountain goats are native to the national park.

Beginning in the 1970s, NPS and other scientists began collecting data at Olympic National Park on mountain goat population biology and the impact of the goats on plant communities (Houston et al. 1994; Olympic National Park 1995). Additionally, the NPS live-trapped and removed approximately 400 goats from Olympic between 1981 and 1989. In 1995, the park released a draft EIS whose preferred alternative was to shoot all the goats remaining in the park, on the grounds that they were exotic and posed a threat to rare endemic plants and to fragile alpine plant communities (Olympic National Park 1995).

Again, fierce controversy followed. The park office was flooded with hostile phone calls, and one poll conducted in 1995 (by Elway Research, Inc., Seattle) indicated that 73% of Washington voters opposed the extermination of the park's goats,

which were traditional favorites of visitors. Officials of the Washington Department of Natural Resources expressed concern with the plan. The question of the mountain goats' exotic status remained undecided in the minds of many. We believe, in addition, that the NPS overstated its case for goat impacts. Twenty years of research demonstrated that goats damaged individual plants, through grazing or wallowing, but only in local areas and at low levels (Houston et al. 1994). The NPS research yielded no evidence that mountain goats affected population levels of any rare or endemic plants, and much of the research was carried out when goat populations were much higher than existed at the time of the release of the environmental impact statement (EIS).

The mountain goat controversy has not yet been definitively resolved. In our view, however, it has already damaged the image of the NPS, at least regionally. A proposed NPS action, based on a fairly narrowly held set of values, clashed with widely held public values of humaneness and the intrinsic value of wildlife, producing a reaction from the public that ranged from confused to appalled. Olympic's attempts to link the goat extirpation effort to endangered species protection—a rationale that the public might have accepted—proved to be based on scientific claims that were largely hollow, further undermining the NPS's credibility and authority.

Management of Native "Overflow" Species

Perhaps the NPS's greatest challenge for the 21st century will be managing relations with the human communities that border the national parks. One aspect of the challenge will be defending the ecological integrity of parks against the intrusive impacts of disruptive human activities: mining, logging, livestock grazing, residential development, and uncontrolled recreational use. In this effort, the animal welfare community will lend its full support to the NPS. Creation of buffer zones to protect the parks from such intrusion should be a major objective for all national park advocates.

Another aspect of this challenge will prove more problematic for animal welfare advocates. Wildlife will continue to move out of the national parks and, unless efforts to buffer parks are highly and uniformly successful, will increasingly cause conflicts with neighbors. Short of building wildlife-proof fences around national parks, which will not generally be either desirable or practical, the NPS will be forced (if only for political reasons) to confront questions of controlling wildlife populations that originate within park boundaries. Rarely, however, will there be clear NPS policy justifications for controlling native wildlife populations within park boundaries. And unless such actions are very strongly justified, they are likely to be viewed dimly by the public and by the animal protection community.

In our view, reductions of native wildlife populations should be limited in scope and duration and unambiguously justified with clear policy and good science. All alternatives to population control within parks should be explored and exhausted, and non-lethal population reduction methods (such as immunocontraception) should be favored over lethal means if at all possible.

White-tailed deer at Gettysburg National Military Park. A white-tailed deer population at Gettysburg National Military Park and Eisenhower National Historic Site, Pennsylvania, reached high densities by the late 1980s (Storm et al. 1989). NPS management believed this deer population was altering historic woodlot appearance and inflicting intolerable crop damage to fields farmed by private lessees (who are also park neighbors), thus interfering with the parks' missions of historic interpretation. The NPS initiated extensive research into the biology of the resident deer population, culminating in an EIS process (Storm et al. 1989; Fairweather and Cavanaugh 1990; Vecellio et al. 1994; Gettysburg National Military Park 1995). The EIS yielded a preferred alternative of dramatic lethal reduction of the deer population through NPS-employed sharpshooters, and that program was implemented in 1995.

Although the research effort was thorough, the policy justification for massive deer reduction at Gettysburg and Eisenhower was and is, in our view, extremely weak. Rather than

developing a comprehensive plan to improve the appearance of the battlefield and an integrated pest management strategy to protect crops—including restoration of historic fence lines and drainages, selective logging of woodlots, temporary barriers to locally exclude deer from woodlots, repellents to protect historic orchards from deer—the NPS focused the EIS entirely on methods of deer population reduction, virtually guaranteeing the outcome from the outset.

The deer killing program has resulted in ongoing controversy with neighbors and animal protection groups, for safety and humane reasons. While initial results suggest that Gettysburg is succeeding in its immediate objective of reducing the crop damage being experienced by its leaseholders, it is not at all clear that the parks' fundamental mission of historical interpretation will be served by the deer kill.

Yellowstone bison. Like the wild horse, the American bison (*Bison bison*) is an American wildlife icon. More than any other animal, it symbolizes all that is both heroic and shameful in the conquest and settlement of the American West. The ambiguity of its symbolism is reflected in the animal itself: huge, capable of astonishing feats of strength and agility, awesome when assembled in numbers that can darken a landscape, but, conspicuous and placid, pathetically vulnerable to the human propensity for destruction.

Probably because of swelling numbers, grooming of snowmobile

trails, and adaptive learning, bison regularly have been straying over the boundaries of Yellowstone National Park in varying numbers since the late 1980's (Meagher 1989). This overflow has antagonized some park neighbors, most notably ranchers who have expressed concern that the bison might transmit brucellosis to their cattle (a threat that we have in the past argued is greatly exaggerated, e.g., Schubert et al. 1994; see also Meyer and Meagher 1995). With strong encouragement from the animal protection community, the NPS has refused to control bison numbers within Yellowstone, lacking a clear policy justification for doing so.

Unfortunately for the bison, however, the state of Montana has had no such compunctions. Under a variety of interim management plans, hunters and state officials from first the Division of Fish, Wildlife, and Parks and then the Department of Livestock have shot bison by the hundreds as they grazed outside park boundaries. Although clothed as a brucellosis-control effort, in our view the rules governing the killing have not been linked logically to risk of disease transmission. (For example, bulls as well as cows have been aggressively shot, despite general agreement that there is no plausible mechanism by which bison bulls may transmit brucellosis to cattle.)

More recently, the Montana shooting campaign has been augmented (at least for now) with a joint Montana-NPS effort to trap, test, and slaughter brucellosis-positive bison

both inside and outside Yellowstone, while tolerating their presence in some relatively remote national forest lands adjacent to the park (Yellowstone National Park 1996). While superficially more convincing as a brucellosis-control program, the unreliability of the brucellosis test employed, the predictions of models, and the presence of the disease vector in other wildlife species (most notably elk, *Cervus elaphus*) in and near the park suggest that the effort is not credible (Peterson et al. 1991; Meyer and Meagher 1995). In the face of this evidence, we now believe the bison removals are functioning primarily as *de facto* population control, rather than disease control.

We continue to be strongly opposed to active control of bison populations within Yellowstone, especially any kind of lethal control. We also continue to seek greater tolerance of bison outside the park, especially on federally owned lands. However, we do acknowledge that the public will not tolerate indefinitely the spread of bison into agricultural lands and developed areas. Brucellosis aside, bison are, after all, physically intimidating creatures with little respect for fences or other conventional obstacles.

Thus, population control of some sort outside Yellowstone may prove necessary at some point, possibly soon. In this case, we encourage the park to take the lead in exploring non-lethal, non-invasive population control techniques such as immuno-contraception.

Shooting bison is gruesome and callous, and resonates deeply with our national recollection of the most shameful sides of western expansion. Likewise, treating bison as livestock is at least as inhumane as shooting, and also sullies our national self-image as a frontier nation. Consequently, in our view, neither of these practices will ever gain broad public acceptance. As it continues to protect Yellowstone and grapple with the management of its bison, the NPS will serve its mission well if its policies assure bison the respect and humane treatment they deserve.

Conclusion

The National Park Service is perhaps the U.S. government's foremost communicator of ethical views of wildlife to the public. Consequently, it bears a heavy responsibility to examine carefully the values on which it bases its own programs and policies. This responsibility is practical as well as moral; high expectations on the part of the public can lead to deep cynicism and powerful political backlash when the NPS abandons the moral high ground.

But if the NPS embraces humane values in the broad sense—compassion for individual animals, and care for the biological communities in which they thrive—it will receive the strong support of the animal welfare community and of the public. This support will, in turn, keep our national parks secure, and their wildlife safe for future generations to enjoy.

