

NPS & Latino American heritage • Hartzog's legacy  
**Watchful waiting or genetic rescue for Isle Royale's wolves?**  
The Presidio matters • Lessons from the shutdown  
Selected papers from the 2013 GWS Conference

# The George Wright Forum

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The GWS Journal of Parks, Protected Areas & Cultural Sites  
volume 30 number 3 • 2013



## Origins

Founded in 1980, the George Wright Society is organized for the purposes of promoting the application of knowledge, fostering communication, improving resource management, and providing information to improve public understanding and appreciation of the basic purposes of natural and cultural parks and equivalent reserves. The Society is dedicated to the protection, preservation, and management of cultural and natural parks and reserves through research and education.

## Mission

The George Wright Society advances the scientific and heritage values of parks and protected areas. The Society promotes professional research and resource stewardship across natural and cultural disciplines, provides avenues of communication, and encourages public policies that embrace these values.

## Our Goal

The Society strives to be the premier organization connecting people, places, knowledge, and ideas to foster excellence in natural and cultural resource management, research, protection, and interpretation in parks and equivalent reserves.

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P. O. Box 65 • Hancock, Michigan 49930-0065 USA

1-906-487-9722 • [info@georgewright.org](mailto:info@georgewright.org) • [www.georgewright.org](http://www.georgewright.org)

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# The George Wright Forum

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**On the cover:** A wolf investigates the remains of a bull moose in Isle Royale National Park. The debate continues in this issue over what to do, if anything, about the park's precarious wolf population. Photo courtesy of Rolf O. Peterson.

# SOCIETY NEWS, NOTES & MAIL

## **Lane-Kamahele, Spence appointed to Board; Gagnon reappointed**

At its annual meeting, the GWS Board of Directors appointed Melia Lane-Kamahele of the US National Park Service and Chris Spence to three-year terms, succeeding John Waithaka and Brent Mitchell, who are reaching the end of their second and final terms. Lane-Kamahele is manager of NPS's Pacific Islands Office, and her appointment marks the return of active-duty NPS employees to the GWS Board in the wake of the decision earlier this year allowing US federal employees to serve in such capacities. Spence, the director of the Institute at the Golden Gate, located in San Francisco, has a background with several nongovernmental organizations as well as in journalism. In another move, the Board appointed Nathalie Gagnon to a one-year extension of her term. Gagnon is senior analyst and lead specialist for Aboriginal Engagement with Parks Canada.

## **Alan Hogenauer, inveterate park traveler and documenter of the defunct, dies at 71**

Alan K. Hogenauer, the only person known to have visited every US and Canadian national park system unit as well as all of the delisted units of the two systems, died in June. He was a professor of business administration at Loyola Marymount University, and had recently completed visiting the newest national monuments proclaimed by President Obama, thus keeping his record intact. While other people have visited all of the active national park units or performed such comparable feats of systematic travel (reputedly, the historian Robin Winks had, before his death, not only visited every park unit but every visitor center within those units—and read every interpretive panel), Hogenauer's unique contribution to park history was to have tracked down all of the places that were once part of the US and Canadian national park system but which were later cut out. He published his findings in two papers in *The George Wright Forum*, "Gone, But Not Forgotten: The Delisted Units of the U.S. National Park System" (1991) and an update later that year (available at [www.georgewright.org/074hogenauer.pdf](http://www.georgewright.org/074hogenauer.pdf) and [/083hogenauer.pdf](http://www.georgewright.org/083hogenauer.pdf)). The effort required to not only document but personally visit each of these places, some of them quite obscure, was immense. Systematic travel was Hogenauer's passion: at his death, he was ranked as the 17th most-traveled person in the world, having gone to over 300 countries and territories and logged over 2.2 million air miles. His travels are documented on his personal website, [www.cheklist.com](http://www.cheklist.com).

## **New website aims at comprehensive coverage of National Park Service history**

Harry Butowsky, a long-time GWS member and retired National Park Service historian, has launched a new website that aims to be the most extensive repository of material related to the agency's history. While still working for NPS, Butowsky developed an official website that contained thousands of such documents. From now on he will be updating and adding to the trove through a new website, [NPShistory.com](http://NPShistory.com). Butowsky says, "The site is for those who are passionate about America's national parks and for the employees of the National Park Service. Our goal is to offer a window into the historical richness of the national park system and the opportunities it presents for understanding who we are, where we have been, and how we as a society might approach the future. This collection of special places also allows us

to examine our past—the contested along with the comfortable, the complex along with the simple, the controversial along with the inspirational. We hope, in addition, that these pages will contribute to a national discussion of history and natural resources of our parks and their importance to contemporary society. We welcome your input on how we can better deliver that message by contacting us at [info@npshistory.com](mailto:info@npshistory.com).”

### **GWS helps organize preparatory meeting for 2014 World Parks Congress**

In early October, 35 leaders involved in planning the next IUCN World Parks Congress (November 2014 in Sydney, Australia) came together for a preparatory meeting held in Charles Town, West Virginia. The meeting set out to create synergies among Congress organizers, trigger creative ideas for the program, and initiate the legacy that will guide the future of protected areas. GWS was a principal organizer of the meeting, and GWS President Brent Mitchell facilitated it.

Together with the IUCN World Parks Congress Management Committee, as well as the co-hosts, Parks Australia and New South Wales Parks and Wildlife Service, the stream and cross-cutting theme leaders agreed that Sydney should aim to be a turning point in protected area thinking. Echoing the theme of the Congress, a change in three steps will need to take place: for parks, achieving quality conservation; for people, connecting people with nature; for the planet, fulfilling our aspirations and improving overall well-being. To achieve this vision, the IUCN World Parks Congress 2014 will pursue broader engagement of all sectors, particularly those outside of traditional conservation circles, such as business and youth, and will place protected areas within the broader goals of economic and community well-being. The Charles Town meeting resulted in not only an action plan, but an abundance of new contacts and connections. Equipped with new tools and new associations, the participants emerged ready to take on the challenges that lie ahead during the next year as Congress preparations heat up. — *Janina Heim, IUCN*



### **An Enlightened Beginning: The National Park Service and the American Latino Heritage**

*Joseph P. Sánchez and Angélica Sánchez-Clark*

IT IS A TRUISM THAT THE NATIONAL PARK SERVICE (NPS) serves as a major cultural institution where Americans come to see themselves, sometimes for the first time since high school. Since its inception, NPS has striven to showcase our national story, and, more recently, its diversity. In that regard, the National Park Service is a trend-setter in the telling of our national story from the point of view of historical processes that have shaped America's past through the lenses of diversity, inclusion, accessibility, relevancy, and fairness. Still, our educational system has not provided the type of teaching that would be conducive to learning about the diversity that forms our national story, particularly that of the American Latino experience. This failure has ramifications for how NPS interprets current national park units that are related to Latino heritage, how it might in the future add sites to the national park system that would fill gaps in the story of that heritage, and how it might reach out to current and future Latino Americans.

In American history textbooks, examples abound that deny the Latino heritage, past and present. Beyond a few paragraphs in Chapter One, traditional history books tend to leave out the Latino participation in our national story. Without acknowledging that the people of North and South America have a common history, most early chapters are devoted to English settlement of North America, while Latino history is dealt with as a “pass through” history featuring explorers in Florida, New Mexico, and California. Latino settlement patterns are ignored, just as are its institutions of governance. Born from the Greco-Roman tradition, for example, the House of Burgesses in Virginia (1619) and New England town hall (1620) are hailed as the basic units of democracy and are venerated because they were the first and oldest signs of governance and evolving democracy in what came to be the United States.

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Yet, the much older models of the town hall, known as the *cabildo*, similarly with elected and appointed members, were established, among other places in the Americas, in Caparra, present Puerto Rico, before the end of the 15th century; San Agustín, Florida, by 1571; San Juan de los Caballeros, New Mexico, in 1598; Santa Fe, New Mexico, in 1610; San Antonio, Texas, in 1716; Monterey, California, in 1773; and Tucson, Arizona, in 1776—to name a few. In New Mexico, the continuity of the *cabildo* is evident from 1598 to the present state legislature. Indeed, when the founders of Jamestown arrived at their settlement site, the Indians came out speaking to them in Spanish. Jesuit missionaries had been there in the 1570s. Too, the early settlers of Jamestown arrived in the New World via the Canary Islands to islands off Puerto Rico. The route they followed to the Caribbean was the traditional one established by Columbus. By studying United States history in a more global way, the common history thesis is demonstrated to be more inclusive and relevant.

It is said that every generation writes its own history. That is also true about how and to what end Latino history has been portrayed historiographically by others. Well into the 20th century, Spanish colonial history was misunderstood and suffered under two streams of historiographical thought. One is the Spanish Black Legend—in its harshest terms, the depiction of Spaniards “as depraved and cowardly people” and as “*uniquely* evil, cruel, bigoted ... [and] violent.”<sup>1</sup> Stereotypically, it was common to assume that Spanish colonials came to kill Indians and destroy cultures. The second is American exceptionalism, which has been defined as “the belief that the United States is an extraordinary nation with a special role to play in human history; a nation that is not only unique but also *superior*.”<sup>2</sup> Both tenets tended to exclude the positive role of Spain and its people in the history of the development of North America.

Negative notions about Spain and its people who settled the Americas evolved from the 16th-century Spanish–English rivalry, which ended with England winning the war of propaganda, resulting in the furtherance of the Spanish Black Legend. The stereotypes against Spain prevailed and were embedded in US history textbooks. Indeed, very little in textbooks revealed much about Spanish colonial enterprises, settlement, and governance other than exploration and conquest as part of our national story. Spanish Black Legend stereotypes crept into elements of the Latino story. US exceptionalism gained in influence, with its view that Englishmen came to do good in a world that does evil; from there began the long road to the American Revolution and the US Constitution. Thus, a dichotomy emerged, with England as the good empire while Spain was viewed as the “citadel of darkness.” Thus, the history of Spanish colonialism has long been tied to Spanish Black Legend stereotypes that have influenced how that history and its associated sites would be interpreted. In the teaching of US history, for example, there was no room for Spanish colonial, much less Latino, heritage in textbooks or the classroom. In many ways, history books prompted a resurgence of the 16th-century propaganda by negatively narrating the histories of the Battle of the Alamo (1836), the Mexican War (1846–1848), and the Spanish–American War (1898). Such biases are reflected in issues dealing with immigration from Mexico or Latin America. Today, such stereotypes are visible in Hollywood versions of historic events, history books, and other media.



During the 1960s, the Chicano Movement struck at the heart of the Black Legend stereotypes and American exceptionalism that seemed to pervade American historiography. Historians such as Rudolfo Acuña, Juan Gomes Quiñones, Ricardo Romo, Félix D. Almaráz, Jr., Manuel Servín, and Richard Griswold del Castillo, among others, devoted their careers to fighting for social justice and correcting the omissions and falsehoods about the Latino experience in the United States. The importance of such awareness engendered by the Chicano Movement is critical to understanding the significance of the meanings of diversity, relevancy, inclusion, accessibility, and fairness within the context of America's past. As Joseph P. Sánchez has noted, "If your history is not respected, neither will you be in education, employment, the workplace, housing, justice, law, medicine, banking, the arts or any other institution in our society."

Nevertheless, biases and negative stereotypes about Latinos prevail. To help remedy this situation, in the summer of 2011 Secretary of the Interior Ken Salazar unveiled the American Latino Heritage Initiative at a meeting in La Paz, California. Secretary Salazar spoke of America's forgotten pathways that had led Hispanic frontiersmen to explore North America from the Caribbean to Alaska and from Maine to San Diego. Clearly, Latino heritage is greatly visible in the American landscape and people, whose ancestors settled places and established institutions, governance, language, and a legal system as early as the 16th century. Indeed, many settlements and their jurisdictions later became part of the Union and formed states with great American cities. At the La Paz meeting, Secretary Salazar proposed that a Latino Theme Study analysis be done by NPS, appointing the lead author of this essay to chair the task force in order to determine a direction for integrating the American Latino heritage story into our national history in a way that makes it relevant to all Americans and the world. In recommending that a Latino Theme Study be created, the analysis sought to define a National Park Service that is balanced and complete in its representation of the nation's Latino heritage.

Later in 2011, at the White House Forum on American Latino Heritage, Secretary Salazar introduced the country to the American Latino Heritage Initiative and the National Park Service's commitment to "connecting and amplifying American Latino stories throughout national parks and communities across the United States." Soon after, the National Park System Advisory Board formed the American Latino Scholars Panel. Tasked with developing the theme study, they would address the many experiences and contributions of American Latinos to our national story. Under the direction of the advisory board, National Park Service subject-matter experts, including Joseph P. Sánchez, Dennis Vásquez, David Vela, and Robert Arzola, worked with a panel of scholars who prepared 17 essays that would form the basis of the theme study. The resulting *American Latinos and the Making of the United States: A Theme Study* addresses the role of Latinos in our national story from the 1840s to the present. The theme study, approved by the National Park System Advisory Board on February 28, 2013, serves as a resource for NPS as it moves forward in identifying and designating national historic landmarks and other sites relevant to exploring and sharing the nation's important Latino heritage. The American Latino Theme Study emphasizes such topics as "Making the Nation," "Making a Life," "Making a Living," and "Making a Democracy."