Citations

- Assateague Island National Seashore. 1995. Alternatives for managing the size of the feral horse population of Assateague Island National Seashore. U.S. Department of Interior, National Park Service, Berlin, MD.
- Berger, J. 1986. *Wild Horses of the Great Basin*. University of Chicago Press, Chicago.
- Cape Lookout National Seashore. 1996. Alternatives for managing the feral horse herd on Shackleford Banks, Cape Lookout National Seashore. U.S. Department of Interior, National Park Service, Harkers Island, NC.
- Crosby, A.W. 1986. *Ecological Imperialism, The Biological Expansion of Europe, 900-1900*. Cambridge University Press, Cambridge, England.
- Cumberland Island National Seashore. 1996. Alternatives for managing the feral horse herd on Cumberland Island National Seashore. U.S. Department of Interior, National Park Service, St. Marys, GA.
- Fairweather, S.E., and C.M. Cavanaugh. 1990. Identification, restoration, and maintenance of historic woodlots at Gettysburg National Military Park. Technical Report NPS-MAR-NRTR-90/049. U.S. Department of Interior, National Park Service, Philadelphia, PA.
- Gettysburg National Military Park 1995. *Final Environmental Impact Statement: White-tail deer Management Plan*. U.S. Department of Interior, National Park Service, Gettysburg, PA.
- Houston, D.B., E.G. Schreiner, and B.B. Moorhead. Mountain goats in Olympic National Park: biology and management of an introduced species. Scientific Monograph NPS-NROLYM-NRSM-84-25. U.S. Department of Interior, National Park Service, Washington, D.C.
- Kirkpatrick, J.F. 1994. *Into the Wind: Wild Horses of North America*. NorthWord Press, Inc., Minocqua, WI.
- . 1995. Management of wild horses by fertility control: the Assateague experience. Scientific Monograph NPS-NRSM-95/26, U.S. Department of Interior, National Park Service, Washington, D.C.
- Lyman, R.L. 1988. Significance for wildlife management of the late Quaternary biogeography of mountain goats (*Oreamnos americanus*) in the Pacific Northwest, U.S.A. *Arctic and Alpine Research* 20:13-23.
- Meagher, M.M. 1989. Range expansion by bison of Yellowstone National Park. *Journal of Mammalogy* 70:670-675.
- Meyer, M.E., and M.M. Meagher. 1995. Brucellosis in free-ranging bison (*Bison bison*) in Yellowstone, Grand Teton, and Wood Buffalo National Parks: a review. *Journal of Wildlife Diseases* 31: 579-598.
- Moorhead, B.B., and V. Stevens. 1982. Introduction and dispersal of mountain goats in Olympic National Park. Pp. 46-50 in *Ecological Research in National Parks of the Pacific Northwest* (E. Starkey, J. Franklin and J. Matthews, eds.). USDA Forest Service Forestry Research Laboratory, Oregon State University, Corvallis.
- National Park Service. 1988. *Management Policies*. U.S. Department of Interior, Washington, D.C.
- Olympic National Park. 1995. *Goats in Olympic National Park: Draft Environmental Impact Statement for Mountain Goat Management*. U.S. Department of the Interior, National Park Service, Port Angeles, WA.
- Peterson, M.J., W.E. Grant, and D.S. Davis. 1991. Bison-brucellosis management: simulation of alternative strategies. *Journal of Wildlife Management* 55:201-213.
- Schubert, D.J., A. Ruthberg, and P. Knight. 1994. *Brucella abortus* in the Greater Yellowstone area: the animal protection perspective. Paper presented at the National Brucellosis Symposium, Jackson Hole, Wyoming.
- Storm, G.L., R.H. Yahner, D.F. Cottam, and G.M. Vecellio. Population status, movements, habitat use, and impact of white-tailed deer at Gettysburg National Military Park and Eisenhower National Historic Site, Pennsylvania. Technical Report NPS-MAR-NRTR-89/043. U.S. Department of Interior, National Park Service.
- U.S. Congress, Office of Technology Assessment. 1993. *Harmful Non-Indigenous Species in the United States*, OTA-F-565, U.S. Government Printing Office, Washington, D.C.
- Vecellio, G.M., R.H. Yahner, and G.L. Storm. 1994. Crop damage by deer at Gettysburg Park. *Wildlife Society Bulletin* 22:89-93.
- Yellowstone National Park. 1996. *Interim Bison Management Plan*. U.S. Department of Interior, National Park Service, Montana Department of Livestock, and Montana Fish, Wildlife and Parks, Helena, MT.

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Wildlife in Parks: Policy, Philosophy, and Politics

The last century provided a platform for many great minds and visionaries who taught us what conservation and preservation mean. Those ideas evolved into the parks and forests that have been our legacy in this century. It is our duty to leave both the resources in place and the infrastructure to protect those resources, including, and perhaps most importantly, an informed and supportive public.

As we move into the next century, we face a much greater challenge than the one our predecessors met so successfully. They operated in a world where many of our lands were separated from the pressures of civilization by distance, in a nation with an abundance of resources. In the future, habitat will be in ever-diminishing supply, not only for the animals both great and small, but also for the soul of humankind—a soul that requires constant replenishment and occasional solitude.

Today is the time to establish a vision for the management of our national treasures in a comprehensive, programmatic, and objective manner. From my point of view, the one element of the natural world most in need of comprehensive protection is wildlife. Increasing conflict between the burgeoning human population and wildlife, resulting from rapidly increasing habitat alteration by humans is the greatest threat to free-ranging wildlife populations. One must ask: what will any great expanse of wilderness mean without the free-

roaming fauna that inhabit it today?

Therefore, it is the preservation of wildlife as a viable and meaningful element of our great lands and waters to which we should be turning our attention now. The U.S. National Park Service (USNPS) has always suffered great criticism regarding wildlife management. The criticism continues today from many of those imbued with a harvest ethic view of land management. Many critics will never comprehend or accept ideas such as natural regulation and preservation of resources. The philosophical basis and goals of traditional wildlife management philosophy make it a difficult fit at best, in many situations, in a national park setting.

My greatest fear regarding wildlife policy in our national parks has always been that inaction and inconsistency of policy implementation by the USNPS might lead to legislated wildlife policy. From a vantage point outside the agency, the National Park Service appears to accept alien species in some parks and purge them in others. It appears to be passive in

some situations and proactive in essentially the same situation elsewhere. People often ask: "Why are feral horses acceptable at Assateague Island, but not in the Ozarks?" "Why do we purge mountain goats at one park and protect them at another?" others will ask. Some of these questions have logical answers and some do not.

Fears of misguided, legislated wildlife policy have taken on more substance with the enactment of the 1996 Omnibus Parks Bill. In that bill, Congress directed the National Park Service to maintain a minimum number of feral horses in Ozark National Scenic Riverways. This may seem a small matter to some, but it is diagnostic of a larger potential problem that is looming before the US-NPS. There is a general perception that the agency does not have a viable and realistic wildlife management strategy. This perception is rampant among state wildlife managers and popular among academics involved in the discipline.

Whether this perception is factual or not is one issue, but neither the agency nor its defenders can deny that the perception exists in many circles, which is in itself a real problem. The perception of a problem can often be as damaging as any real and documentable problem. If this perception of failure persists and spreads to the general public and their political representatives, it could present problems that would alter the manner in which we view not just wildlife management, but all management in na-

tional parks.

The problems associated with the "natural regulation" philosophy and with the more proactive stances that the agency has taken at times are more related to inconsistency of policy application than they are to efficiency of one philosophy over another. In many of the same situations, traditional wildlife management philosophy has proven just as ineffective and inefficient as natural regulation. Those policies have also functioned just as well as natural regulation has in other situations.

One example of the complex nature of these issues is the present status of the white-tailed deer (*Odocoileus virginianus*) in the eastern United States, and its ramifications for state agencies and the US-NPS. This issue symbolizes both the need for comprehensive planning for wildlife management and the need for a programmatic approach to policy issues for all land management agencies.

A variety of forces and pressures have combined synergistically to compound the frequency of negative interactions between humans and deer in the urban and suburban environment. Negative deer-human interactions include such things as deer-caused automobile collisions, depredation upon crops, and depredation upon horticultural plantings. Many national parks and historic sites have documented a high population density of this species. As a result of both perceived resource degradation and public pressure resulting from

the impact of deer population densities on adjacent private lands, a great deal of white-tailed deer research has taken place in national parks.

In many of the parks studied, research has confirmed anecdotal observations about the population numbers and the apparent nutritional status of the herds in question. In some cases the research has been thorough enough to detail dietary preferences and impacts upon vegetation. In addition to the forest succession and exclosure data, for vegetation analysis, home range information has been critical for management of most reserves.

In the eastern United States, however, overpopulations of these ungulates appear to have become virtually immune to herd thinning by traditional state management techniques. Regardless of how many hunting permits one issues, if access to prime habitat is denied by private landowners, overall net reduction in the herd density will be difficult or impossible to achieve. Increased areas of urban and suburban interface with natural areas have forced limitations on hunting as a management tool in many areas.

Often, game managers lay the blame for lack of access at the feet of the USNPS; however, in most cases this theory simply does not stand up to close examination. Many USNPS sites in the eastern United States do have high population densities of white-tailed deer. Proponents of maximum sustained yield management techniques tend to blame park

areas for their lack of success in controlling herd size. The "refuge effect" theory claims that wildlife species in season flee into non-hunted areas in order to evade hunters. In many of these cases, however, the deer population density is equally or nearly as high outside of the park boundaries as it is within.

Although there may be validity to the "refuge effect" in some areas, it is a moot point in many others because of the high population density of the same species in the surrounding lands. There may be some situations in which the reduction of the herd inside the park will alleviate depredation pressure in the surrounding area. This is more likely to be the exception than the rule in the coming decades. Hunting access is often denied on private lands as well as in parks.

This has been the case in many States east of the Mississippi River in the past several decades. Often, national park units are cited as the source of the problem, and their status as refuges is blamed. Most of the USNPS sites heralded to refuges of wildlife from recreational hunters are simply too small to provide that "refuge" to any significant number of the population being examined. In point of fact, when studies are undertaken to determine if a refuge effect exists in a historical park, the answer is more likely to be a resounding "no."

What does often seem to happen in these situations is twofold. First, the area surrounding most of our

larger historical parks is zoned for development at a lower suburban density rate. Morristown National Historical Park in New Jersey, for example, is approximately 1,800 acres and does have an extraordinarily high deer-population density of about 65 per square kilometer. However, the surrounding residential area is mostly zoned for five-acre lots and there are thousands of additional acres of state, county, and city parks in the area. This creates a region that is essentially all prime deer habitat.