The new National Park Service theme study traces its origins to two earlier incarnations: the 1972 servicewide plan for history, which was a mix of chronological and thematic topics, and its 1994 update, which created the present-day conceptual approach. In creating the American Latino Theme Study, NPS turned to the 1994 thematic framework to rethink approaches to its themes in order to reflect new scholarship. Chiefly, NPS took into account changes that had taken place in society in the previous decades. The evolving historical process since the 1960s had, indeed, produced a prime theme, supported with new scholarship that has further defined who we are as a nation. In the new schemata, historical topics would not be enumerated to fit an outline, nor would they follow a chronological sequence. Instead, topics would fit into a framework of broad, open-ended themes that would not only reflect great men, women, and events but also ordinary people and everyday American life. The flexibility of the new framework facilitates the development of individual theme studies that could be applied to eligible sites with similar themes. Still, the basic story of America must be aligned with the watchwords of diversity, inclusiveness, relevancy, accessibility, and fairness.

The Latino Theme Study analysis stated that the American Latino heritage experience should be considered as an integral part, rather than a special or specific theme, of NPS's interpretive efforts. In the identification of "gaps" within our national story, it should be noted that despite the percentage of national parks that carry themes related to Latino Heritage in the United States, no theme or subtheme can be well represented so long as prime sites remain outside the National Park Service—meaning outside of either (1) the national park system or (2) the historic preservation programs NPS administers that affect other sites (e.g., the National Register of Historic Places). For example, San Pascual, a battle of the Mexican War near San Diego, California, would complement the story told at Palo Alto National Battlefield near Brownsville, Texas. This does not imply that the federal government should acquire such properties, but researching and sharing their history would provide support and flexibility in the event that present owners or other entities with an interest in them should ever become unable to assure continuing their proper preservation. Currently, such sites outside the National Park Service could add context and perspective to existing national parks, national historic trails, national historic landmarks, and national heritage areas that carry or potentially could carry Latino Heritage themes.

Within NPS, opportunities to expand upon the American Latino experience abound. At Brown v. Board of Education National Historic Site, for example, threads of court cases leading to the Supreme Court's 1954 decision could include Latino efforts in their struggle for civil rights. One example is a California case, *Mendez v. Westminster* (1947), that attacked the separate-but-equal doctrine enshrined in the landmark *Plessy v. Ferguson* decision (1896), which supported open discrimination practices in America's institutions. Following the Treaty of Guadalupe Hidalgo (1848), which ended the Mexican War of 1846, a great number of cases show how Hispanics in the territories sought to affirm their civil rights through the courts. Many of their arguments, some of which reached the Supreme Court, were based on first, fourth, and fourteenth amendment rights. At Jefferson National Expansion Memorial, which is largely dedicated to interpreting the Westward Expansion, the Latino heritage experience theme can easily be included, for the histories of Spain and

the United States were inextricable, before and after the Louisiana Purchase, as was the cultural history that followed.

Of the 400-plus national parks, those that support Spanish colonial themes or facets identified in the Latino Theme Study are the most promising targets for integration of the Latino experience, in addition to certain national historic trails, a considerable number of national historic landmarks, and some national heritage areas. Additionally, a significant number of sites that share themes beyond the historical boundaries of Spanish colonialism and that exist within private, state, and local ownership that commemorate Latino heritage themes can benefit from efforts of NPS to integrate Latino heritage sites and their attendant stories into our national patrimony.

In many ways, it is the land that brings Americans together in such a way that historical processes, which have shaped the American experience, are revealed. Today, the clarion call for diversity, inclusion, relevancy, accessibility, and fairness forms a vision of a truly American heritage forged from a mosaic of people, cultures, historical events, and geography that make America what it is: a pluralistic society. In 1983, under the Treaty of Friendship between Spain and the United States, Joseph P. Sánchez directed a research project in eight archives in Madrid, Sevilla, and Simancas, demonstrating that much of our national story lies buried in Spanish as well as in Mexican and Latin American archives. To that end, the creation of the Spanish Colonial Research Center by NPS in 1985 signaled a new beginning point for the agency. The center is a partnership between NPS and the University of New Mexico in Albuquerque. The mission of the center—to create and maintain a documentary database from domestic and foreign archives and depositories, specifically for 40 Spanish colonial heritage sites in the national park system—soon proved its value. Under the direction of Sánchez, the center created a renewed consciousness in the National Park Service about Latino history and culture.

In 1990, with the commemoration of the 500th anniversary of Christopher Columbus' first voyage at hand, both negative and positive voices began to be heard. The National Park Service responded positively by preparing for the event and encouraging the Spanish Colonial Research Center's continuing efforts to conduct research in international archives; develop a database of archival materials; produce publications; establish Spanish-language translation services for NPS parks, sister agencies, and local entities; and carry out training courses for interpreters, teachers, and public audiences across the country. During the commemoration of the 500th anniversary, the center increased its efforts to provide Spanish-language translations to assure that parks would be more welcoming, relevant, and accessible in their efforts to encourage visitors to learn more about America's heritage in all of its manifestations.

The accomplishments of the center cut across federal, state, and local agencies on a nationwide as well as an international basis. Throughout its existence, the center has undertaken congressionally mandated studies leading to the designation of the Camino Real de Tierra Adentro National Historic Trail, Old Spanish Trail National Historic Trail, and the Camino Real de los Texas National Historic Trail, among others. Such designations have added relevancy to the notion that Latinos are a part of our national story, heritage, and patrimony. Other undertakings by the center include the publication of the *Colonial Latin American*

*Historical Review*, a scholarly, peer-reviewed, quarterly journal that enjoys an international distribution, and hundreds of Spanish–English translations on a servicewide basis of NPS brochures, film scripts, exhibit labels, scientific studies, correspondence, etc. The center’s Spanish-language translation program assists NPS in enhancing visitor understanding of US history as interpreted by the parks, as well as increasing understanding of safety measures. The translations enhance the connection, relevancy, and accessibility of our nation’s diverse communities to parks servicewide. Additionally, more than 20 book-length studies have been published on Spanish colonial/Latino heritage themes, along with over 100 scholarly articles, resources studies, national historic trail studies, and administrative histories of specific parks. The center’s staff also has made hundreds of presentations before public and academic audiences, both nationally and internationally.

Recently, the Spanish Colonial Research Center was absorbed into the newly established National Park Service Latino History Research and Training Center. It is aimed at sustaining the American Latino Heritage Initiative’s goals and values, and assuring that NPS interpreters and resources managers are better prepared to work with Latino themes. The new center will continue to carry out research and training objectives for NPS, sister agencies, state and local entities, and the Latino community. The center will assist in carrying out the NPS mandate to introduce new audiences to the national park system so that future generations can learn more about our national story.

As NPS prepares for a second century of stewardship and engagement, it is committed to engaging underrepresented groups such as Latinos as stakeholders in the preservation and conservation of a shared national story as told through the history of national parks. Demographically, economically, and politically speaking, Latinos are an ever-growing important group in the United States, yet their contributions to the history of the US continues to be ignored or diminished. In order to appeal to the Latino community, NPS must go beyond Spanish-language translations of visitor materials and integration of Latino heritage themes in certain established parks. The effort required involves looking at current national sites and identifying Latino themes that should be incorporated into their interpretive story as part of our national history and patronage. It involves identifying and nominating personages, stories, and new sites as national landmarks that exemplify the modern history of Latinos. It involves educating NPS personnel, both Latino and non-Latino, about the important roles that Latinos have played—and continue to play—in the evolution of our nation. More importantly, this effort involves engaging NPS leaders, interpreters, and resources managers in a national dialogue that will result in an environment that will inspire future generations to visit or work in our national parks and see themselves reflected in the telling of our national story.<sup>3</sup>

To that end, the Latino History Research and Training Center aims to open new doors in research, interpretation, and preservation of the historical and contemporary Latino heritage in NPS. The center will partner with NPS workforce initiatives that aim to make diversity not just an equal opportunity objective but rather an agency value by educating and training NPS employees at all levels. Additionally, the center will form part of NPS educational outreach efforts that include the Heritage Education Services Program and Preserve America as well as the development of curriculum materials and professional development workshops for teachers.<sup>4</sup> Through public speaking, community engagement, publications, and research,

the center will continue to develop and share new data regarding Latino heritage which binds our national story with that of Spain, Mexico, and the rest of Latin America, with whom we share a common history. Importantly, the center will serve as a model for Native Americans as well as Asians, African Americans, and other minorities who seek inclusion in a diverse workforce.

In past National Park Service efforts, Spanish colonial history has been the main vehicle to convey the Latino heritage story, albeit without mention of significant historical Latino settlements and governance in North America. Instead, the Latino heritage story was anchored by a number of small parks across the country that emphasized exploration and missionization of native groups by Franciscan friars. The first National Park Service area with a Spanish colonial theme was El Morro National Monument (proclaimed 1906), which emphasized exploration while inadvertently failing to recognize that in the 16th century the permanent settlement of North America was the major Spanish enterprise in Florida (1565) and New Mexico (1598). Similarly, Salinas Pueblo Culture National Monument (proclaimed 1909) focused on the missionization of pueblos in that area emanating from the Spanish colonial settlement at Santa Fe, New Mexico, which had been established in 1610. Much of the theme of exploration as it relates to the Latino heritage is largely subsumed by three expeditions that, in the Age of Discovery, loomed large in the history of North America. Cabrillo National Monument (proclaimed 1913), Coronado National Memorial (authorized 1941), and De Soto National Monument (authorized 1948) centered on exploration and war between explorers and Indian tribes. Still, the diaspora and settlement patterns of Spanish North America went untold. The evolution of the American Latino heritage experience must evolve beyond the telling of the Spanish colonial legacy.

That heritage experience is not monolithic. For NPS, interpreting the American Latino heritage story is ever more challenging when one considers that Latino culture has many faces. It basically comprises five heritages, some of which are linked genealogically as well as culturally: Spanish, Indian, African, Asian, and Anglo-American. Thus, in order to make parks accessible, relevant, and inclusive, the interpretation of the Latino heritage at NPS and national historic landmark sites requires much understanding of differences in Latino identity among the diverse ethnic and geographical sections of the United States. In choosing the term “Latino,” the contributors to *American Latinos and the Making of the United States* recognize that, despite these differences, “the term punctuates the experience of peoples living in the Americas rather than Europe.”<sup>5</sup> As the population of people of Latin American descent in the US continues to grow, these shared experiences unite Latino communities without implying the loss of their individual identities.

NPS is poised to explore and emphasize the complete story of the American Latino heritage, representing the historical and present participation of Latinos in our national story. In order to sustain the goals of Secretary Salazar’s Latino Initiative, NPS is committed to further educating not only the public but its own employees about important Latino contributions to our nation’s past, present, and future. Through its research, community outreach, educational, and training objectives, the newly established Latino History Research and Training Center will work towards meeting—and implementing—these expectations for the National Park Service, sister agencies, and state and local entities. Tied to nationally significant historical

people and places, the National Park Service stands on the threshold of unlocking history's door in expanding the wider world of our national story.

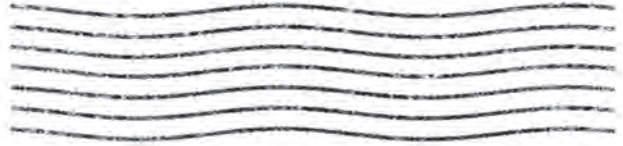
## Endnotes

1. Joseph P. Sánchez, *Comparative Colonialism, the Spanish Black Legend, and Spain's Legacy in the United States: Perspectives on American Latino Heritage and Our National Story* (Denver: U.S. Government Printing Office, 2013), 19.
2. *Encyclopedia of the New American Nation*. Online at [www.americanforeignrelations.com/E-N/Exceptionalism.html](http://www.americanforeignrelations.com/E-N/Exceptionalism.html) (accessed November 5, 2013).
3. In 2012, Joseph P. Sánchez wrote the key essays for the American Latino Heritage Discover Our Shared Heritage Travel Itinerary for the National Park Service's Heritage Education Services. See "The National Park Service and American Latino Heritage," online at [www.nps.gov/history/nr/travel/American\\_Latino\\_Heritage/The\\_National\\_Park\\_Service\\_and\\_American\\_Latino\\_Heritage.html](http://www.nps.gov/history/nr/travel/American_Latino_Heritage/The_National_Park_Service_and_American_Latino_Heritage.html).
4. For more information about these and other NPS American Latino Heritage projects, please visit [www.nps.gov/latino/](http://www.nps.gov/latino/).
5. *American Latinos and the Making of the United States: A Theme Study* (Washington, D.C.: National Park System Advisory Board, 2013), 5.

**Dr. Joseph P. Sánchez** is superintendent of Petroglyph National Monument and the National Park Service's Latino History Research and Training Center, formerly the Spanish Colonial Research Center, at the University of New Mexico. Dr. Sánchez is also founder and editor of the *Colonial Latin American Historical Review (CLAHR)*. Before his career with the National Park Service, Dr. Sánchez was a professor of Colonial Latin American history at the University of Arizona, Tucson. In May 2000 he was awarded the Medalla de Acero al Mérito Histórico Capitán Alonso de León by the Sociedad Nuevoleonesa de Historia, Geografía y Estadística, Monterrey, Mexico, for his lifelong work in Colonial Mexican history. In April 2005, he was inducted into the prestigious knighthood order of the Orden de Isabel la Católica by King don Juan Carlos of Spain.

**Dr. Angélica Sánchez-Clark** is assistant program manager of the National Park Service's Latino History Research and Training Center, formerly the Spanish Colonial Research Center, at the University of New Mexico (UNM) in Albuquerque. She is also the managing editor of the *Colonial Latin American Historical Review (CLAHR)*. She received her doctorate in the Department of Spanish and Portuguese at UNM and is a research assistant professor in that department. Her research focuses on issues of identity, mestizaje, and nationalism in colonial and nineteenth-century Mexico. Dr. Sánchez-Clark has served as Spanish-language translator for NPS parks, sister agencies, and local entities. Additionally, she has worked as a researcher on resources studies and administrative histories, national historic trail studies, and Latino heritage-related reports. Her publications include an edited anthology on the preservation and management of petroglyphs, translations of Afro-Latino narratives, and a special *CLAHR* issue on women in the Spanish colonial judicial system.