Most of these areas also share in the high population density of deer that has been demonstrated in the park. Essentially, the homeowners are often seeing the deer that live on their own property and in many of the contiguous habitat areas between the parks, arboretums, and other greenways in the area. They are often encouraged by game managers to perceive the deer as "park deer" regardless of the factual situation or the geographic distance to the park.

Secondly, the deer that are taken first in the hunting season are often the ones that actually reside in the fringes of the greenspace as their primary habitat. After hunting begins and those individuals are harvested, hunters turn their attention to other individuals that they believe are now hiding in the deeper wooded areas more recessed from the roads and human populations.

The problem with this assessment is that these individuals normally inhabit the deeper, more recessed areas and are not simply seeking refuge

from the hunting activity. The fact that they habitually avoid human contact is one of the reasons that these animals tend live longer and grow larger and stronger. However, among traditional wildlife managers the "refuge effect" is accepted as a fact with little or no research to substantiate its existence in specific situations. This is one of the areas where traditional wildlife management tenets resemble art more than science and religion more than philosophy.

Clearly there are several issues related to the situation described above. What kind of problem would rightly drive an agency such as the USNPS to take a proactive management stance in such situations? In order to justify action on a resource-based rationale, the unit manager needs to have some idea of what the appropriate carrying capacity is for the lands and species involved. "Carrying capacity" is a term that has properly been characterized as a slippery shibboleth at best. The term can only have meaning in relation to specific goals for the land area or species in question.

In traditional wildlife management philosophy, the goals are clearly defined as harvest and recreation. For most wildlife managers, the goal is to produce as many recreational opportunities to harvest a deer and as many "healthy" deer to be harvested as possible. Within the parameters of these goals, carrying capacity is easily defined. The term "healthy" for the animal is also equated with one that is a good harvest.

It is the basic philosophical differ-

ences between conservation lands that are set aside for harvest, and preservation lands that are set aside for heritage purposes, that are not reflected in any wildlife management strategy in academia or in practice by game managers today. Many academics recognize that site-specific goals must be used to measure wildlife impact on resources and to develop action plans. They fail to understand the critical role that the agency mission has in developing wildlife strategy. They also often fail to understand that the USNPS is a holistic management agency and not a single-species manager.

First, little recognition is made of the fact that this species (white-tailed deer) was essentially extirpated from much of the eastern United States at the turn of the century. Deer, for example were reintroduced by state game managers and private hunting clubs and consistently managed to produce the largest herds possible. USNPS had nothing to do with that.

Secondly, it is time that the discipline of wildlife management recognized that national parks are not set aside for harvest, but for posterity. National park managers were never meant to be single-species managers nor were parks meant to be game lands any more than they were meant to be timber stands. All wildlife management philosophy and management techniques appear to be based upon two principles: 1) maximum sustained yield, and 2) increased recreational opportunities for hunters.

Neither of these is or ever will be a basis for managing wildlife in a national park. The USNPS will have to determine its wildlife management policies and strategies based strictly upon its own mandates and goals. The necessity for action will have to be determined on a case-by-case basis related to site-specific goals for the landscape. Policy, however, should not veer unless dictated to do so by legislation. It may become necessary for the agency to establish its own wildlife management strategies, including perhaps its own nomenclature, in order to be effective managers of wildlife on preservation lands.

What is an appropriate carrying capacity? Very often, carrying capacity is a number set upon economic factors as much as upon biological ones. In a national park setting, proactive management of any single species can only be justified within the context of balance within the ecosystem or cultural landscape that is being protected. One resource can only be judged out of balance if it is negatively impacting the other resources demonstrably. Furthermore, this is only significant if the disturbed resources are being protected for a discrete reason.

It is not enough to state that deer are eliminating the oak stands within an historical park if the park does not have some logical reason to protect oak stands and to protect them from evolving into a different type of forest. Within the context of a cultural landscape, it is not difficult to determine that a particular setting made of cer-

tain vegetative types is essential to the story of the park. If, however, the setting has no more to do with the story of the park than the anticipated forest type that will follow, then there is no reason to protect it from deer or any other natural event or disaster.

The same theory applies to natural areas. If there is a reason to protect a particular static type of vegetative cover, then it should be protected by all means. If the park was mostly chestnut when it was established and now oak is succeeding to a new forest cover, then perhaps the impact of wildlife is minimal. Traditional measures of impact, such as the number of stems per acre necessary to re-establish a forest after a clearcut, may not be appropriate in a national park situation where no clearcut is ever anticipated to take place.

Extensive studies may be made of deer impacts in a dynamic ecosystem, such as a barrier island like Fire Island National Seashore. The studies may indicate definite negative impacts from deer, but before wildlife management activities begin the entire ecosystem could be eliminated by a hurricane. This entirely possible scenario should give managers pause to consider the eventual fruits of their labors. I am proposing only that caution should be used in systematically identifying goals and actions.

The USNPS may employ hunting techniques to achieve its goals, however, the USNPS mandate is completely different from those of other agencies in relation to wildlife management. It is incumbent upon the

USNPS to separate the harvest ethic from its management goals and specifically from the development of wildlife management policy. Single-species management for its own sake has no place within a national park.

This is not to suggest that the USNPS needs to be passive in order to meet its mandate. It seems likely that the wildlife within our parks will require proactive management well into the next century. The nature of that action, and the precepts that drive that system to action, are what must be established carefully and meticulously.

Controversy is certain to ensue if and when USNPS areas assume an active wildlife management program on a Systemwide scale. Recent attempts to manage deer at Gettysburg National Military Park seem to be progressing well. The actions, however, are based upon many years of study, goal-setting, and a proactive use of the compliance laws by numerous people at the park, Regional and Washington offices. The possibility of an increasingly active USNPS wildlife management program at sites that have never been subjected to hunting pressure in the past will be significant, as the forces discussed earlier expand.

Regardless of the fact that superintendents have the acknowledged authority to manage the wildlife within federal reserves, the anticipated controversy and legal challenges will generate the necessity for Directorate-level policy interpretations and decisions in many cases. The success at

several sites in recent years with proactive management is encouraging. Many other parks, however, are still struggling with similar issues that may be beyond the resources of the individual parks to solve.

The potential for non-action in areas that clearly require action is obvious. It is equally possible that some parks may endeavor to act on this issue in a premature or ill-advised fashion. Every step we see in legislated policy moves the agency toward a lack of flexibility and a larger potential for policy based upon emotion. We have yet to see the full potential of a tragedy involving an automobile-wildlife collision in a park. The impact of bad policy and emotional legislation could be devastating on a Systemwide basis. An ecosystem is more likely to rebound from an overpopulation of a single species than the National Park System will from an overabundance of bad legislation and policy.

Although wildlife management actions could be undertaken across the System based on the history of this issue and previous success with case law, it would be much wiser to begin with a clarification of USNPS policy on a national level. It would also be wise for the Regional- and field-level personnel to function with full and clear guidance and under the auspices of the Washington office and a strong Directorate. It is difficult to develop the necessary resources at the field level to successfully manage nationally important and controversial issues such as wildlife management.

A careful analysis of this issue leads to the conclusion that the best approach to wildlife management in parks is for it to be handled on a programmatic basis. The behavioral variability between individual populations and ecosystems can be extensive. The number of problems presented by an overpopulation are limited, however, and very similar from one area to the next. The number of solutions available to the manager are also limited and similar in scope and depth.

A programmatic action plan and the appropriate level of environmental compliance could be developed to examine the alternatives for wildlife management available to the USNPS. The agency should use this opportunity to share its dilemma, its vision for the future, and potential alternatives with the public and to seek their best advice.

This is one area where a strong leadership role from the top down is necessary for any positive resolution to conflicts between wildlife and human populations. While the agency is now largely decentralized, some areas and disciplines should remain under the leadership of individuals with expertise in both the science and the policy aspects that are relevant. The amount of controversy wildlife management actions could generate can still overwhelm a single park superintendent, as it did to the U.S. Fish & Wildlife Service (USFWS) in the Mason Neck National Wildlife Refuge in Virginia earlier in the decade. Mason Neck is a unit of an agency

with a clear and undeniable legislative mandate to encourage hunting, which the USNPS does not have.

The final resolution will generally come from senior policy officials; therefore, those officials should make the decision on a programmatic level with full knowledge and understanding of the controversy, emotions, and ecological considerations involved. The USNPS leadership should share their plans with the public and be unembarrassed by the individuality of their mission. The need to actively manage wildlife will be the most pressing issue in the next century as parks are increasingly surrounded by development. The USNPS will have to recognize that the need to protect wildlife into perpetuity will require wisdom, planning and some level of active management. Natural regulation cannot be the only strategy in an environment without predators; neither can recreational hunting.

A proactive policy should be declared at the highest levels of the agency, if such a policy is to be followed. It should be accompanied by an honest and credible overview of the history of wildlife management policy in the agency. The agency also needs to determine whether the time is ripe to enunciate such a policy and to follow through with National Environmental Policy Act (NEPA) compliance for programmatic review.

Specific wildlife management implementation decisions should be made at the field level, but policy and leadership must come from the na-

tional level. Only the Directorate can determine when the moment is right for such action. But time is limited for action to begin. Outside forces have always attempted to seize control of wildlife management from the USNPS. They have failed to date; however, the status of wildlife in National Parks in 2099 and 2199 will result from the actions taken or not taken in the next several decades.