*Letter from Woodstock*  
Rolf Diamant

## The Presidio Matters

A FEW YEARS AGO, I suggested at a regional superintendents' meeting that US national parks were facing a paradoxical future. This was, I said, an era of unprecedented changes and challenges but also, in many ways, a golden age for the National Park Service (NPS)—as it was an organization becoming more sophisticated, focused, and better trained than it has ever been in the past. More than a few of my colleagues in the room did not agree with this assessment or at least objected to my choice of words as they complained about their operating budget shortfalls, staffing vacancies, various bureaucratic obstacles, and workloads. I couldn't disagree with any of that—as a superintendent, I was working through similar problems in my own park—but I thought we should recognize that the park system was still growing in many positive directions. Park superintendents, overall, were becoming more emotionally intelligent and adept at dealing with complexity. New, more inclusive, and successful community engagement strategies were being developed. Partners were increasingly more nimble and capable and across the park system pockets of useful experimentation and innovation were able to flourish.

In my sixth "Letter from Woodstock," I will take a closer look at one of those nodes of useful experimentation and innovation, the Presidio of San Francisco. The 1,500-acre former military post is national parkland managed jointly by the federally chartered Presidio Trust and NPS, nested within the much larger Golden Gate National Recreation Area. The trust manages about 80% of the Presidio (most historic buildings); NPS is responsible for the other 20% (mostly shoreline property around Crissy Field) and has legislative authorization to provide interpretive services, visitor orientation, and educational programs throughout the Presidio in cooperation with the trust. (For the record, I worked for Golden Gate about 35 years ago on its first general management plan and I still keep up a membership in the Golden

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Gate National Parks Conservancy, the nonprofit partner that supports and assists the Golden Gate National Parks.)

Congress established the trust in 1996 as an independent government corporation with a mandate to manage the Presidio, find new uses for its nearly 800 structures (5.9 million square feet of useable space), and become financially self-sufficient within 15 years—a milestone that the trust reports it has now achieved. By any measure the Presidio represents one of the most ambitious experiments in public park-making, urban design, and multi-sector cooperation anywhere in the world. There have been base closures and transitions in other places, but given the distinctive nature of the Presidio, with its vast number of historic structures (over 400), its storied cultural landscape, and the immense urban infrastructure associated with it all, the scale of this undertaking is profoundly different and consequential.

The metrics of Presidio's ongoing transformation are impressive by any measure. Today much of the residential and non-residential property in the Presidio has been renovated, leased, or rented, and 7,000 people live or work in a spectacular national park setting that attracts, according to the trust, approximately 5 million visitors annually. Three hundred-fifty historic buildings have been renovated, housing thousands of residents and some 225 organizations. The Presidio has been called the largest historic preservation project in the country and it probably is.

On a recent visit to the Presidio, I also saw stream restoration and reforestation projects, a newly built system of pedestrian and bike trails, an urban campground, and several spectacular scenic overlooks. The Golden Gate National Parks Conservancy has been the trust's principal nonprofit partner for much of this impressive park development. I think it is safe to say that the scale and pace of this transformation is without precedent in the modern national park system.

So what can be learned from the Presidio at this point in time? While many of Presidio Trust's circumstances and authorities are unique and cannot be easily replicated or adapted, I would direct attention to at least three developments that may have broader application:

- *The Presidio is demonstrating approaches to sustainable city living and sustainable park design, and the two can be merged to offer new ideas for adaptation and resiliency.* One noteworthy example is the revitalization of the 36-acre Presidio Public Health Service District, including the rehabilitation of a derelict six-story hospital and adjacent campus buildings for rental housing, office space, and a school. Through environmental remediation and by adding new walking trails and overlooks, the Public Health Service District has also further enhanced the national park values of the Presidio. This neighborhood has come back to life with help of NPS-administered preservation tax credits and is the first historic landmark property to be certified by the US Green Building Council as "LEED for Neighborhood Development" for "smart growth, urbanism and green building."
- *There is an opportunity at the Presidio to evaluate the reciprocal benefits of private and public investments.* Repopulating the Presidio with people who live and work there along with shared neighborhood amenities (such as landscaping, public seating, cafés, and shops) encourages expanded recreational use as the public perceives the Presidio

as a lively, attractive, and safe environment. Similarly, the public projects (such as natural area restoration, bikeways, and overlooks) enhance the Presidio as a desirable place to live and work.

- *The governance model of the Presidio Trust has both strengths and weaknesses. While much can be learned from how the trust carries out its work, particular attention needs to be focused on its relationship with NPS and the Golden Gate National Parks Conservancy.* In the absence of a more structured partnership codified by statute (such as having Golden Gate National Recreation Area formally represented on the trust's board of directors), the partnership's success depends a great deal on leadership, personality, and good will. It would be instructive to better understand what confidence-building measures and other tools can be used to strengthen and periodically refresh the level of trust, cooperation, and shared vision essential to the health and robustness of the partnership.

The relationship has not always been an easy one between the trust and NPS, particularly in the early years. NPS and park advocates were unhappy with the 1996 Presidio Trust Act that had the trust report to Congress and the Office of Management and Budget. NPS would be consulted, but would have no direct oversight. There were further worries that the congressional mandate for the Presidio to be financially self-sustaining in 15 years might later be applied to other parks in the system. And finally, there was the fear of an even more troubling potential precedent: the reversion section in the act (which would only be invoked if the trust failed) would transfer trust-managed property, not to NPS, but to the General Services Administration, to be withdrawn from Golden Gate National Recreation Area and sold. Beyond misgivings about the legislation, NPS may have been uneasy about the broad authorities granted to the trust by Congress and the trust's early focus on the real-estate side of its mission. Even today the Presidio is featured on the NPS home page, but curiously there is no mention of the Presidio Trust or link to its programs. For its part, the trust had plenty of trouble finding its own footing in the relationship. Looking at the trust's annual report released ten years ago, the only collaborative projects with NPS and the conservancy appear to have been water monitoring and songbird inventories. Not so now: this year's annual report credits the Presidio's success to "a strong collaboration" with NPS and the conservancy, the "principal organizational partners" of the trust.

This shift in tone reflects a maturing partnership. But I suspect that the conservancy has also played an outsized role in facilitating more mutually beneficial cooperation. Serving as the non-profit partner and cooperating association for both the Presidio Trust and the Golden Gate National Recreation Area, the conservancy has raised and invested substantial resources in a seamless network of new trails, overlooks, and other world-class visitor and educational facilities shared by both. Both NPS and the trust had a major stake in the outcome of the conservancy's hugely successful rescue and revitalization of Crissy Field, and likewise both will share in the many benefits to be derived from the recent gift of \$25 million from the S.D. Bechtel, Jr., Foundation to the conservancy. These funds will create 10 acres of parkland over a newly buried roadway, connecting the Presidio's historic Main Post with Crissy Field's marsh and waterfront. The gift will also expand the activities of the Crissy

Field Center serving both the park and Presidio as “a nationally recognized program hub for youth engagement in environmental learning and community betterment.” Reflecting the spirit of this cooperation, more and more signs are appearing bearing the logo of all three organizations—perhaps a modest but symbolic indicator of a new willingness to co-brand and share credit for the enormous transformation that is occurring.

The ultimate success of the Presidio, however, will be largely determined by attaining and holding on to what I call the “sweet spot” in the Presidio Trust’s delicate balancing act of maintaining financial health while continuing to make the Presidio accessible and welcoming to the public, including people from diverse and underserved communities around the Bay Area. Success will also be determined by the trust’s commitment to building a new kind of national park that has, as stated in its mission, “broad relevance” to the larger world and invests in such purposes as “environmental learning and community betterment.” The “sweet spot” is realized when there is a clear alignment of goals and where the enactment of each part of the Presidio’s mission strengthens and adds value to the other parts. However, this is never going to be easy or non-controversial.

A case in point is the trust’s request for proposals (RFP) for the “Mid-Crissy” area of the Presidio to establish a “cultural institution of international distinction.” The project would repurpose the former post commissary site and utilize the newly created parkland connecting the Main Post to Crissy Field. The site, with its commanding views of the Golden Gate, is the Presidio’s keystone. Whatever is built, according to the RFP’s guidelines, must “integrate well with plans for Crissy Field and the Main Post” and “welcome a broad cross-section of the community in a manner that reflects and reaffirms the public nature of the Presidio.”

One of the two leading contenders in the RFP process has been film director George Lucas, who is proposing to construct the “Lucas Cultural Arts Museum,” a 93,000-square-foot building “highlighting populist art from some of the great illustrators of the last 150 years through today’s digital art.” In an interim review of the proposals, the trust praised the generosity of George Lucas, who has offered to pay for and endow the museum with his own funds, and noted the broad appeal of the museum’s educational opportunities. The trust raised serious concerns, however, over the proposed Lucas museum’s “massing and height and its architectural style design” which the urban design critic of the *San Francisco Chronicle* has described as “boilerplate Beaux Arts, ornamentation without imagination.” The trust also questioned the degree to which the Lucas museum would stand apart from its national park environment, not creating the “programmatic connections that would add value to other park programs throughout the Presidio.”

The other leading RFP contender is the trust’s own partner, the Golden Gate National Parks Conservancy. The conservancy has proposed building a “Presidio Exchange,” a “park-based cultural center that creates, curates, and hosts unique public experiences at the Presidio ... that are Presidio-themed, participatory, and cross-disciplinary.” The Exchange is designed as a highly versatile performance and learning venue, taking cues from some of the nation’s newest and most successful cultural spaces, such as New York City’s Highline Park and Chicago’s Millennium Park.

In their interim review, the trust recognized the conservancy’s exceptional contributions to the Presidio and throughout Golden Gate National Recreation Area and especially its

“ethos of partnership in the public interest.” The trust commended the conservancy’s approach to the Exchange as “varied, flexible and relevant” but asked for a clearer “master narrative” and more information on public programming.

When all is said and done, the conservancy is offering the Presidio a remarkable opportunity. There are many parts that make up the new Presidio—emerging neighborhoods, distinctive campuses, and newly preserved landscapes. The Exchange would significantly enhance the Presidio’s overall visibility and coherence as a great public park. Building on all the good work that has already been accomplished, the Exchange has the potential, as well, to position the Presidio in the vanguard of a 21st-century national park system that is working to become more inclusive, more collaborative, and more relevant.

The decision on this RFP will not be the first time the Presidio Trust has had to seek out that “sweet spot” under intense scrutiny and political pressure, nor will it be the last. With the challenge of self-sufficiency now met, however, it will be a bellwether test of the trust’s fidelity to its public mission and will do much to shape the ultimate contours of the Presidio’s character as a national park.

Given the magnitude and breath of this remarkable 15-year transition from “post to park,” and the many important choices still to be made, I think it is time to give the Presidio greater recognition as a valuable part of our national park system.

A great urban national park laboratory has been created at the Presidio for perfecting sustainable practices in environmental remediation and recovery, historic preservation, and park design. Just as importantly, the Presidio is also an opportunity to experiment with new approaches to partnership, community-building, and civic stewardship. We should take advantage of all that can be learned, particularly the positive interaction of what we have too often chosen to segregate: nature and culture, public and private, recreation and work, urban and open spaces.

It is time to pay more attention.

A handwritten signature in dark ink, appearing to read "Ray Dammant". The signature is fluid and cursive, with the first name "Ray" being more legible than the last name "Dammant".

# The Heart of the Matter

*New essential reading on parks, protected areas, and cultural sites*

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***Revolutionary Parks: Conservation, Social Justice, and Mexico's National Parks, 1910–1940***, by Emily Wakild. Tucson: University of Arizona Press, 2011.

***Reviewed by Nelly Robles García***

WHILE FOR MOST FOREIGNERS, including Americans, the Mexican Revolution is a dramatic period embracing the country's struggle for democratization and agrarian reform, in her thoughtful treatment of the creation of Mexico's system of national parks Emily Wakild demonstrates how the Revolution affected other arenas of national life. She starts with a very simple question: in the aftermath of a violent revolution that upended political leadership, shook the social structure, shattered the economy, and left Mexicans uncertain about their future, how did the country find the will and energy to create a national park system? How can we explain the emergence of a park system at a time when presumably Mexico needed to assure political stability, create essential institutions, restore the economy, and address the basic needs of the millions of rural Mexicans hitherto excluded from national life?

Wakild argues two central factors explain the attention given to the creation of a national park system. First, the impulse for resource conservation did not originate with the Revolution but in fact began decades before as Mexican intellectuals and scientists, disturbed by the ways in which late-nineteenth-century industrialization laid waste to the forests, polluted air and water, and degraded long-standing relationships between humans and nature, began to call for constraints on unbridled exploitation. The degradation of forests around Mexico City, with negative impacts on urban life, offered a ready focus for revolutionary reformers eager to bring the authority of a new political regime to bear on the problems confronting the general population. Second, a concern for conservation provided a mechanism for pursuing social justice for those Mexicans disadvantaged by the policies of exploitation and exclusion marking the long reign of Porfirio Díaz. National parks accessible to all and managed for the public good would symbolize the social perspective of the new government.

Although the pioneers of Mexico's national park system drew inspiration and practical lessons from conservationists and practitioners in Europe, the United States, and elsewhere, they placed post-revolutionary values at the center of the system they created. Wakild argues that unlike the American system, with its emphasis on wildness and the centrality of nature, "Mexicans promoted a concept of human integration with nature" (p. 14). Thus many of the

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national parks created prior to 1940 were relatively close to urban centers with the explicit mission of serving as centers of education and recreation for the general population. By exposing ordinary Mexicans to the value and benefits of conservation, park proponents sought to build a constituency that would sustain the system against long-term pressures from competing interests. “Lessons from the era of revolutionary environmentalism demonstrate the symmetry between sustaining social justice along with protecting nature and the precarious risks involved with balancing both” (p. 15).

The core of Wakild’s analysis is a framework of five themes—science, education, productivity, property, and tradition—that she applies to the creation of four national parks in the vicinity of Mexico City. Wakild’s choice of these parks flows from her view that in effect they served as accessible laboratories for the political leaders and professional foresters seeking to implement revolutionary environmentalism. In the decades prior to the Revolution, the overexploitation of Mexico’s forests as a consequence of industrialization, urbanization, and technological change prompted a cadre of scientists and citizens to create organizations such as the Mexican Forestry Society, to pursue contact with counterparts abroad, and to create the foundations for institutionalized protection of forests. The triumph of the Revolution opened the door for such protection but also unleashed expectations of social justice and opportunity for marginalized millions. The administration of President Lázaro Cárdenas (1934–1940) established a cabinet-level Department of Forestry, embedding within it the National Parks Office. But the revolutionary commitment to social justice led to the creation of parks intended to include, not exclude, people and anticipated controlled multiple-use rather than a dedication to wilderness.

Through exhaustive review of a broad array of documentary sources Wakild walks readers through the interactions of government officials with citizens, organizations, agencies, companies, and communities. The common thread linking her case studies with the five themes mentioned earlier are detailed accounts of specific experiences, such as the recurring struggles of Tepoztlán to protect its lands or the creation of educational programs at Zempoala National Park. Such accounts are a major strength of the book as they provide an extensive foundation for her more general assessment of revolutionary environmentalism and its engagement with social justice. They underscore a major dilemma for the Department of Forestry and the national parks movement: conservation of forest resources had been a central goal for more than five decades, yet the same revolution that facilitated such conservation unleashed popular expectations of access to those resources. Any effort to constrain access therefore challenged revolutionary values and needed to be managed with great care and discretion, placing a premium on education and building collaborative relationships.

In the end Wakild’s assessment of the convergence of social justice and conservation underscores the centrality of land as a critical component in understanding not only the origins of Mexico’s national park system but also the difficulties in sustaining its early momentum in the decades after 1940. Unlike the United States, where great national parks like Yellowstone or Grand Canyon were established on land wrested from its original inhabitants, Mexico’s national parks overlay lands owned and used by individuals or communities. The original parks, like the country’s protected areas today, were superimposed upon occupied landscapes. This proved to be a point of continuing tension as the prospect of a far-away government imposing controls over land use frequently provoked strains with local com-

munities. Wakild notes that in cases such as Tepoztlan the national government appeared as benevolent and a protector, while in other cases the goal of long-term conservation clashed with the desire for short-term gains or traditional practices that had the effect of undermining forest health. A Revolution celebrating the notion of “land to those who till it” found it difficult to protect forests from those seeking to plow and pasture even when the expansion of agriculture was in direct contradiction to conservation.

Confronted with the pressures to modernize Mexico and respond to multiple demands, the national government drifted away from revolutionary environmentalism. Sustaining it brought many headaches while abandonment had few immediate costs. The ideal of communities protecting their resources frequently foundered on the realities of population growth, monetized economies, urbanization and infrastructure development, and other competing priorities. Many of the original national parks proved too small to offer meaningful ecosystem protection and too vulnerable to micro-level exploitation for other uses. The removal of a few trees here or construction of a house there seems eminently reasonable to residents of a community that, after all, is the original owner of the land. Across time, the realization that the cumulative effects are devastating to the national park comes when it is too late to establish effective controls. This is where Wakild’s earlier description of specific relationships becomes important: it foreshadows the multitude of demands, interactions, conflicts, and expectations that combine to sap the national park system of vitality and dynamism.

*Revolutionary Parks* provides a window on the Mexican Revolution that was previously opaque to most non-Mexicans. More important, it demonstrates that in the wake of the Revolution the Mexican government was willing to pursue a conceptual framework for national parks that sought to integrate principles of conservation with the need to address the social realities of marginalization and exclusion. While this effort to innovate ultimately proved to have grave weaknesses, Emily Wakild demonstrates revolutionary environmentalism provided a springboard and inspiration for the conservation efforts of later generations.

# Last of His Kind? Some Reflections on the Career and Legacy of George P. Hartzog, Jr.

*Laura J. Feller*

ONE OF THE MOST ACUTE STUDENTS of recent National Park Service (NPS) history, John J. Reynolds, has said that “George Hartzog, Jr., a product of his times and the changing times of the nation as a whole, was the first and so far the most activist NPS director” to understand that NPS had to re-think its conception of the “public” that national parks serve. “He ‘got’ what rapid urbanization, the culmination of the Civil Rights movement and the freeing of black voters in particular, the emergence of ‘minority’ middle and upper classes, and the effects of burgeoning demographic shifts meant politically.”<sup>1</sup> Hartzog is on everyone’s list of the most politically skilled directors of NPS. In a new biography, *Reshaping Our National Parks and Their Guardians: The Legacy of George P. Hartzog, Jr.* (Albuquerque: University of New Mexico Press, 2012), Kathy Mengak reports how Hartzog, nearing the end of his long and productive life, wanted us to remember his park work and his years as the NPS director from 1964 to 1972. How was Hartzog so effective? What meanings do Hartzog’s story of his career and his achievements have today, as we think about the futures of parks and protected lands? What aspects of his leadership are models for us today?

Our times are surely not his. His early years as director coincided with an expansive economy, in a political and social climate that, for some, fostered optimism about the possibilities of progressive changes in Americans’ daily lives. Our national legislature has always been a contentious place, but the present political climate in Washington would challenge and perhaps stymie even George Hartzog. Even more fundamentally, today global climate change, among other trends, forces us to re-examine possibilities for preservation and to scrutinize the varied meanings we attach to hallowed words like “nature,” “conservation,” and “environmentalism.” Global trade patterns, and the continuing, absolute necessity of recognizing the political ambitions and economic needs of workers and indigenous people worldwide, press more urgently than ever on people who manage and love parks. Experienced conservationists and naturalists raise questions about cherished assumptions, including the concept that NPS park lands can be preserved “unimpaired.” In the 1960s, with growing awareness of the environmental effects of modern industries and mega-agriculture, perhaps only the most

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far-seeing ventured to suggest that we (and the planet) were entering an “Anthropocene” era. Now, the question is not whether massive changes are upon us, but how best to develop new strategies and to identify the fundamental values that we should strive to protect, in a time when the social capital and political will needed for parks seem scarce.

Of course, it would be grossly unfair to ask “What would George Hartzog have done, faced with global warming?” He was a tireless, pragmatic, skillful, opportunistic administrator and lover of the national park system, not a seer or a scientist. His gusto for the business of cutting political deals, his enthusiasm for the work of influencing legislators and finding allies, and his bravado were legendary in NPS. Apparently he could be delightful, even inspiring, when you were on his side—and formidable if you were not.

Mengak’s biography is helpful for thinking about Hartzog’s legacy, but in a limited way; as she herself says, hers is a picture largely drawn from Hartzog and his supporters.<sup>2</sup> Basing her narrative largely on interviews with Hartzog and a few others, Mengak gives us Hartzog’s explanations of, and stories about, his intentions and his accomplishments.

His achievements are undeniable, especially his devotion to adding new parks to the system, including the urban, recreation-oriented Gateway and Golden Gate NPS units. Hartzog wanted us to remember him as an advocate of bringing national parks within reach of more Americans, especially city dwellers, and as someone who struck an appropriate middle ground in the debates of his era about the meaning of the NPS founding mandate for conservation and use within the parks. (Full disclosure: to me, framing this as a “preservation vs. use” conflict is stale and always was simplistic. This is a false dichotomy, in my opinion, in that it makes little sense to pit the present against the future.) The maxim that “parks are for people” was one Hartzog emphasized through a variety of initiatives such as “Summer in the Parks.” His advocacy for urban recreational areas as part of the national park system was ground-breaking and innovative in many ways. In other ways, it seems also true that this effort fit with NPS’ traditional emphasis on parks as places where public access and recreation were paramount concerns for the agency.

Drawing from his conception of democracy in the US, Hartzog skillfully operated on his awareness that Congress has a fundamental responsibility to express what the American public wants in its national park system. He was similarly astute about what kinds of initiatives “old line” NPS managers and rangers might readily accept. At the same time, he took great pride in the persuasive arts and wiles he used to convince people of the need for his initiatives. For example, he worked hard to lay some groundwork in Congress that later helped the authorization of huge new parks in Alaska. He emphasized democratic and demographic concerns, but he understood well that good outcomes for parks and protected areas require assiduous insider maneuvers and pragmatic behind-the-scenes work.

In describing Hartzog’s view of his career aims and effectiveness, Mengak’s book particularly invites us to reflect on aspects of his work in which he took most pride (like expanding the number of parks in the system). Hartzog perhaps took a more equivocal view of his efforts to place more emphasis on scientific research as a fundamental basis for park decision-making about natural resources.<sup>3</sup> He became director as the famed Leopold and National Academy of Sciences reports (about NPS science) came out in 1963. These reports criticized NPS for not placing more emphasis on understanding and managing parks as pieces of complex

ecological systems, and for skimping on the research and rigorous analysis necessary for resource management in parks. Hartzog at some level understood the issue, and saw clearly that NPS needed publicly to respond to this criticism in constructive ways. Given the analysis in Richard West Sellars' *Preserving Nature in the National Parks*, it also seems fair to say that Hartzog did not, in the end, invest much political capital in approaches to the problem.<sup>4</sup> In more recent years—and in the wake of Sellars' influential book—NPS had more success in increasing funding and attention to natural-resource research programming. The story of Hartzog's efforts in this area reminds us that many superintendents, traditionally, have felt a righteous proprietorship of management decision-making processes. In Hartzog's time as director, not all superintendents welcomed a more methodical, science-based approach to planning and decisions that they felt their experience and dedication equipped them to make on a more *ad hoc* basis. Still fewer superintendents have committed to comprehensive research agendas for the long haul, rather than the short term, as places to invest comprehensive (or at least consistent) funding. In my opinion, this climate, which encourages seat-of-the-pants, rather than systematic, research programming and planning, still prevails in too much of NPS. It is instructive that even a director as powerful and politically canny as Hartzog was, in the end, less than successful in persuading superintendents who were reluctant to embrace the idea of more independent, wide-ranging scientific inquiry in the service of park preservation and management.

Hartzog took pride in his efforts to do away with a system of dozens of formal administrative manuals that NPS had produced to guide decisions about a wide range of park management issues. He substituted three shorter manuals of policy, one each for parks categorized as primarily natural, cultural, or recreational. As Mengak acknowledges, these categorizations presented difficulties to managers of parks (and this is nearly every last one of them) with significant resources that demonstrate not only the folly of the idea that any national park is just natural, cultural, or recreational, but also the wisdom of recognizing that individual resources may be natural and cultural all at once.<sup>5</sup> Hartzog's notion that there should be, in effect, separate management policies for natural, cultural, and recreational parks did not long survive. Hartzog's stated intention to foster more timely, flexible, innovative decision-making locally by superintendents is laudable. (It seems true, though, that many NPS managers perceived Hartzog as a "hands-on" manager quick to transfer superintendents who didn't perform to his satisfaction.) Today, though, as a broad principle, NPS people widely embrace the conventional wisdom that all units of the national park system are part of a whole, and all must be managed consistent with the NPS founding conservation mandate. Given the global challenges facing parks and protected areas today, some thoughtful people are re-examining that broad principle. I would bet that the best answers will come from fine-grained analyses based in localized scrutiny of individual parks and resources in global contexts, not from broad-brush top-down pigeonholing of parks and resources. Hartzog's approach in this area does not seem a model for the future.

Hartzog was undoubtedly a master of political processes, but by his own account, he sometimes had less-than-warm relationships with the broad-based environmental-advocacy groups that were increasingly visible in his years as director.<sup>6</sup> Perhaps this reflects his sagacity about the back-scratching needed to manage and grow a national park system as a process

that had to be mutual. In other contexts, Hartzog well understood the value of partnerships, including arrangements that might entail NPS involvement in lands that the bureau did not hold.<sup>7</sup> Today, as parks such as the Ebey's Landing National Historical Reserve demonstrate, NPS has embraced "less-than-fee" arrangements for a variety of preservation and conservation efforts.

So, what does it take to effect change in an organization like the National Park Service? Organizationally, the bureau is an unruly mix of hierarchy and decentralization. Socially, the motivations and devotions of its employees vary enormously, of course, but in general, the bureau tries to foster a climate of reverence for a founding "mission" in ways that perhaps only the military surpasses. This sense of mission can be a powerful tool for mobilizing employees, but NPS can also be parochial, insular, and stovepiped. Some of its employees are reluctant to recognize subtly and not-so-subtly racist and sexist approaches to historical interpretation. In some NPS quarters, there's a desire to feel good about parks as shrines to outmoded ideas about a single unifying national identity or "pristine" nature. This impedes the bureau's ability to deal honestly with conflicts and ruptures as well as continuities, with failures and tragedies as well as progress, and with the polyglot, multiform nature of this country and its peoples.

Hartzog's career shows us that one person with *chutzpah* and an appetite for politics can make significant change. It also shows that even the happiest park warrior will not overcome deeply entrenched attitudes and interests within or outside the agency. Perhaps, for example, Hartzog could have done more to use the 1963 Leopold and National Academy of Science reports to leverage immediate, expansive emphasis on park science and on park ecological values, systems, and contexts. Still, the context for Hartzog's directorship was different from the climate today in many important ways. Mengak's book succeeds in giving voice to Hartzog, as he explains his intentions and tells great stories.