I suggest the following points as a basis for enunciating an evolving wildlife policy for parks:

- 1) All actions should be based upon resource protection.
- 2) Each unit should have goals that make the determination of resource damage simple to achieve.
- 3) Political pressure should not drive policy, and the perception of resource damage should be clearly separated from scientifically documented resource problems.
- 4) The Directorate needs to determine if the time is ripe and, if so, articulate a clear policy on these issues that can be implemented in the field.
- 5) A proactive wildlife management program such as the one which is slowly forming itself across the System, will require NEPA compliance. If handled at the national level, much like the USFWS's "Refuge 2000" document, it can alleviate most of the financial and political burden from the field units. This can be accomplished in a two-year pe-

riod and the cost expended can save individual parks from expending much greater resources over time.

- 6) Expertise at every level should be included in this process.

I do not wish to leave the impression that the present systems and paradigms have not served us well in the past. John Muir told us that "the battle for conservation will go on endlessly. It is part of the universal warfare between right and wrong." In this battle we are all fighting with ourselves as much as with others, since we are always both preservationists and consumers.

We must plan now for the obviously greater needs of the future. We must plan now for the tremendous cultural diversity that the United States is certain to experience as demographics change in this nation. We must remember that if the majority do not understand the need for wilderness and wildlife, then there will be no such aspects to the legacy we leave behind. We must never forget that the laws that we sanctify and the lands that we spend our lives protecting exist at the whim of a democratic majority.

We preserve and conserve lands and waters at the direction of the people of our nation. We must recognize that if we do not educate our constantly changing population about the need for historical sites and lands to be preserved, then they will not be preserved. Congress can deauthorize our sanctified public lands, and, in the end, Congress does exactly what the people want. If we allow the teachings of conservation and environmental philosophies to fall by the wayside, then the populace will cast off the special designations that protect our public lands.

Forests and parks can be deauthorized with a voice vote and a stroke of a pen. We must set aside our differences and work together toward the education of our population. We must develop serious national- and state-level planning for future land use needs. Developers and preservationists, hunters and animal rights groups must work together toward a common goal of ensuring some national heritage for the future generations. If we can do these things, we will be sure to leave a legacy for those who follow us as grand as the heritage our predecessors left for us to enjoy today.



Mitigating Effects to Battlefield Landscapes: A National Park Service U.S. Army Corps Of Engineers Partnership

This monograph addresses historic preservation planning for Civil War battlefields,¹ one of the most contentious and otherwise difficult tasks confronting project-review participants. The steady development of privately owned rural land will continue to affect these resources and simultaneously challenge federal officials bearing oversight responsibility. Efforts to mitigate the adverse effects that development poses to battlefield landscapes have been fraught with acrimony and can produce costly “solutions” lying near the extremes (i.e., total development or total preservation) of the option spectrum (Cease 1993). The following paragraphs describe a preservation-planning partnership in Virginia and its attempts to find lodgments closer to the center of this range.

In 1992, Hal Wiggins, environmental scientist for the newly created Fredericksburg Field Office of the U.S. Army Corps of Engineers (FFO), requested that Fredericksburg and Spotsylvania National Military Park assist him by serving as an “interested person” in project reviews involving Civil War-era historic resources. The FFO reviews permit applications for the development of public and private lands falling under the purview of Section 404 of the Clean Water Act of 1972 and related laws and regulations. The FFO’s jurisdiction covers about 1,200,000 acres in north-central Virginia, an area whose technologically advanced transportation networks attracted battalions of Civil War soldiers during the mid-nineteenth century and

battalions of developers during the late-twentieth. In the eastern portion of FFO’s jurisdiction, the park owns 7,000 acres contested by those soldiers and orients more than a million visitors to the battlefields annually.

Wiggins, however, requested the partnership because of the park’s holdings in archival materials, not real estate. Although the park owns fewer than one-quarter of the Civil War sites in the FFO’s jurisdiction, leaving the remainder in private hands, the park’s visitors have always expected park historians to provide interpretation of *all* such sites. Many of those visitors are local landowners curious about their property. Others are genealogists seeking information on the campsites, march routes, and combat areas of ancestors. In re-

sponse to this demand, the park created a huge database of maps, photographs, diaries, and other historical materials about local Civil War sites both publicly and privately owned. The latter category includes the scene of the first combat between an African-American unit of the Union Army of the Potomac and a unit of the Confederate Army of Northern Virginia, the site of the only photographs known to have been taken in 1864 of dead soldiers on the battlefield where they fell, and the rediscovered location of a long-“misplaced” cavalry engagement where the ill-fated General George Armstrong Custer led Federal troopers against the Confederate squadrons of a West Point classmate.

Whenever Wiggins considered issuing an Army Corps permit, Section 106 of the National Historic Preservation Act of 1966 directed him to “take into account any effect” that action might have upon historic resources. As outlined in the U.S. Code of Federal Regulations (CFR), he would “seek ways” to avoid or mitigate any adverse effects to those resources posed by development, which could include residential, commercial-industrial, and public utilities projects. As part of such planning, he would consult with the Virginia State Historic Preservation Officer (VASHPO) and other “interested persons.” It is important to note that the CFR emphasizes the importance of formulating strategies for “reconciling the interests” of the parties involved, including the permit

applicants, over preventing development entirely.

Although Wiggins lacked historical staff and archives of his own, he was beginning to encounter project reviews that involved Civil War-era historic resources. As an “interested person,” the park would (1) provide him with information from its database and (2) suggest non-archeological mitigation measures he might implement as permit conditions.

The park would also assist the VASHPO during project-reviews. The role of the latter included advising FFO on archeological resources. The VASHPO, similarly lacking a detailed database on Civil War sites and events in the FFO’s jurisdiction, was especially eager to predict the likelihood of whether soldiers’ remains or sub-surface evidence of their battle movements and other activities were present at any given site. For example, the park’s archival searches and pedestrian surveys often uncovered evidence that extensive disinterment campaigns by the directors of four local soldiers’ cemeteries, together with intensive metal-detecting campaigns by relic hunters, had rendered the survival of soldiers’ remains and other categories of 1860s artifacts doubtful. The VASHPO would typically recommend that mitigation measures include archeological surveys for Civil War-era resources whenever the park found little or no preliminary evidence of these subsurface disturbances.

In 1992, the FFO reviewed a permit application for a residential

development, the first examination involving the park as an "interested person." The development encompassed an area whose principal historical resources were several segments of Civil War fortifications that had not been the scene of combat. Historical review was therefore restricted to the relatively minuscule acreage occupied by the earthen berms of the fortifications. The applicant, moreover, had always intended to incorporate these resources into his marketing concept. Mitigation planning was consequently a simple process, almost a formality, and produced conservation easements straddling nearly all of the berms.

The next project review, however, involved a property containing a more problematic type of Civil War-era historical resource: a combat area covering the entire project site but containing no fortifications. (Civil War combat did not always involve the construction of fortifications, and those that were extant often channeled battles into unfortified areas.) In the absence of applicable mitigation guidelines or precedents, the park staff could do little beyond providing extensive documentation of the historical event and urging preservation of the entire site. The initiative thus remained with the applicant, who, lacking the same guidelines, successfully argued that *in toto* preservation was both unfair and impractical. A shopping center and its surrounding parking lot now occupy the battlefield.

Clearly then, the FFO-park part-

nership required a balance between documentation and mitigation. The park had provided the former in abundance but suggested little of the latter. The result was a painful reminder that federal preservation law emphasized compromise over prohibition. The lack of workable mitigation measures encouraged the adoption of inflexible negotiating stances, produced no preservation of the battlefield landscape, and endangered the future participation of the park, which served entirely at the invitation of the FFO.

In 1993, the park's historical staff responded to the challenge by devising two mitigation concepts for battlefield landscapes. These measures were non-development corridors and historical mitigation-banking. (See the schematic representations in Figures 1-4.)

Under the first concept, project-review participants agree to exclude development from a corridor that preserves all the landscape elements—hills, swales, stream valleys, road traces, fortifications, etc.—traversed and/or occupied by representative units of soldiers from each army that contested the battlefield. The project-review participants determine the location of the corridor by analyzing the maps, eyewitness accounts, and other elements of the park's database and then reconciling these during site visits to identify those movements and experiences that were typical of two or more representative, opposing units. The width of the corridor is based upon

the amount of undeveloped land needed by a typical modern visitor—walking along the center line—to experience the corridor’s historical appearance and extrapolate this landscape image onto the developed portion of the site.

A non-development corridor offers advantages for both permit applicants and preservationists. An ideal implementation enables the former to develop the majority of land within the combat area and perhaps align the corridor along the least-developable land, since soldiers frequently attacked along wetlands, ravines, and other terrain features that afforded them concealment and protection. An ideal implementation also places the modern visitor physically atop a sample portion of the actual site, a situation that greatly enhances their ability to “feel” the historical events that occurred there.