Steering NPS from the director's perch remains a tricky and challenging job, requiring more than ever nimbleness and facility in the worlds of science, scholarship, and conservation theory, as well as a deep appreciation of social, economic, and political trends. To say, with John Reynolds, that Hartzog was "a product of his times" does not diminish his achievements or the admiration he deserves. It does suggest that we need new models if the National Park Service is to move forward in intellectually and socially responsible, sophisticated ways as a steward of the environment. NPS approaches to civic engagement in recent years provide new tools for building partnerships—not only in ways that Hartzog envisioned, but also in even more expansive, inclusive, transformative ways. Civic engagement strategies can ameliorate NPS tendencies to parochialism and stovepiping. In addition, NPS must take more seriously its role as a research institution, going beyond Hartzog's ambitions and actions in that area, if NPS is adequately to protect parks in the system in the 21st century, given the environmental challenges the world faces. Hartzog's canny efforts to build a park system that democratically served more people can inspire us, but today NPS needs approaches and tools beyond Hartzog's imagining for building partnerships, doing research, and thinking about climate change.



## Endnotes

1. John J. Reynolds, "Whose America? Whose Idea? Making 'America's Best Idea' Reflect New American Realities," *The George Wright Forum* 27 (2010), p. 129.
2. "My contact with Hartzog's critics was limited and would have provided a better balance" : Kathy Mengak, *Reshaping Our National Parks and Their Guardians: The Legacy of George P. Hartzog, Jr.* (Albuquerque: University of New Mexico Press, 2012), p. 7.
3. Mengak, p. 195, 216–222.
4. Richard West Sellars, *Preserving Nature in the National Parks: A History* (New Haven and London: Yale University Press, 1997), pp. 214–232.
5. Mengak, pp. 145–146.
6. Mengak, pp. 130–131.
7. Mengak, pp. 81, 151–152.

**Laura J. Feller**, 3010½ R Street NW, Washington, DC 20007; [fellerl47@verizon.net](mailto:fellerl47@verizon.net)

# Six Shutdown Lessons for the National Park Service and its Supporters

*David Harmon*

JUST AFTER MIDNIGHT ON OCTOBER 17, the final curtain rang down on the latest revival of Shutdown Theater, bringing an end to a show that had a riveting, baffling, infuriating, and—finally—mind-numbing run at venues across America. Truth be told, the US federal government shutdown of 2013 was Theater of the Absurd. There are plenty of images from the shutdown that qualify as absurd, some of which—such as that of the congressman berating the ranger at the World War II Memorial, or the congressman who, during a televised inquisition of the National Park Service director, mockingly held up a mirror to his colleagues in the hearing room when they were searching for someone to blame for the closures—are not soon to be forgotten.

Too bad, because most of us would love to just wipe the whole thing from our memories. But that would be a mistake. For both the National Park Service and those who support it, there are valuable lessons to be drawn from the shutdown, dispiriting though it was. One of the lessons is blindingly obvious; the others less so, but just as important.

## The obvious

**1. The National Park Service is the face of the US federal government.** If there ever were any doubt about this, it was laid to rest first thing on October 1. That morning I got up, turned on my laptop, and did the first of several screen grabs throughout the day of the front page of the *New York Times* website (see Figure 1). I knew what I would find, for it was easy to predict. If I'm an editor at a big newspaper with a heavy web presence, or the producer of a TV news show, what I need to lead with is a compelling visual. If the story is the shutdown of the federal government, what picture do I go for? Is it, say, the exterior of the deserted Department of Justice headquarters ... which looks precisely like a hundred other federal buildings? How about a picture of a woman in a robe and slippers standing on her front porch holding a sign that says "Hi, I'm a furloughed budget analyst with the Social Security Administration"? A black square with a note at the bottom that says "This used to be the National Zoo's Pan-

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daCam””? No, what you show is a person in uniform doing an activity, such as putting up a fence or blocking off a road, that is instantly recognizable as the act of shutting something down, preferably in a place that is easily identified as belonging to the federal government. Hence the photos of Figure 1, and the countless variations on them that appeared in the news across the country.

## The not-so-obvious

**2. The fact that NPS is the face of the federal government now makes it a special target of those who have built an ideology around the assertion that government can't do anything right.** This, I think, is one of the key differences between the 2013 shutdown and its predecessors in the mid-1990s. There was vitriol aimed at NPS back then, but the intensity of the hatred this time around was on another order of magnitude. The fact that the Park Service is popular across the political spectrum, and is widely viewed as being effective,<sup>1</sup> is a resounding slap in the face to those whose political agenda depends on promoting the idea of universal government incompetence. This minority is small but intensely vocal, and their reach through websites and social media is far beyond anything attainable in the 1990s. This time around their reaction was to try to undermine NPS by any means possible.<sup>2</sup>

**3. In times of crisis, the focus is on symbols, not places.** The National Park Service is place-based: it runs beautiful landscapes, solemn battlefields, inspiring historic sites, and so on. However, emotions run highest around those places with the most overt symbolic value; hence the intensity of feeling surrounding access to the National Mall sites. One lesson that was very clear this time is that people of all political persuasions see national parks as not just symbols of democracy, but places where democracy can and should be enacted. As such, they are seen as a fundamental entitlement of every citizen, a key part of which is an implied right of access.

**4. Making the NPS director a de facto political appointment opened a door to partisan sniping that can never be closed again.** Several students of the agency have noted the increasing politicization of the Park Service, and usually trace it to 1972 when George B. Hartzog, Jr., the last of the directors in the grand Mather–Albright–Wirth mold, was forced to resign in favor of a White House staffer. Since then, the position of NPS director has been made subject to Senate confirmation, so that now the incumbent is expected to offer his or her resignation at the start of every new presidential term. No one should be so naïve as to think that the position of NPS director was ever entirely free from political meddling, but



**Figure 1.** Two screen grabs from the front page of the New York Times website on October 1, 2013. Above, taken just before 10:00 am; below, just before 2:00 pm.

today's incumbents have to overcome powerful assumptions of partisanship that their predecessors did not. This has made it open season for pundits to treat the position as just another political appointment, even if the director is a career Park Service employee. The idea that the NPS director is just a pawn of the current administration conveniently slots into a worldview that the federal government consists of a revolving cast of political hacks and functionaries rather than conscientious professionals who have chosen public service.<sup>3</sup>

Not only does this view undercut the very idea that park management is a profession with standards of competence and codes of conduct, it's an open invitation for pundits far and wide to poison the well of public opinion. One conservative blogger concluded an anti-NPS diatribe by identifying Director Jonathan Jarvis as a "30-year civil servant"—note, please, not a "career NPS employee" or a "30-year parks professional"—before going on to compare him to an overzealous meter maid determined to make the pain of the shutdown as acute as possible.<sup>4</sup> Insulting as this is, it pales in comparison to other epithets and actions intended to portray all of the Park Service as nothing more than a strong-arm of the current president. In the blogosphere, no hyperbole is out of bounds, so NPS employees became "shock troops" and rangers who refused to allow a tour group to proceed into Yellowstone "acted like the Gestapo."<sup>5</sup> Sarah Palin gleefully urged her supporters to "storm the *barrycades*" to protest the unjust closures by the Park Service, puppets of President Obama that she believes them to be. Indeed, some Tea Party protesters (at least one of whom brandished a Confederate flag,) removed barricades from the National Mall and stacked them outside of the White House.<sup>6</sup> These coded and explicit references to Nazism<sup>7</sup> and to racism should be deeply offensive to all citizens.

**5. NPS needs to rethink the differential treatment of national park units under the "First Amendment exception."** This exception to general NPS policy, which was used to allow Honor Flight veterans to enter the World War II Memorial after the initial brouhaha at the barricades, was widely decried on the right as a flimsy ploy by NPS to dial back public relations damage. With apologies for the lengthy quotation, here's an enlightening excerpt from a story in the conservative *Washington Times*:

In downtown Washington, where the civil disobedience began with veterans bursting through barricades to get to the World War II Memorial, the Park Service has relented to some extent.... Rangers told visitors Wednesday that they could not deny entry to anyone who wanted to exercise First Amendment rights, and could not interrogate visitors, which effectively means the monument is open to those aware of the loophole.

'The First Amendment trumps all,' a Park Service ranger told visitors....

Some visitors Wednesday didn't realize the monument was essentially open.

One woman jumped the front fence to get inside just around the corner from the area where barricades had been opened. Renee Younk, visiting from Wisconsin on a work trip, said she probably wouldn't have gone into the monument based on the

sign that read, ‘Due to the Federal government shutdown, this National Park Service area is closed, except for 1st Amendment activities.’

Donna Chapman, another out-of-town visitor, said she felt like she was exercising her First Amendment rights just by visiting the memorial.

‘I don’t think they should have gates up at all. It’s open air,’ she said. ‘It’s ridiculous.’

But the service had to relent Tuesday after it allowed a major pro-immigration rally on the otherwise closed Mall, drawing rebukes from rally participants and from others who said the administration shouldn’t be able to choose who is and who is not allowed to exercise rights.

Michael Litterst, a National Park Service spokesman, said the First Amendment exception applies only to several Washington and Philadelphia parks related to the government and its history, ‘due to these parks’ long history of hosting First Amendment events, their expansive outdoor grounds, and their location in major metropolitan areas.’

‘You could not host a First Amendment rally at Chaco Culture, Grand Canyon, Manassas or any one of the 395 other parks where such activities are prohibited during the shutdown. They can be held only at the National Mall and Memorial Parks, the areas of the White House administered by the NPS, and Independence National Historical Park,’ he said.<sup>8</sup>

The points being made here by the disgruntled visitors are not easily dismissed. It seems to me that the exceptions for the National Mall and Independence—based on historical precedent and their physical circumstances—would have trouble standing up if challenged in court. As far as I’m aware, all 401 park units have a designated area for First Amendment activities, and it seems indefensible to maintain that a handful can allow such activities during periods when the park is otherwise closed, but none of the others can.

There are many other legal issues to be disentangled here as well, the most basic of which is, Who owns the national parks? In the House hearing on the shutdown, a member asked Director Jarvis a leading question along these lines, one designed to elicit an answer to the effect that “the American people do.” The questioner, who was critical of NPS, presumably would then have made the point that, as owners, American citizens cannot be denied access to any national park. In rhetorical contexts like this the exchange amounts to little more than political jousting, but there is a serious underlying question of law: if the American people are in fact the collective legal owners of the parks, then under what circumstances (if any) can NPS deny owners access to their property? Moreover, what constitutes legitimate civil disobedience with respect to public areas that have been closed (for whatever reason)? Does an action taken avowedly in protest (such as bypassing a barricade solely and specifically to make a political point) constitute “protected speech”?<sup>9</sup> (See Figure 2.) Does it make a difference if such an action *inadvertently* causes (or could cause) resource damage? Since NPS (rightfully) cannot question people about their speech intentions, in practical terms on



**Figure 2.** Free speech, civil disobedience, or illegal activity? Photo accompanying a tweet by Noelle Bruno (aimed at the conservative pundit Michelle Malkin), which read “@michellemalkin my husband throwing the cones out of the way at the Bad Lands [sic] National Park, South Dakota” (posted October 5, 2013).

what basis can they deny anyone access to a designated First Amendment free speech area within an otherwise-closed national park?<sup>10</sup>

**6. There is a widespread failure to understand the NPS mission and the basic requirement that national park resources need both protection and professional stewardship.** This failure is bipartisan: liberals as well as conservatives don’t really get it. Early on in the shutdown, the Republican National Committee offered to pay to reopen the World War II Memorial. The committee’s chair, Reince Priebus, said that “ideally, I’d hope to hire furloughed employees for this job” but failing that, he thought that a handful of “security personnel” would do.<sup>11</sup> In a letter to Secretary of the Interior Sally Jewell, the top official in Blount County, Tennessee, which covers part of Great Smoky Mountains National Park, proposed to use sheriff’s deputies and volunteer firefighters to reopen the county’s portion of the park. In this official’s opinion his plan “had everything covered” and, if only the federal government would have agreed, “we could have opened those gates and it could have been business as usual for that area and for the Great Smoky Mountains National Park in Blount County.”<sup>12</sup>

Far more ominous was a plan by officials in San Juan County, Utah, to unilaterally remove barricades at several national park units in order to reopen them using emergency services and law enforcement personnel. The plan was conceived after several southern Utah counties declared a “state of emergency” because of the tourism revenue being lost due to the shutdown. Although some of the officials were careful to say that the move was not intended as a showdown with the federal government, others spoke of “storming the barricades,” and rumors flew that there might be an armed confrontation between a “sheriff’s posse” and NPS rangers. The officials felt their plan was analogous to actions they would take under other “normal” emergency declarations.<sup>13</sup> Tensions were defused and the plan was shelved only after the Interior Department reversed course and allowed state governments to pay for the cost of reopening the parks, with the proviso that they be staffed entirely by NPS personnel.

You might think these sentiments are primarily the province of people on the conservative end of the political spectrum. My experience suggests that this isn’t so. During the shutdown I spent a fair amount of time monitoring “chatter” in the comments section of various political and news websites—left, right, and center. In all, posters of all political stripes



expressed befuddlement at why the national parks simply couldn't be reopened and staffed with ... you name it: local law enforcement, the National Guard, volunteers and docents, state park workers, EMS squads, search-and-rescue teams, the state police, and so on. In fact, more than a few people suggested that you wouldn't need any personnel at all on duty, so long as somebody could be found to jimmy open the restrooms and keep them clean: just open the gates and let the people flow in.

This, to me, is the most important—and most disturbing—shutdown lesson of all: the average person seems to think that practically anyone can do what it takes to run a national park. Obviously NPS is aware of this, and in interviews during and after the shutdown Director Jarvis made the point that the national parks “are irreplaceable assets and they don't manage themselves” and that “nobody can run the national parks except the National Park Service.”<sup>14</sup> But aside from such general statements, there was no concerted effort by the agency to communicate the breadth of professionalism, and the diversity of specializations, that are needed to manage a national park effectively, whether in law enforcement, facilities management, research, resource management, interpretation, or administration. To be fair, NPS more than had its hands full during the shutdown, and during a crisis one can hardly expect it to mount a thorough campaign to educate the public about what it takes to run national parks. But the immediate crisis is past, and now is the time for the agency—and partners such as GWS—to begin thinking about how to successfully convey this information to the public. Doing so would help ameliorate the worst effects of Shutdown Theater if and when the next sequel comes along.

## Acknowledgments

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## Endnotes

1. A June 2013 national opinion poll found 68% of Americans overall (73% of Democrats, 68% of Independents, and 65% of Republicans) think the federal government is doing a good job taking care of national parks and open space. See Jeffrey M. Jones and Steve Ander, “Americans Praise Gov't Work on Natural Disasters, Parks,” <http://www.gallup.com/poll/163487/americans-praise-gov-work-natural-disasters-parks.aspx>, July 12, 2013; and Jeffrey M. Jones, “Party Satisfaction on Healthcare, Foreign Affairs Varies Most,” [www.gallup.com/poll/163496/party-satisfaction-healthcare-foreign-affairs-varies.aspx](http://www.gallup.com/poll/163496/party-satisfaction-healthcare-foreign-affairs-varies.aspx), July 12, 2013.
2. Not surprisingly, some commentators on the right used the shutdown to push a privatization agenda for the national parks, which they view as chronically mismanaged. See Nick Gillespie, “Who Knew that National Parks were Such a Vital National Interest?,” <http://reason.com/blog/2013/10/02/who-knew-that-national-parks-were-such-a>, October 2, 2013; J.D. Tuccille, “It's Time to Let Somebody Competent Run National Parks (Hint: Private Enterprise),” <http://reason.com/blog/2013/10/16/its-time-to-let-somebody-competent-run-n>, October 16, 2013; Paul Kengor, “The National Park

Service's Behavior has been Shocking, and It Should be Privatized," <http://forbes.com/sites/realspin/2013/10/11/the-national-park-services-behavior-has-been-shocking-and-it-should-be-privatized/>, October 11, 2013.

3. A case in point is the much-discussed, videotaped confrontation between a Tea Party-affiliated member of the House of Representatives and a female ranger at the World War II Memorial, which became an instant Internet meme. The representative, Randy Neugebauer of Texas, told the NPS employee that she should be ashamed of closing the memorial. She replied that it was difficult to turn visitors away, but she was not ashamed of doing her job. He was immediately confronted by a passerby, a man who turned out to be a furloughed federal employee, who chastised Neugebauer for the confrontation. The whole exchange, which took less than two minutes, went viral. As a result, Neugebauer's Facebook page received thousands of comments from people defending the ranger (who actually was not a line interpreter, but the deputy superintendent for operations at the National Mall). Later—and with almost no media attention—Neugebauer tried to walk back his comments in a special newsletter to his constituents, saying, "I want to be clear: I meant no disrespect to the Park Ranger, who was simply doing her job." See Emily Wilkins, "Park Rangers Call Rep. Randy Neugebauer's Outburst 'Shameful,'" <http://trailblazersblog.dallasnews.com/2013/10/park-rangers-call-rep-randy-neugebauers-outburst-shameful.html/>, October 15, 2013.
4. The exact sentence was: "But he [Jarvis] has taken to his political duties with all the fervor of a third-tier hack from the DNC [Democratic National Committee], marrying the disinterested contempt of a meter maid with the zeal of an ambitious party apparatchik." "Rightstuff" [pseud.], "Is Jonathon [sic] Jarvis Now a Favorite of the American Public?," <http://answers.yahoo.com/question/index?qid=20131009131430AARWb8k>, October 13, 2013.
5. Daniel Strauss, "How the National Park Service Became Obama's Shutdown 'Shock Troops,'" <http://talkingpointsmemo.com/dc/parks-and-museums>, October 2, 2013.
6. Lynh Bui, "Veterans Protest Closure of Monuments and Memorials during Shutdown," [http://www.washingtonpost.com/local/veterans-protest-closure-of-monuments-and-memorials/2013/10/13/adaf699c-342e-11e3-be86-6aeaa439845b\\_story.html](http://www.washingtonpost.com/local/veterans-protest-closure-of-monuments-and-memorials/2013/10/13/adaf699c-342e-11e3-be86-6aeaa439845b_story.html), October 13, 2013. A photo showing the protester carrying the Confederate flag is in the accompanying slide show.
7. In another example, an Arizona state representative, Brenda Barton, posted this on Facebook: "Someone is paying the National Park Service thugs overtime for their efforts to carry out the order of De Fuhrer ... where are our Constitutional Sheriffs who can revoke the Park Service Rangers authority to arrest:?? Do we have any Sheriffs with a pair?" [Spelling as in original.] See Hunter Walker, "Arizona Lawmaker Rages Against 'De Fuhrer' Obama in Angry Facebook Post," <http://talkingpointsmemo.com/livewire/arizona-lawmaker-rages-against-de-fuhrer-obama-in-angry-facebook-post>, October 7, 2013. See also the blog post by "Allahpundit" [pseud.] on the Hot Air website, "National Park Spokesman: The 'First Amendment Exception' to Shutdown Closures Only Applies to Certain Parks," <http://hotair.com/archives/2013/10/10/national-park-spokesman-the-first-amendment-exception-to-shutdown-closures-only-applies-to>

certain-parks/, October 10, 2013. The comments on this post have references to NPS rangers as “brownshirts” doing the bidding of President Obama as “Führer,” calls to arrest rangers for treason, etc.

8. Stephen Dinan, “We’re Not Gonna Take It! Americans Use 1st Amendment to Storm Shutdown Barriers,” <http://www.washingtontimes.com/news/2013/oct/9/first-amend/>, October 9, 2013.
9. For example, how do you treat this published admission, from an editor at the website of *Road and Track* magazine, of entering a closed park—which he styled as a “middle finger” to the shutdown: “I’m not typically one for politics. My life soldiers on, regardless of the state of our government, so I saw no need to burden myself with concern over the latest antics on Capitol Hill. Then someone told me Cades Cove was closed. The thought of the loop completely abandoned, devoid of traffic and the suburban flatlanders responsible for it, was too much to ignore. Rumor had it that rangers would slap anyone caught in the park with a \$125 fine. If they charged that much to run the loop by your lonesome, there’d be a line clear to Maryville. Totally worth it.” An obnoxious brag? To be sure. But obnoxious speech is protected just like any other speech, and when the man went ahead and drove his dirt bike around the Cades Cove loop in Great Smoky Mountains National Park and through a creek to boot, was he trespassing (can you do that, if you are one of 300 million part-owners of the property?) or was he just enacting dissent? A motorcycle ride is not speech, but could it be argued that the action of entering a closed national park is a necessary element of civil disobedience if one wishes to protest this particular consequence of a government shutdown—an element without which the speech is rendered empty? See Zach Bowman, “A 250cc Middle Finger to the Government Shutdown: Civil Disobedience on Two Wheels,” [www.roadandtrack.com/features/web-originals/a-2013-honda-crf250l-middle-finger-to-the-shutdown](http://www.roadandtrack.com/features/web-originals/a-2013-honda-crf250l-middle-finger-to-the-shutdown), October 7, 2013. In November, Bowman was charged with three misdemeanors in relation to the incident; see Kurt Repanshek, “Road & Track Editor Facing Charges for Dirt Bike Ride Through Great Smoky Mountains National Park,” <http://www.nationalparkstraveler.com/2013/11/road-track-editor-facing-charges-dirt-bike-ride-through-great-smoky-mountains-national-park24319>, November 27, 2013. See also Patrik Jonsson, “Government Shutdown: Do National Parks Really Need to be Barricaded?”, [www.csmonitor.com/USA/Politics/2013/1003/Government-shutdown-Do-national-parks-really-need-to-be-barricaded](http://www.csmonitor.com/USA/Politics/2013/1003/Government-shutdown-Do-national-parks-really-need-to-be-barricaded), October 3, 2013; and E.M. Swift, “Thoreau Would be Proud: Civil Disobedience in the Time of the Shutdown,” <http://cognoscenti.wbur.org/2013/10/08/old-north-bridge-e-m-swift>, October 8, 2013.
10. The American Center for Law and Justice, a law firm founded by the evangelical minister Pat Robertson, sent a letter to Director Jarvis on October 4, 2013, contending that NPS was violating the First Amendment, due process, and equal protection rights of citizens seeking to enter the World War II Memorial, and threatening a lawsuit if NPS did not immediately allow access to the memorial for everyone. See <http://media.aclj.org/pdf/letter-to-national-park-service.pdf>.
11. Strauss, “Shock Troops.”
12. Jonathan Serrie, “Tennessee Mayor Offers to Manage National Park during Partial

Shutdown,” [www.foxnews.com/politics/2013/10/10/tennessee-mayor-offers-to-manage-national-park-during-shutdown/](http://www.foxnews.com/politics/2013/10/10/tennessee-mayor-offers-to-manage-national-park-during-shutdown/), October 10, 2013.

13. Erin Alberty, “San Juan County Considers Taking Over National Parks,” [www.sltrib.com/sltrib/news/56976191-78/county-lyman-national-park.html.csp](http://www.sltrib.com/sltrib/news/56976191-78/county-lyman-national-park.html.csp), October 9, 2013. For the “storming the barricades” quote, see Howard Berkes, “County In Utah Threatens Takeover of National Park Areas,” [www.npr.org/blogs/thetwo-way/2013/10/09/231086726/county-in-utah-threatens-takeover-of-national-park-areas](http://www.npr.org/blogs/thetwo-way/2013/10/09/231086726/county-in-utah-threatens-takeover-of-national-park-areas), October 9, 2013.
14. Howard Berkes, “National Parks Close as Other Public Lands Stay Open,” [www.npr.org/2013/10/03/228719015/national-parks-close-as-other-public-lands-stay-open](http://www.npr.org/2013/10/03/228719015/national-parks-close-as-other-public-lands-stay-open), October 3, 2013; Judith Lewis Mernit, “NPS Director Jarvis on Shutdown Rage and and Funding Needs for the Service,” [www.hcn.org/blogs/goat/national-parks-service-director-jon-jarvis-on-shutdown-rage-we-should-be-proud-1](http://www.hcn.org/blogs/goat/national-parks-service-director-jon-jarvis-on-shutdown-rage-we-should-be-proud-1), October 31, 2013.

**David Harmon**, George Wright Society, P.O. Box 65, Hancock, MI 49930-0065; [dharmmon@georgewright.org](mailto:dharmmon@georgewright.org)

## ***Selected Papers from the 2013 George Wright Society Conference on Parks, Protected Areas & Cultural Sites***

### **Tort Liability in National Parks and How NPS Tracks, Manages, and Responds to Tortious Incidents**

*Scott Breen*

SINCE THE ORGANIC ACT MANDATES THAT THE NATIONAL PARK SERVICE MISSION is to conserve the natural and cultural resources within its units, NPS cannot eliminate all dangers to visitors. As the 2006 NPS management policies state: “Park visitors must assume a substantial degree of risk and responsibility for their own safety when visiting areas that are managed and maintained as natural, cultural, or recreational environments” (NPS 2006). The risk is serious, as over 5,000 serious injuries occur among park visitors each year, with 98% of them occurring in 110 parks (NPS 2012). Due to Government Performance and Results Act requirements, NPS must report fatalities and serious injuries in the parks, but there is scant reporting of less serious claims. In terms of actual litigation, not all those who are harmed file claims and, of those who do file, not all have claims that are meritorious, mainly due to governmental immunity from many types of tortious incidents.

This paper first explores the extent of liability the government faces for tortious incidents that take place in national parks. Then the cost of legal actions stemming from tortious incidents, and government efforts to track such incidents, will be detailed. Last, public risk management efforts to reduce tortious incidents in national parks and a case study showing how proper tracking of tort claims can lead to more effective public risk management strategies will be presented.

A “tortious incident” is any civil wrong that occurs when one person’s action or inaction causes injury to another and from which a remedy may be obtained. Attorneys in the Department of the Interior’s Office of the Solicitor (DOI-OS) make the ultimate decision on whether to settle or litigate a claim made against NPS. While there is no database that keeps track of all tort claims against NPS, as will be detailed later, there is no doubt that in most claims, NPS is not liable for the incident.

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NPS is often not liable due to exceptions in the Federal Tort Claims Act (FTCA). The FTCA, passed in 1946, waived the government's general immunity and declared that tort actions against the US were authorized under circumstances "where the United States, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred." The FTCA has a discretionary function exception that is a major restriction on claims allowed under the law, as it shields the NPS in many cases. The 1991 Supreme Court case *United States v. Gaubert* affirmed the two elements that must be met for the discretionary function to apply: (1) the act giving rise to the alleged injury involves an "element of judgment or choice"; and (2) The judgment must involve social, economic, or political policy of the kind that the discretionary function exception was designed to shield.