In 1993 and 1995, the park and the FFO utilized the corridor concept during two project reviews involving the scenes of attacks launched during the Chancellorsville Campaign of 1863. In both cases Wiggins issued permits after the applicants, the VASHPO, and the Advisory Council on Historic Preservation agreed that non-development corridors were the most appropriate measures to mitigate adverse effects to battlefield landscapes. Both corridors are open to the public. The FFO is now considering applying the concept in a third project review involving the scene of an attack launched during the Battle of Spotsylvania Court House in 1864

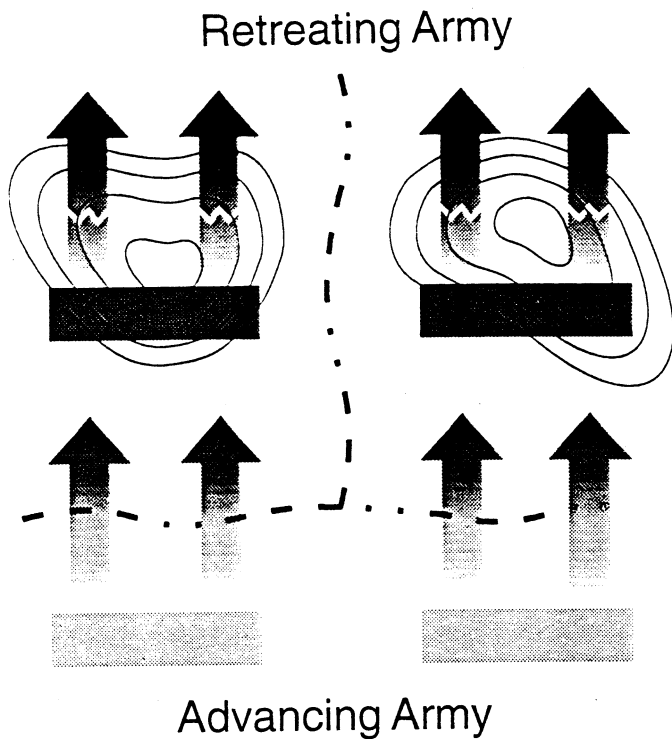
(Fitts 1995).

Non-development corridors unquestionably possess limitations as historic preservation options. They are appropriate primarily for combat sites where the repeated ebb and flow of troop movements occurred roughly parallel to the same line, arc, or angle. The military events of the 1860s, however, transpired during a shift from the rigidly linear tactics of the Napoleonic era to the fluid tactics common in World War Two. Many Civil War combats, especially those of extended duration, actually involved *combinations* of both. In the park’s experience, moreover, the minimum effective corridor width is about 30 yards, which is impractical for many low-acreage developments.

A response to the former challenge perhaps involves the establishment of additional corridors along the paths of the additional types of movement. A response to the latter challenge involves the application of historical mitigation-banking.

In historical mitigation-banking, the applicant develops entirely one combat site but preserves entirely an adjoining or nearby combat site. The latter is of equal or greater historical significance and preferably encompasses the site of part of the same battle. The overall concept is inspired partly by a natural-resources planning measure—mitigating the loss of one wetland area by creating another—utilized by the FFO and other Corps of Engineers Field Offices around the country.

Historical mitigation-banking also



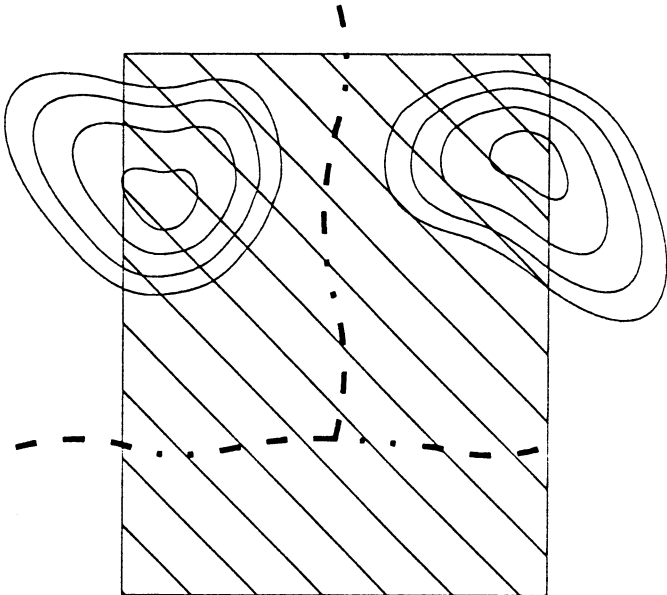
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Hill



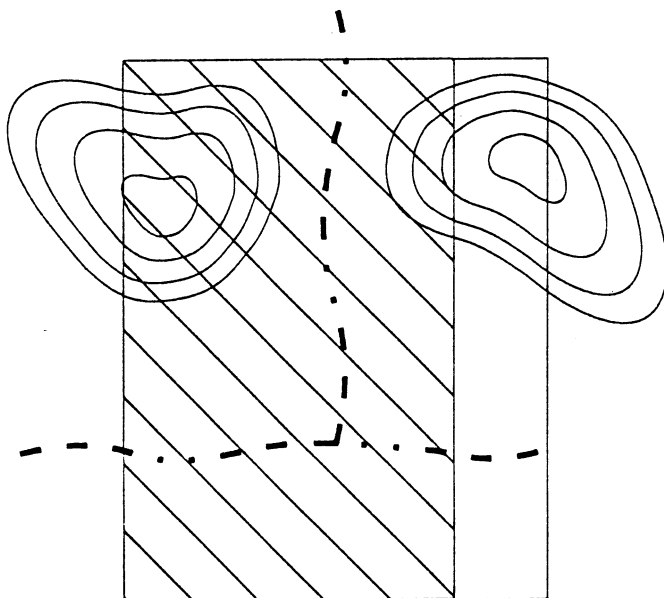
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Area Proposed for Development



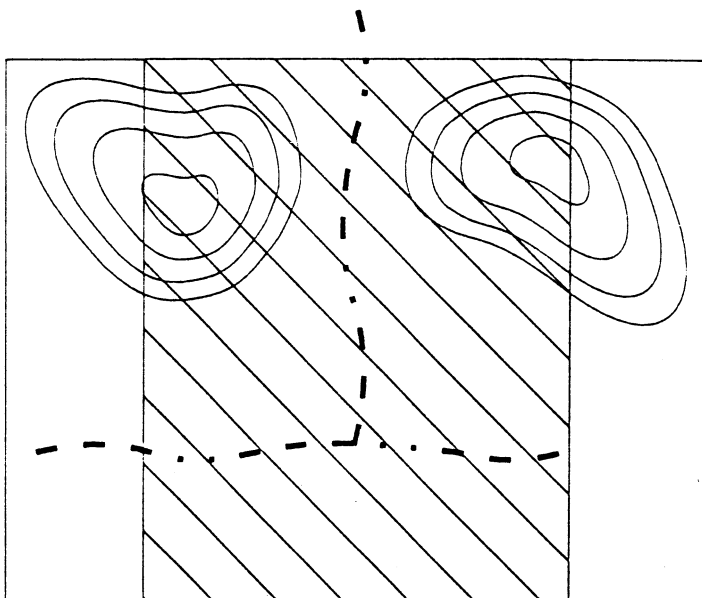
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Battlefield Terrain Altered by Development



Battlefield Terrain Preserved



Legend



Battlefield Terrain Altered by Development



Battlefield Terrain Preserved

offers advantages to both developers and preservationists. An ideal implementation enables the applicant to avoid plan modifications that incorporate battlefield preservation if the potential success of the development is severely limited by such modifications. An ideal implementation also results in the preservation of part or all of a battlefield whose characteristics, such as the absence of wetlands, would have otherwise placed it outside the jurisdiction of federal reviewers.

In 1994, the FFO and the park utilized historical mitigation-banking in a project review involving the scene of a Confederate attack and a Union counterattack launched during the Chancellorsville Campaign. The applicant, the City of Fredericksburg, proposed constructing a two-acre stormwater-retention pond in a portion of a city-owned ravine traversed by the attacks. To mitigate adverse effects to the battlefield landscape, the applicant agreed to establish a four-acre historical reserve on an adjacent slope of the same ravine. The city acquired both a permit and a key addition to what its planners hope will become a system of mini-parks, easements, and trails interpreting Civil War events in the area.

The option of mitigation-banking has its share of limitations. For one, not all permit applicants possess spare battlefield land near or adjoining their project areas. Also, mitigation-banking places an even higher ethical penalty upon historical error than the corridor concept. Specifi-

cally, project-review participants must be doubly sure that the second site is truly of equal or greater significance before acquiescing to potentially irreversible alterations proposed for the first site. The passage of time reveals flaws in all historical endeavors; mitigation-banking is a gamble that these flaws are largely inconsequential. The risk, however, clearly exists in inverse proportion to the scope, depth, and utilization of a historical database.

Both concepts also possess limitations in common. First, they are not equivalent to the *in toto* preservation achieved when a lands trust or other group purchases a battlefield from a willing, private-sector owner. Crucial real estate acquisitions such as that recently negotiated between the Association for the Preservation of Civil War Sites and the owners of the site of the 1863 Battle of Brandy Station often require years of painstaking effort and might be derailed by a hasty application of less comprehensive measures. Second, application of the two concepts is appropriate mainly for project reviews involving Section 106 of the National Historic Preservation Act, not ordinances and laws such as the Department of Transportation Act of 1966 offering more specific or explicit preservation prescriptions, prohibitions, and guidelines. Third, the landscapes set aside through historical mitigation-banking or the establishment of non-development corridors are of questionable value unless they enjoy maximized, permanent protection. Such protection

is enhanced, for example, when easements are held by a pre-existing, third-party organization dedicated specifically to battlefield preservation.

Essentially, the concepts devised and applied by the FFO-park partnership are appropriate for battlefields at which comprehensive preservation is not an option for the foreseeable future. Non-development corridors and historical mitigation-banking are efforts to apply the CFR mandate for "reconciling the interests" to a currently problematic facet of historic preservation. These are stop-gap measures: the park and FFO eagerly await the day when lands trusts or permit applicants themselves routinely initiate the *in toto* preserva-

tion of battlefields prior to entering the project-review phase. In Georgia, Tennessee, and Virginia, for example, the American Battlefield Protection Program and the Natural Lands Trust are working with selected counties and private landowners to establish preservation procedures at the local-government and private-sector levels by, among other actions, capitalizing upon the value of Civil War sites as real-estate marketing assets (Higgins 1996; Pacelle 1994). Until these efforts reach maturity, however, federal officials must help devise landscape preservation measures at the sites of tragic battles past without provoking fruitless battles present.