Several NPS officials were interviewed for this paper. One attorney at a DOI regional solicitor's office remarked, "In 22 years at the regional solicitor's office, I've only seen us lose once on the discretionary function exception." This makes sense considering the first prong is often satisfied since Congress rarely specifies to NPS that amenities like lights and handrails need to be put in specific places. NPS Director's Order 50C (NPS 2010) regarding the Public Risk Management Program bluntly states, "The means by which public safety concerns are to be addressed in each park falls under the discretion of the park's superintendent" (NPS 2010). The second prong is also often satisfied since the *Gaubert* court said that when a regulation allows for employee discretion, this creates a "strong presumption" that the discretion authorized by the regulation involves the same policies underlying the regulation's promulgation (Hyer 2007). In other words, if the regulation creates the opportunity for discretion, then the policy considerations required to satisfy the second prong exist.

Two cases from the U.S. Court of Appeals for the Third Circuit help illustrate what kinds of incidents are covered under the discretionary function exception. Note that while it seems to be a bright line test, at times the court may reason around the "strong presumption" to get the outcome it feels is best.

*Merando v. U.S.* is an instance where the discretionary function exception immunized the US from suit. A family was driving in Delaware Water Gap National Recreation Area (Dewey-Forest National Recreation Area) when a 27-foot red oak fell on their car and killed the mother and a daughter. The court noted that there were no state regulations or agency guidelines specifically providing that if a tree inspection plan was developed, it would need to include particular inspection procedures (*Merando v. U.S.* 2008). Thus, NPS was free to balance safety objectives with practical considerations such as staffing and funding in deciding that low-traffic areas like where this accident occurred would only get windshield inspections. This is exactly the type of policy decision the court wants to avoid second-guessing.

*Cestonaro v. U.S.* is an instance where the discretionary function exception was deemed not to apply. While vacationing with his family, Daniele Cestonaro was shot and killed in the parking lot of Christianted National Historic Site. The court reasoned that NPS failed to show how providing some parking lot lighting, but not more, was grounded in its management policy objectives, specifically to maintain the area's historic appearance. There was no "rational nexus" between the lighting decisions of NPS and social, economic, and political concerns (*Cestonaro v. U.S.* 2000). The court declared that NPS cannot make decisions unrelated to policy and then seek shelter under the discretionary function exception. One could



make a strong argument, though, that this case is similar to *Merando* in that there were no guidelines stating how much light needed to be provided in parking lots, and NPS officials made a policy decision regarding how much to provide.

Notwithstanding *Cestonaro*, the court often does not scrutinize the policy decision for such a “rational nexus” but rather makes the presumption, detailed in *Gaubert*, that if discretion is given, it involves the policy considerations underlying the governing regulation. Still, even with immunization from most tort claims, millions of dollars are spent each year in settling and litigating such claims stemming from incidents in the national parks. NPS does not know how much in total is paid to deal with tort claims in any given year. For any case that costs more than \$2,500, the money comes from the Judgment Fund, a permanent, infinite fund that Congress created to pay compromise settlements and judgments against the United States. For such cases, the cost does not come out of any park unit’s budget. This may actually lead to less of an incentive for parks to take steps to prevent tortious incidents as the parks often do not directly pay for the damages. In the last ten years, \$39,232,921.71 was spent for NPS administrative payments (settled by agencies without Department of Justice assistance) and NPS litigative payments (payments for claims where Department of Justice was the defendant agency) (Department of the Treasury 2013). This figure does not include payments made by individual parks or NPS staff time to help handle cases.

There may not be much of a financial incentive, but Director’s Order 50C does say, “The NPS must strive to prevent visitor injuries and fatalities within the limits of available resources” (NPS 2010). This directive is much harder to comply with considering NPS officials have had no way to track tort claims. While NPS has had an electronic database for tortious incidents involving workers called the Safety Management Information System for more than a decade, it was not until January 2013 that the Department of the Interior as a whole adopted a system to electronically track visitor incidents: the Incident Management Analysis and Reporting System (IMARS). IMARS has been over budget and behind schedule as DOI’s FY2008 budget justification actually called for IMARS to be implemented department-wide in 2008 (Department of the Interior 2008). One NPS safety officer remarked, “IMARS became a running joke: IMARS is coming, IMARS is coming, the sky is falling.”

Jokes aside, IMARS holds a lot of promise. It will allow NPS staff at all park units across the country to query the system for a variety of factors that are filled in with each incident report. For example, one could look at how many 20-to-30-year-old, black-haired, white males had a certain type of injury/illness. Further, now those in Shenandoah National Park can see if some type of incident is also occurring in parks out west. As one NPS park ranger said, “The main power of IMARS is sharing amongst all these disparate park units.” While several previous vendors failed to deliver, the operating system used for IMARS has a track record of success as it has now been used worldwide for the past 15 years, including in Canada, the United Kingdom, Alaska, and Missouri. Still, the system is only as powerful as the information put into it. There may be some push-back from park rangers regarding learning a new system. Also, the current requirement is all “significant injuries” must be inputted into the system, but there is no bright line as to what constitutes a significant injury. Further, the system will not pick up near-misses: incidents that almost resulted in a serious injury.

If IMARS is utilized to its full potential, it will be a rich source of data that NPS pub-

lic risk managers can then utilize to adequately respond to the new servicewide emphasis established in Director's Order 50C in 2010 on *prevention* of visitor incidents rather than just *responding* to them (NPS 2010). The Director's Order 50C does include some specific guidelines and recommendations, such as calling for tort claims officers and safety officers at the park level (NPS 2010). Unfortunately, due to funding restrictions only the major parks have such employees. Much more common is that a park ranger has safety or tort claims officer as a collateral duty, which means it is officially only supposed to take 20% of his/her time. NPS's Office of Risk Management does not know how many parks have some sort of safety officer since roles and jobs change so rapidly. As one Office of Risk Management employee put it: "I learn of a new point of contact almost ever day."

Aside from staffing issues, even if there were an employee who wanted to try to implement a program to reduce risk to the public, there is a lack of funds to accomplish such programs. Aside from the small amount in park budgets for risk management programs, NPS employees may be able to get money from the NPS's Problem Management Information System, but these grants are given out once every two years and must be applied for well in advance. For some time prior to 2013, there was money made available for a summer internship program jointly run by the NPS Public Risk Management Program and the Student Conservation Association that provided opportunities for students to support park injury-prevention efforts and provide parks with a cost-effective way to enhance visitor and employee safety. The program did not run in 2013 since no funding was made available.

Before being defunded, the internship program was instrumental to the success of a public risk management program at DWGNRA. In 2011, there were eight drownings in the park, and the years preceding it were not much better. NPS wanted a program to curb this high number of drownings. Luckily, in 2008 a ranger had been directed to go through drowning incidents since 1961 with the result being a rich dataset that DWGNRA used to determine where, when, and to whom most drownings took place. The data revealed that Saturdays and Sundays between 12 p.m. and 6 p.m. were the most common times for drownings, and that victims were most likely male and between 18 and 33 years old, with Hispanics increasingly being victims. Incidents were also charted by location, revealing that the canoe access area by the Kittatinny Point Visitor Center was a frequent site of drownings.

Over the course of three years and several funding sources, DWGNRA was able to implement a targeted program to address the drownings issue. In 2009, the park applied for and received a public risk management intern. This intern did some observational studies to see how people reacted to various warning signs. For instance, the intern noted what percentage of visitors would stop and read the different types of signs. The following year, DWGNRA applied for and got \$30,000 from the NPS Youth Internship Program. This allowed for the hiring of another public risk management intern and a full-time GS-5 park interpreter to work together to launch a volunteer corps to talk to visitors and to have more eyes on the busy areas that the data identified as posing a high risk for drownings. The money was also used to purchase ten new signs as the old signs were only in English and a paragraph long (Figures 1 and 2). In 2011, the volunteer water safety ambassador corps was launched. Ultimately, 18 dedicated volunteers were trained to go out on kayaks with staff every Saturday and Sunday targeting the busiest areas. The volunteers would model safe behavior, talk with visitors



**Figure 1** (left). An old sign warning visitors of the dangers of swimming in the Delaware River. Note how it is in English only and consists of one long paragraph.

**Figure 2** (right). A new sign installed in areas where park officials knew drownings frequently occurred after analyzing data going back more than 40 years. The signs were developed knowing what type of visitor was most at risk and after studying what type of signs to which visitors are most responsive. Note how the sign is bilingual and to the point. Photos courtesy of Kathleen Sandt, Delaware Water Gap National Recreation Area.

about water safety, and as positive reinforcement give out safety equipment such as whistles and water bottles. The result of all these efforts: no drownings in 2012.

This case study from DWGNRA exemplifies the utility of data and the need to make funding available for public risk management programs aside from and including those addressing fatalities. Without the data, those leading the risk management program would not have known to whom to target the message or where to put the messaging to reach those most at risk. Further, without the internship program and grants, DWGNRA would not have had the money or the resources to address the drownings issue and launch the volunteer water safety ambassador program.

NPS may be on the cusp of major strides in public risk management. It is possible that IMARS may empower other park units to take similar proactive, data-driven action as did DWGNRA, but it is imperative that park employees on the ground actually input information into the system. Such action could lead to less injuries in our parks, thereby reducing the number of tort claims filed against NPS. While NPS often avoids liability with the FTCA's discretionary function exception, and much of the money paid litigating or settling claims does not come out of NPS's budget, it is still a major goal of the agency to provide safe experiences for visitors, and it is still important for the government in general to cut costs where it can. The National Parks are quite possibly "America's best idea," and the best way to reduce tortious incidents in our parks is with data-driven approaches that can be implemented with adequate funding and staffing.

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**Scott Breen**, 316 East University Street, Apartment #30, Bloomington, IN 47401; [sbreen@indiana.edu](mailto:sbreen@indiana.edu)

# Proposing New Barrens National Natural Landmarks

*Mary C. Brickle, Todd R. Lookingbill, and Katharina A.M. Engelhardt*

THE NATIONAL NATURAL LANDMARKS (NNL) PROGRAM, administered and maintained through the National Park Service, was established in 1962 with the goal of highlighting sites that best demonstrate the outstanding geologic and biologic features of the United States. In a unique partnership between public and private landowners, the National Park Service accepts sites into the program that best illustrate the diversity of our country's natural heritage regardless of ownership. The NNL program seeks solely to recognize these sites for their geologic and biologic significance and to strengthen the public's appreciation for and conservation of America's natural heritage. Potential NNLs are evaluated based on the following criteria: (1) outstanding condition, (2) illustrative value, (3) rarity, (4) diversity, and (5) value to science and education. Sites are designated by the secretary of the interior and, as of today, 586 landmarks have received the NNL designation.

We conducted an analysis of the existing NNL portfolio of sites within three physiographic regions of the Northeast Region: Piedmont, Valley and Ridge, and Appalachian Plateau (Figure 1). The goal of the assessment was to identify underrepresented biologic and geologic themes and to recommend potential new sites within the region whose character provides excellent illustrations of those theme gaps. To identify specific sites for recommendation to the program, we examined studies of hundreds of sites previously considered for nomination as potential NNLs in the relevant physiographic provinces. Two sites came to the forefront in this review: Albany Pine Bush Preserve and Nottingham Serpentine Barrens. Both are representative of a new barrens theme which is missing from the current list of landmarks. These biologically diverse ecosystems combine outstanding examples of important geologic themes (e.g., "Eolian Landforms"; "Works of Glaciers") and ecological processes (e.g., "Fire"). They also provide good habitat for rare species in relatively urban settings that have a high potential for public education. The gap analysis demonstrates how the NNL program provides a highly structured but flexible system for the continued expansion of this catalogue of the country's diverse natural landscape.

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**Figure 1.** Map of three physiographic provinces assessed and two barrens study sites.

## Albany Pine Bush

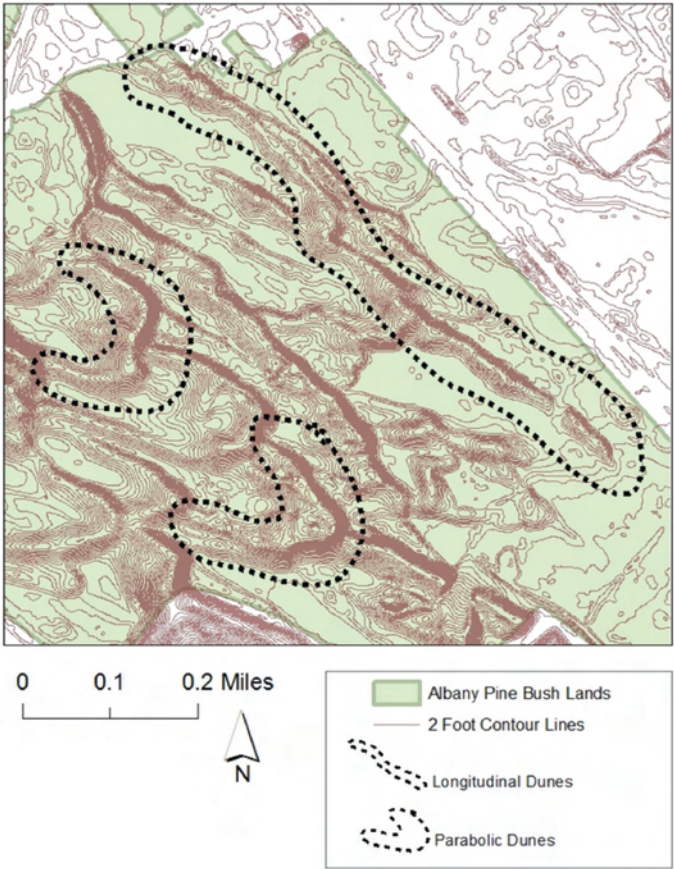
Albany Pine Bush Preserve supports significant examples of periglacial sand dunes and pitch pine–scrub oak barrens. The preserve is located between the cities of Albany and Schenectady in the Capital District of upstate New York (Figure 1). It is owned by multiple private and public organizations and managed by the Albany Pine Bush Preserve Commission. The site is one of only two pine barrens to support a dynamic sand dune landscape in the Appalachian Plateau region and one of two sand dune ecosystems within the Appalachian Valley and Ridge region. This extraordinary ecosystem gives rise to a variety of habitats. The sandy, well-drained soils are home to 45 of the 538 wildlife species of greatest conservation need (SGCN) found in New York State, including one state and federally listed endangered species, the Karner blue butterfly (*Lycaeides melissa samuelis*).