Special thanks to: the Fredericksburg Field Office, U.S. Army Corps of Engineers; and to the Department of Planning and Community Development, City of Fredericksburg, Virginia.

Endnote

1. "Battlefield" and "combat area" are hereafter used interchangeably

References

- Cease, Cheryl J. 1993. Uncivil wars: Despite highly publicized clashes, developers and preservationists are finding ways to save Civil War battle sites. *Virginia Business*, May, pp. 12-15.
- Fitts, Deborah. 1995. Park officials trying to minimize Spotsylvania development impact. *The Civil War News*, May.
- Higgins, Randall. 1996. Preservation of battlefields topic of Civil War conference. *Chattanooga Times*, September 18.
- Pacelle, Mitchell. 1994. New fighting erupts on old battlefields. *Wall Street Journal*, March 11.

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Developing a Business Approach to Protected Areas Management

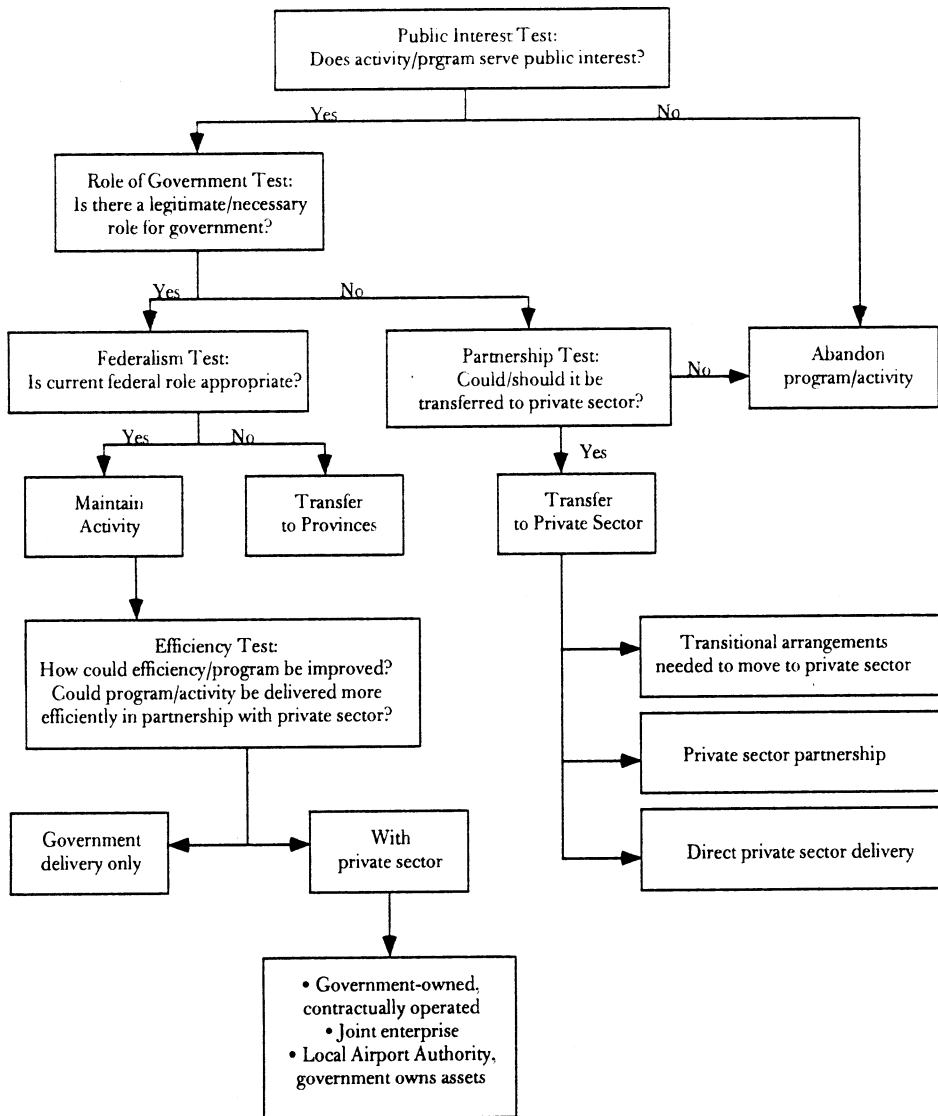
Background

Over the last 10-15 years, park management agencies have been directed by government to find ways and means to reduce costs substantially and also to increase revenues. This change in direction after many years of park systems expansion came as a significant challenge to those who had grown accustomed to more plentiful times. This wave of budget reductions was necessitated by the overspending of governments and their inability to raise adequate resources from taxes to maintain the infrastructure and services that had been developed in more affluent times. The challenge was given to park agencies to seek both traditional and innovative ways to operate more cost effectively. This resulted in a number of common approaches being adopted, as well as the development of innovative ways to accommodate these demands. In the fall of 1996, over 2,000 delegates met at the World Conservation Congress in Montreal to discuss relevant issues affecting the field of global conservation. One of the workshops addressed the topic of "Developing a Business Approach to Protected Areas Management." This paper will both summarize and highlight some of the issues that were covered or discussed at the workshop.

Four papers were presented to set the scene, all of them from a government perspective. They had some common themes, but a variety of approaches, in responding to the new challenge. Another four speakers commented on the first group of papers and also presented information from their own experience. The latter four speakers represented the Thorau Institute, the Canadian Nature Federation, the academic community, and the South Africa National Parks Board.

Representatives from the federal and provincial governments gave a clear indication of the magnitude of recent budget reductions and the

consequent impact and necessity to re-examine their mandate to clarify their future role and priorities. (Refer to Figure 1.) They confirmed that the original mandate of their organizations—to protect representative natural landscapes and cultural sites, and to protect and maintain the ecological integrity of these special places—continues to be paramount. Provision for public use and enjoyment also continues to be emphasized, yet there is flexibility on how these services might be provided. With that as background, Parks Canada touched directly on some of the issues and the initial response of staff:



Source: Canadian Treasury Board

Figure 1. Decision Tree: Public-Private Sector Co-operation.

We have been turning to new ideas, alternative approaches and other sources of funds in our attempts to adjust to this new reality. Many are uncomfortable with the new concepts such as "business planning," with ideas of revenue generation, with the tools of partnership and sponsorship, with techniques such as return on investment and net present value. . . . Some see these changes as major threats to the integrity of our mandates as managers of those protected areas" (Borbey 1996).

This summed up some of the thoughts reflective of both federal and provincial park staff.

The initiation of change was accomplished through reviewing and redefining the philosophy, roles, and rationale of the parks agency and translating the outcome into a new vision for the organization—a vision that could be shared so that staff could identify with the core values, principles, and direction of the renewed organization. This process often involved redefining or reconfirming the core business, assessing the capacity to deliver, restructuring, and implementing the changes within an identified time frame.

Reviewing the Mandate

The majority of park agencies undertook a comprehensive review of their legislation, policy, roles, and mission to redefine the basis for developing a revitalized organization. This included undertaking public

opinion surveys, convening focus groups, or other mechanisms for pursuing discussion with primary user groups. Often the question was raised whether this is an activity appropriate for the government or parks agency, considering the revised expectations for government. It was as well, at this stage, an opportunity to delve into principles that might guide the new organization. For instance, some set targets for cost recovery. Others established a principle of what would be funded from government allocations versus user fees. This was defined as funds for public goods, such as resource protection or research, or for private or individual benefit, such as camping or skiing, or for water and sewage facilities for business or residents.

One parks organization indicated that its response was to identify principles that would provide the parameters for organizational reform. These were:

- A well-focused mandate and vision;
- Mechanisms for meeting public demand for programs and services, including research, inventory, and natural heritage education;
- A means of encouraging investments in new ventures;
- Increased flexibility to adopt entrepreneurial business practices;
- Incentives for staff to perform at high levels; and
- Exemplary service to the public (Richards 1996).

Park agencies tended to reinforce traditional mandates or program objectives which, in the case of Alberta, were preservation, heritage appreciation, outdoor recreation, and tourism (Duffin 1996). Whereas Parks Canada accentuated three fundamental accountabilities in its business planning. First and foremost is the commitment to ecological and commemorative integrity. No investment, no matter how attractive the return, will be made if it compromises this commitment. Ecological integrity statements and commemorative integrity statements within park and site management plans are to give greater definition to this direction. Secondly, providing quality service to parks clients is a commitment. This implies seeking, recording, analysing, and responding to public comments. Third is an accountability for ensuring that public funds are invested in a wise and efficient way (Borbey 1996).

The conclusion of the review phase usually resulted in the development of a new vision statement for the parks agency to provide for medium-term guidance and to serve as a touchstone for employees on where the organization is moving.

Reducing Expenditures

Over a number of years agencies were faced with relatively modest across-the-board reductions of 1-5% on an annual or multi-year basis. However, in reflecting on the implication of today's reductions, one of the presenters noted: "We can no

longer just peel another layer off the onion as in many cases we have been peeled down to the point that it is affecting the core and the time has come to make fundamental quality versus quantity choices. Perhaps it is time to admit that we have to do less with less" (Duffin 1996).

Initial approaches to reducing costs focused on cutting capital budgets, which reduced new development and the recapitalization of older facilities needing renewal. This results in the postponement of required maintenance and is more likely than not to cost more in the future for both operating and maintenance costs. This is particularly noticeable in the deferral of road repairs. As well, facilities that might have been underutilised or outdated were closed, and in some cases mothballed, further reducing overall expenditures. There were also reductions in operating and maintenance allocations, thus extending periods of maintenance and often leaving facilities appearing neglected compared with previous years. There was at this time a greater effort to contract out selected visitor services to others that could operate facilities at lesser cost yet retain the traditional, high-quality standard of service that the public has come to expect. Golf courses, some day-use facilities, and campgrounds were operated by the private sector under operating agreements or service contracts at less cost to government, while providing needed revenue. These revenues, however, in large part were returned to the Treasury

with no benefit derived by the park agency that created the saving. Where agreements could be arranged, other services became the responsibility of non-profit organizations (e.g., co-operating associations, heritage trusts), particularly where common goals were shared. This was often the case for interpretive services and sales outlets that dispense orientation materials and park-related products such as books, tours, videos, etc.

Because of the magnitude of reductions, the majority of park agencies in Canada have gone through major downsizing, layering, consolidation, and restructuring. This has produced organizations that are severely strained because the workforce has been reduced but not necessarily the workload. In addition, the mechanisms for devolution of responsibilities normally entails managing contracts and other partnerships. On the positive side, most agencies are less encumbered by paperwork and have greater flexibility, shorter lines of authority, and greater accountability at the point where services are delivered.

Increasing Revenues

The second major thrust of park agencies was to ascertain ways of increasing revenues to make up for the loss in allocations as a result of budget reductions. For instance, Parks Canada has a target of increasing revenue from CDN\$35 million (10% of total budget) to CDN\$70 million (25% of total budget) as it has been reduced by 25% (Payne 1996).

Other agencies such as the South Africa Parks Board have established an 80% cost return (Robinson 1996), or have raised their cost-return target as did Ontario, to 63% for the year 2001 (Richards 1996).

The prime means for augmenting revenues is to increase user fees, and the majority of park agencies have done this. Fees have been set at a figure closer to market value and with consideration of other fees in the area. Some entrance fees have also been modified by changing the method of charging so as to charge individuals rather than for the vehicle, which had been the past practice. Fees have also been extended to cover new items that were free before, such as firewood, showers, back-country campsites, interpretive hikes, etc. An increase in charges to lessees to provide for full coverage of services rendered is also contemplated where not already implemented. New product lines, such as learning vacations, are also being contemplated.

Becoming Innovative

A number of new ideas have been implemented over the past several years. Quebec has established an independent autonomous government agency to manage visitor facilities such as ski areas, campgrounds, and other commercial lodging facilities (Berthiaume 1996). Alberta has increased the use of the private sector as campground operators, concessionaires, and golf course developers and operators (71% of all campsites are operated under facility operating

agreements, 21% through service contracts and the remaining 8% by park staff) (Duffin 1996). Other organizations have developed shared management opportunities to reduce both capital and operational costs. A case in point is when Parks Canada and the Prince Edward Island government agreed to jointly develop and operate a visitor reception and information facility. Both the Park Warden Service and the Royal Canadian Mounted Police, Canada's national police force, also operate in shared space in the basement of the same structure.

Biting the bullet and getting out of selected non-core responsibilities is equally challenging. In this context, Parks Canada has turned over the responsibility for Banff townsite to the local municipality after a plebiscite decided to proceed in this direction. Similarly, Alberta has divested 31 recreation sites to municipal governments (Duffin 1996). It is equally significant that park agencies are looking and finding new sources to invest in new facilities and programs and in the upgrading of facilities. For instance, in Jasper National Park the Brewster Bus Line has invested in a new, expanded visitor centre and has full responsibility for its operation and maintenance. Information management products are also delivered by innovative partnerships, such as that between the Nature Conservancy of Canada, the Natural Heritage Information Centre, and the Ontario Ministry of Natural Resources Mapping Office to pursue a Parks Ecolog-

ical Data Compilation and Evaluation mapping project (Richards 1996). Alberta has also pursued partnerships in protection, interpretation, and site development and operation with individuals, clubs, associations, volunteer stewards, campground hosts, tree planters, adopt-a-trail sponsors (Duffin 1996).

Park agencies have also been able to influence governments to allow for revenue retention within the park agency (Richards 1996; Borbey 1996). Another example of ingenuity was the creation of an Enterprise Unit with a revolving fund for the mountain park hot springs in Banff and Jasper National Parks. The development of a business plan allowed for borrowing funds for capital and service improvements from the government at no cost to the taxpayer, with the loan being repaid with interest by the year 2000. The processes required for setting fees have also been successfully deregulated (Borbey 1996).

Another incentive allows employees to have the first opportunity to take over the management of any services privatized within a park—whether they be visitor, professional, or technical services—through the provision of Employee Take Over (ETO) proposals. First applied in British Columbia and in the National Capital Commission in Ottawa, Parks Canada has over the past year developed the concept for application for the national parks and historic sites (Borbey 1996). Two hundred thirty-nine expressions of inter-

est have been received to date. Sixty ETO contracts are open for bids. They range from the provision of carpentry or plumbing services to the operation of a visitor reception centre. Employee-operated services are guaranteed a three-year period without competition and thereafter must compete with other potential private-sector entrepreneurs.

Pay As You Go: The American Experience

In contrast to the Canadian government agency presentations, an alternative view, based on observations of how American federal and state forests, wildlife areas, and other public lands are administered, hypothesized that natural resources are managed best if: management is funded out of user fees, not taxes; fair market value is charged for all resources; the agency can charge for all resources; and overall funding is determined by net income (O'Toole 1996).

O'Toole challenges the belief that scientific experts can do a better job of managing resources than private enterprises, as they lack personal incentives that might be provided by profits. These incentives are also lacking in government agencies because of their dependence on appropriations. He goes on to develop his "laws of pork and bureaucracy," which assume that "funds go to the states and congressional districts of the most senior members of the Senate and House appropriations committees" (O'Toole 1996). Another example, referring to the Na-

tional Park Service and Forest Service, is that "the bureaucracy regards profits—that is, funds returned to the Treasury—as losses because it loses control of them." O'Toole observes that the bureaucracy is not necessarily wasteful, but funds can be utilized for other worthwhile projects of the agency rather than being returned. He further notes that agencies funded out of user fees lack incentives to please appropriators. Finally, profits that are generated might be spent irresponsibly, such as on unnecessary roads or on below-cost timber sales and grazing leases that have negative impacts on the land.

O'Toole's solution is to fund agencies out of their net user fees, thus, in his view, stimulating three new laws: the law of profits, whereby agencies will avoid any activity that loses money; the law of responsiveness, which states that the agency will be most responsive to the users generating the most profits; and the law of diminishing returns, which states that no one set of users will dominate an agency because as more resources are devoted to a single user the marginal value of that resource use diminishes, while the value of competing resource uses increases (O'Toole 1996).

O'Toole concludes that resources are managed better if the agencies are funded out of user fees rather than tax dollars. This is particularly demonstrated by game management agencies, but also by the New Hampshire and Vermont state park agencies. Secondly, he stated that resources are

managed better if agencies charge fair market value. State park and wildlife agencies that are allowed to set their own fees are in the best financial shape and receive few complaints from users about high fees. Agencies whose fees are regulated by the legislatures tend to be in a state of perpetual crisis and neglect many important parts of their mission. Finally, he feels resources are managed better if agencies can charge for a broad range of uses rather than for just one use or a limited range of uses. He does note that these observations haven't shown that agencies funded out of net income are less likely to undertake environmentally damaging money-losing projects than agencies funded out of gross income (O'Toole 1996).

The New Alchemy

The academic commentator at the workshop declared that the business approach was a "triumph for neo-conservative values," noting that public-sector management, so long insulated from the market-induced rigours of the private sector, must confront the real world and adopt to it. "Only by grasping the values and principles of business can they do so. So declares the new alchemy" (Payne 1996). He further notes that the Department of Canadian Heritage, under which Parks Canada is now situated, has a promotions orientation, a culture much more in line with the emerging business initiatives than that of Environment Canada. The recognition of Parks Canada Investments as one of the agency's three di-

rectorates was noted, along with their objective to contain costs, make wise investment decisions, and ensure revenue targets are attained. The business plan—which is the prime vehicle for articulating the new reality—recognizes that the reduction in allocations will have to be picked up through increased user revenues as well as other cost reductions as a result of program changes. Payne notes the distinction between public and private benefit, which is the basis of user fees and the rationalization of core activities. This was previously defined as follows: "The taxpayer should pay for the costs of establishing and maintaining protected areas while those who derive a personal or commercial benefit from the use of these areas should pay for the associated costs" (Borbey 1996).

Payne concludes that "the business approach does not dramatically improve management or necessarily champion better protected areas. Only in those activities which are directly connected with economic values and benefits does business ideology contribute in a positive way." He fears that only those things that can be given a monetary value will be considered, while other values will be ignored or considered valueless (Payne 1996).

Who Will Survive:

The Beggars or the Bears?

The final commentator noted some potential benefits for business planning. For instance, he noted that "Parks Canada is finally asking itself if

a proposed development is appropriate and consistent with its mandate" (McNamee 1996). He further commented that he sees Parks Canada as a regulatory program and agency and as part of its mandate it regulates entrepreneurs from developing certain nationally significant landscapes and this needs to be borne in mind within the business approach. He also suggested a number of recommendations to guide business planning, of which one is as follows: "It is essential that we establish for each protected areas network laws and policies that enshrine ecological principles and accountabilities against which to measure business investments, performance, and budget cuts (McNamee 1996). He acknowledges that Parks Canada has a number of accountabilities that have formed the basis for its business plans, such as those stated in the National Parks Act, specifically that parks are to be managed in a way so that they will be passed on to future generations unimpaired and that ecological integrity is the prime priority in management planning, zoning, and visitor use—the mechanism of accountability being *The State of the Parks Report* and *Park Management Plans*, both of which are tabled in Parliament. McNamee emphasized that "parks are a public benefit for ourselves and future generations and should be paid for by the public."

In closing, he noted that the four emerging business approaches that were presented rarely referenced three pressing needs: the completion of protected areas networks, management for ecological integrity (Parks Canada excepted), and the provision of key educational services to the public.

Summary

In summary, protected areas management agencies are making do with less. Achieving a balance between reducing costs and generating revenue while providing high-quality sites and programs will be an ongoing challenge. Some elements of park management will require continued government funding such as for ecosystem management. Targets for cost recovery will rise toward 80% for most park organizations. There will be greater focus on partnering with others to maintain and enhance levels of service to the public. There is a need to determine what values are enhanced by the business approach and the use of the private sector. The public is interested in having involvement in evolving the business approach and in evaluating appropriate levels of public and private benefit and in knowing the full costs and impacts on ecological integrity. Parks organizations may evolve toward more autonomous and independent agencies.

References

The following papers were presented at the "Developing a Business Approach to Protected Areas Management" Workshop, World Conservation

Congress, Montreal, October 1996. These papers will be part of the proceedings that will be available in May 1997 as Report #5 in the Parks Canada Ecosystem Science Review Reports, "Protected Areas in a Modern World," edited by Neil Munro.

Borbey, Pat. The Parks Canada Business Plan—Towards a Separate Services Agency.

Berthiaume, Luc. The New Management Equation.

Duffin, Bruce. Clarifying and Focusing the Mandate.

McNamee, Kevin. Who Will Survive: The Beggars or the Bears?

O'Toole, Randal. Pay As You Go: The American Experience.

Payne, Bob. The New Alchemy: Values, Benefits and Business in Protected Areas Management.

Richards, Norm. The New Agenda.

Robinson, Robbie. South African National Parks: Another View.

Neil Munro, Parks Canada, Historic Properties, Upper Water Street, Halifax,
Nova Scotia B3J 1S9 Canada



W.L. Halvorson and G.E. Davis, editors. Foreword by P.G. Risser. University of Arizona Press, Tucson, 1996. 364 pp., clothbound.

Reviewed by Ronald L. Hiebert

This book addresses the role and value of long-term research and monitoring towards informed management of natural resources and ecological processes in national parks. The stated purpose is to demonstrate to policy-makers and managers the value and cost-effectiveness of basing decisions on ecological information, to provide scientists with models for long-term research, to alert the scientific community that parks as natural areas are in serious jeopardy, and to enforce the paradigm of ecosystem research and adaptive management as long-term experiments.

This work has its origins in the persistent efforts of the editors and others to establish a viable inventory and monitoring program for the U.S. National Park System. This effort is based upon the belief that one can't manage what one doesn't know. In 1988, the U.S. National Park Service (NPS) adopted a three-pronged approach to developing a long-term natural resource monitoring program: 1) review sustained research efforts in parks, 2) complete resource inventories in all park units with significant natural resources, and 3) develop and evaluate 10 park-based prototype monitoring programs. This book represents part of the review of sustained research.

In 1990, park scientists and managers were asked to nominate examples of long-term research or monitoring programs that could serve as models for other parks and protected areas. Over 100 nominations were submitted. A panel of senior scientists and park managers met to select the 10 or so best examples of where long-term research has been applied to park management issues. In reviewing nominations, the panel was amazed at how difficult it was to find 10-12 cases that could serve as models for managers and scientists. Flaws in programs could usually be traced to insufficient and/or inconsistent funding, rapid turnover in park managers and scientists and the related shifts in philosophy and priorities of park management, and poor planning. However, 12 interesting case studies were selected and are presented in the book.

The case studies follow two introductory chapters, one on the purpose and origin of the book, and one reviewing the history of the national park system and the role of science in management. The case studies are in turn followed by two concluding chapters summarizing the issues addressed and the lessons learned from applying research results to park management. The case studies are arranged into three parts: Long-term versus Short-term Views, No Park is an Island, and Protection versus Use.

Long-term versus Short-term Views

Fire Research and Management in the Sierra Nevada National Parks. When Yosemite and Sequoia-Kings Canyon became national parks, protection from all hazards, including fire, was the philosophy. Observations of encroachment of pines into giant sequoia stands and the build-up of hazard fuels stimulated research. Research and its subsequent application to management has changed our view of fire from one of hazard to an important ecological process. The research, experimental management, and monitoring not only influenced forest management in Sierra parks but throughout the park system and other land management agencies.

Yellowstone Lake and Its Cutthroat Trout. Here is a very interesting tale where research and monitoring were stimulated by decreases in fishing success. Monitoring of cutthroat trout dates back to early in this century. This is an excellent example of how management for a single species can cause major errors. A more holistic look at the Yellowstone Lake system and the surrounding terrestrial zones has led to a understanding of the value of interdisciplinary studies and is a great illustration of the connectiveness of ecosystems.

Wolf and Moose Populations in Isle Royale National Park. This paper chronicles the long-term predator-prey (wolf-moose) studies at Isle Royale. The 35-year-plus data set has not only provided important basic information on predator-prey relationships but clearly illustrates how long-term data sets enhance ecological understanding.

Saguaro Cactus Dynamics. In the 1940s, saguaros were removed from 130 ha of land because scientists believed a bacterial disease threatened their continued existence. Deductive research approaches were used for years to prove this preconceived idea. Later, a similar line of research tried to prove that air pollution was the cause for decline. Although there still is no consensus on the ecology of saguaro, inductive research is now exploring a broad range of causes of saguaro decline.

Alien Species in Hawaiian National Parks. This paper demonstrates the profound effects that introduced species can have on native biota and ecological processes. It also clearly demonstrates the need for good planning and a close working relationship between science and management.

No Park is an Island

Water Rights and Devil's Hole Pupfish at Death Valley National Monument. Securing and protecting water rights is one of the most significant issues for NPS in western parks. This case illustrates how data collected through a monitoring program were used to protect water rights and how the desert pupfish was used as an indicator species.

Urban Encroachment at Saguaro National Monument. In 1933 when

Saguaro National Monument was designated, the population of Tucson was 35,000. The population is now about 700,000, with residential construction taking place on the park's boundaries. Because of park managers' concern about the impacts of urban encroachment, management has become a community effort based upon ecological understanding.

Karst Hydrogeological Research at Mammoth Cave National Park. The park lies in a classic karst terrain where surface water runoff quickly enters an underwater conduit system. In the 1970s, NPS initiated a program to delineate movement of water in the region through dye-trace technology. This information made it clear that Mammoth Cave was not an island and was very much affected by activities outside its boundaries. Research and monitoring information has affected water treatment and development outside park boundaries.

Air Quality in Grand Canyon. Many within NPS have given air quality monitoring and research low priority because it is something we can do little to remedy. Here is a case where top-notch, cutting-edge research conducted by NPS did make a difference. It was demonstrated that the Navajo Power Generating Station was a major contributor to visibility impairment at Grand Canyon. EPA used the WHITEX report as the basis to require substantial emission reductions by the power plant.

Protection versus Use

Rare Plant Monitoring at Indiana Dunes National Lakeshore. Indiana Dunes contains an exceptionally diverse flora despite many impacts before designation and heavy visitor use since. Twenty-six percent of Indiana's rare flora is found within the lakeshore. To make ecologically based management decisions, management needed to know the distribution of rare plants. The geographically based monitoring program is described.

Wilderness Research and Management in the Sierra Nevada National Parks. Providing access to wilderness while maintaining wilderness values is a major issue in many parks. This case study illustrates how awareness by managers of backcountry impacts and subsequent impact inventories, studies, and accurate records of visitation levels and patterns led to controlled-use policies that sustain the wilderness environment and experience in an effective way.

River Management at Ozark National Scenic Riverways. Management of national riverways, in my opinion, is a most difficult task. In most cases, boundaries include the river and a narrow strip of adjoining land, the drain at the bottom of the bath tub. Maintaining high water quality depends upon cooperation of all parties in the watershed. Through recruitment of scientists from numerous agencies and institutions, Ozark has developed a broad aquatic and visitor-use baseline as the foundation for an overall river management program.

According to the editors, the lessons to be learned from these case studies

are 1) ecosystems are dynamic, 2) no park is an island, 3) knowledge is better than ignorance, 4) sustained research reveals secrets that short-term studies never do, and 5) research must be a cooperative effort. I found the last point to be strongly illustrated. All cases presented were successful because of the dedication and persistence of both park managers and scientists (either within or outside the Park Service) and because of close and frequent interaction. Advancement of this synergy must be a major goal of park managers and of the U.S. Geological Survey's Biological Resources Division, which is now the research arm of the U.S. National Park Service, if parks are going to be managed upon ecological principles.

Who should read this book? Park managers and policy-makers to learn the value of scientific information and enforcement of the adaptive management paradigm. Scientists to realize the value of long-term research, the rewards of effective interaction with management, and the national parks' desperate need for scientific information. Science students to prepare them for effective research or resource management careers. It should also provide enlightenment to the interested layperson as to the complexity of park management.

Science and Ecosystem Management in the National Parks excellently packages interesting, well-written, and skillfully edited case studies by presenting the historical perspectives and then guiding the reader to the lessons to be learned. I highly recommend it.

Ronald L. Hiebert is Assistant Regional Director for Natural Resources and Science, Midwest Region, National Park Service.



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