**Primary geological features.** Periglacial sand dunes are fossil landscape features that are common throughout colder climates of the world. These types of inland sand dunes are the result of wind action reworking sediments from glacial lakes or outwash dating back to prior periods of glaciation. The sand dunes at Albany Pine Bush are indicators of past aridity associated with the cold, dry, and windy climates encountered during the Late Pleistocene. Following the retreat of the Laurentide ice sheet and subsequent evaporation of the resulting glacial lake, thick sediment deposits were exposed to continual wind erosion. This led to the formation of scree and finer sand particles, which were shaped into dunes and depressions.

The preserve is a bit unusual in that it contains representative examples of both parabolic and longitudinal dunes (Figure 2). Prevailing northwesterly winds shaped most of the sand dunes, forming primarily parabolic dunes that ranged from 100 to 2,000 feet in length. Typically oriented with their longest axis running from northwest to southeast, the crescent shape of these dunes suggests they were colonized early by vegetation which helped stabilize the dune surface and prevent significant reworking (Barnes 2003). Eolian processes also contrib-

**Figure 2.** Examples of both longitudinal and parabolic dunes found in the Albany Pine Bush Preserve.



uted to the formation of short, broad, ridge-shaped longitudinal dunes, usually between 30 to 60 feet high and typically several hundred feet long (Bradley et al. 2010). Today, the dunes are characterized by a transitioning topography from flat to gently rolling surfaces, with both sand swells and low domes dotted with pitch pine (*Pinus rigida*) and carpeted with diverse understory plants. Swamps, wetlands, and shallow ponds have come to fill in holes that were long ago eroded into the sandy soil (Bried and Edinger 2009). In colder months, the low-lying depressions between the dunes can act as “frost pockets.” As the cooler air settles into these areas, plant growth is delayed in comparison to the areas of higher elevation. This leads to less dense patches of scrub oak (*Quercus ilicifolia*) in these areas, and they instead become dominated by prairie grasses and sedges.

**Primary biological features.** The dynamic mosaic landscape of the Albany Pine Bush gives rise to a globally rare assemblage of plants and animals. Owing to nutrient-limiting sandy soils and the heterogeneous topography of the dunes, sand dune ecosystems support a diverse biota dominated by pine barrens in higher-lying drier habitats and wetlands in low-lying wet areas at the base of the dunes. The Albany Pine Bush provides one of the best and largest examples of an inland pine barrens ecosystem in the world, covering approximately 40 square miles prior to European colonization (USFWS 1997; Barnes 2003). Pitch pine–scrub oak communities dominate the Albany Pine Bush landscape, making up 42% of the mapped communities in the preserve. Fire disturbance within a pine barrens ecosystem serves to rejuvenate the natural community, drive out exotic plant species, and increase the food and habitat supply for native insects and other animals (e.g., Beachy and Robinson 2008). It is an important component in maintaining the unique ecological qualities of the community (Milne 1985). Good natural conditions for wildfires have existed within the Albany Pine Bush Preserve for thousands of years, especially during the frequent periods of high winds, because the sandy, nutrient-poor soil tends to be droughty and a fuel supply of plant litter accumulates rapidly due to retarded microbial decomposition (Barnes 2003). The dry, acidic soils of the Pine Bush do not promote the decomposition of litter, and the lack of earthworms or other organisms in the dry upper layers of the sandy soil mean that organic matter decomposed by fungi is not incorporated back into the soil.

The Albany Pine Bush is nationally recognized for its extensive populations of rare butterflies and moths, and management plans have focused on the protection of these rare insects (APBPC 2010). There are hundreds of Lepidoptera species found in the Pine Bush, including over 40 noctuid moths considered to be pine barrens specialists. A variety of regionally rare butterflies are also associated with the pitch pine–scrub oak barrens, grasslands, and other fire-maintained communities found in dry, sandy areas of the preserve. The federally listed endangered Karner blue butterfly typically occurs in the grassy openings in the pitch pine–scrub oak barrens; both its food plant and the host plant for its larvae is the wild blue lupine (*Lupinus perennis*), distributed throughout the Albany Pine Bush (Forrester et al. 2005). There is increasing evidence of a distinct and rich avian community in the pine barrens ecosystems of the Albany Pine Bush (Beachy and Robinson 2008; Gifford et al. 2010), and the site has been designated as a New York State Bird Conservation Area.

## Nottingham Serpentine Barrens

The Nottingham Park Serpentine Barrens are composed of shallow serpentine rock outcrops and unique vegetation communities, especially serpentine grassland and open savanna communities. The park is located on the outskirts of Philadelphia in Chester County, Pennsylvania (Figure 1). The pine savanna and prairie ecosystems are especially species rich, supporting diverse warm-season grasses. The site contains some of the greatest numbers of endemic, rare, characteristic, and disjunct species found on serpentine soils within the Piedmont physiographic province. Recent surveys have confirmed the presence of at least 21 globally or state-rare plant species, including one of the largest populations in the world of serpentine aster (*Aster depauperatus*), which is one of the only two recognized serpentine endemics of eastern North America.

**Primary geological features.** Serpentine soils have been extensively studied in the United States, and historic mine sites at Nottingham provide glimpses of its underlying geology. Serpentinite is one of the most rare and unusual bedrock materials in the United States (Brooks 1987). The term “serpentine” is derived from the greenish color and pattern of the rock, which resembles that of a snake’s skin. High concentrations of siderophile elements in the soils, such as chromium, nickel, and cobalt, are toxic to plants, resulting in low concentrations of calcium, nitrogen, phosphorus, and potassium and therefore creating conditions of extremely low soil fertility. The inability of crops or other common vegetation to thrive on these soils has permitted a rare, endemic flora to flourish.

The southernmost extent of the Wisconsin ice sheet was just north of the site, which provide an additional connection between the geology and biology of the site (Brooks 1987). New species established themselves in the tundra-like climatic conditions of the region during the period of glaciation. When the ice sheet retreated, these species remained in the serpentine barrens where they likely had far fewer competitors.

**Primary biological features.** Serpentine barren vegetation is found on only a small fraction of serpentine outcrops; this distinctive vegetation is characterized by a diverse native grassland with scattered pines and oaks, sclerophyllous shrubs, and a diverse herbaceous layer. In aerial view, these serpentine barrens appear as islands surrounded by forest and farmland of the heavily populated Piedmont. When compared with non-serpentine vegetation, serpentine plants generally display a greater tolerance of high magnesium and low calcium levels, have higher magnesium requirements for growth, have lower magnesium adsorption and greater calcium absorption, and show magnesium exclusion from leaves (Tyndall and Farr 1989).

Similar to the pitch pine–scrub oak barrens in the Albany Pine Bush, the rare communities that inhabit the serpentine barrens of Nottingham are fire dependent and maintained by an active prescribed burning management policy (Figure 3). Increased fire suppression beginning in the early 1900s has allowed fire-intolerant species such as Virginia pine (*Pinus virginiana*) and eastern red cedar (*Juniperus virginiana*) to increase in abundance on serpentine grasslands throughout the eastern United States (Tyndall and Farr 1989). The persistence of pitch pines in the Nottingham Barrens is unusual and indicates that fire con-



Figure 3. Prescribed fire management in the Albany Pine Bush Preserve. Photo courtesy of Neil Gifford.

tinued to burn parts of the Nottingham landscape throughout this historical period of fire suppression. Ongoing prescribed burning at the site provides an excellent opportunity to educate the public on the role of fire in natural ecosystem processes. Like Albany Pine Bush, the site is also host to a wide variety of birds, mammals, moths, butterflies, amphibians and reptiles including at least 33 that are rare globally or within the state. The site is included within an Audubon Society of Pennsylvania Important Bird Area.

### **Comparative assessment**

After careful evaluation of the barrens ecosystems at Albany Pine Bush Preserve and Nottingham Park and throughout the Piedmont and Appalachians, we recommended both of these sites for designation as NNLs. Barrens are an important natural historical feature of the eastern United States that are largely underappreciated. Once thought to be biologically depauperate, these landscapes are increasingly recognized for their rich flora and fauna, including distinctive endemic and rare species. The designations of these sites would fill a significant gap within the NNL program. They also provide an opportunity to showcase the ecological value of fire to maintaining landscape diversity, and illustrate the important connections between geologic and ecologic processes.

Barrens landscapes are also highly threatened. The interplay of the underlying geologic substrates (inland sand dunes and serpentine outcrops) with the need for frequent distur-



bance provide an uncommon set of circumstances for the development of these ecosystems. As a result, they are easily degraded by activities such as fire suppression and associated biological invasions of coniferous trees and exotic species (Hochman 2001; Malcolm et al. 2008). Unfortunately, many barrens also have been lost to development in the last centuries. Those barrens sites that remain are frequently embedded in a sea of increasing human settlements. This landscape context provides a challenge to the preservation of high-quality, natural conditions at the sites. However, it also provides an opportunity as the National Park Service continues to recognize the educational and ecological importance of urban parks (Lookingbill et al. 2007; Gifford et al. 2010). Ongoing partnerships fostered by the unique land ownership aspects of the NNL program would encourage threatened sites such as these that are paramount to the nation's natural history to share information and solve problems cooperatively.

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**Mary C. Brickle**, University of Richmond, Richmond, Department of Geography and the Environment, 28 Westhampton Way, Richmond, VA 23173; mary.brickle@gmail.com

**Todd R. Lookingbill**, University of Richmond, Richmond, Department of Geography and the Environment, 28 Westhampton Way, Richmond, VA 23173; tlooking@richmond.edu

**Katharina A.M. Engelhardt**, University of Maryland Center for Environmental Sciences, Appalachian Lab, 301 Braddock Road, Frostburg, MD 21532; engelhardt@umces.edu



# Expanding Parks and Reducing Human Numbers: A Superior Alternative to Embracing the Anthropocene Era

*Philip Cafaro*

## Introduction

RECENTLY, THE CLAIM HAS BEEN MADE THAT EARTH HAS ENTERED A NEW GEOLOGICAL ERA. The Holocene has ended and the Anthropocene has begun, in which humans have become an important geochemical force, and perhaps the dominant ecological force on the planet. Moreover, conservationists are advised to *embrace* the Anthropocene era, in which humanity not only dominates, but *rightfully* dominates, the biosphere.

Now that we have entered the Anthropocene, according to Peter Kareiva, Emma Marris, and other prophets of this new dispensation, conservationists should give up outdated goals that no longer make sense. These include trying to protect all Earth's species from anthropogenic extinction; ridding wild lands of invasive species; designating wilderness areas or parks that are off limits to most human economic activities (in order to minimize human interference in relatively wild ecosystems); or managing parks with the goal of meeting ecological baselines that reflect wilder, less human-influenced ecological conditions.

Wild nature is over, we are told, if it ever existed at all. Any baseline we choose is arbitrary. As Emma Marris puts it: "A historic moment in the past" is not "the holy moment that we always have to return every piece of land to.... Not just because it's getting more and more difficult with climate change and so on, but because those baselines we have grown up with are somewhat arbitrary.... The more we learn about how much people have changed the earth over the centuries and over the millennia, the more we know that 1491 in the Americas or 1776 in Hawaii were just moments between two different human landscapes."<sup>1</sup>

Besides, such goals reflect a foolish desire to keep nature "pure," a misanthropic hatred of humanity, and an outmoded metaphysics that sees a sharp line between humanity and the rest of nature. *We* are just as much a part of nature as bluebirds or buffalo; a vacant lot or an agricultural field is just as "natural" as a remote Arctic river.

So conservationists need new goals. According to Kareiva, in his article "What is Conservation Science?" we should protect ecosystem services for a growing human population, and do our part to accelerate economic development in a world where so many people are

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poor.<sup>2</sup> We should avoid “fencing people out” of wildlands; that is old school. Instead, we must find creative “win/win solutions” where people use resources while preserving nature. We should learn to tolerate and even appreciate invasive species, which in many cases *increase* local biodiversity. Similarly, we should make our peace with the extinction of species that are maladapted to the new conditions of the Anthropocene. Rather than try to save every species on Earth, or as many as possible, we should content ourselves with preserving whatever biodiversity ten or twelve billion people find useful or interesting, and which can muddle through in the new conditions humanity is creating.

I believe that conservationists should reject this bold call to selfishness and human racism. Preserving wild nature is still the heart of conservation. Sharing the landscape generously with other species remains a necessary part of any reasonable, morally justifiable land ethic. But that necessarily involves setting *limits* to human demands on nature, not endlessly accommodating them. It involves setting *limits* to the degree of human influence that is acceptable in our national parks and other wildlands. And that, in turn, limits the degree to which real conservationists can accept the dominant trends of the Anthropocene.

Rather than embrace the Anthropocene era, conservationists should try to rein in its excesses. Among our key goals, we should work to expand parks and protected areas; increase the acreage kept free from intensive human resource extraction; and lessen human impacts that degrade wildlife habitat, such as air and water pollution, and the continued transfer of exotic species into new areas. Conservationists should advocate for humane measures to reduce human numbers, gradually and non-coercively. Recognizing that humanity is bumping up against ecological limits to economic growth, conservationists should avoid any temptation to make our peace with the current endless growth economy. Instead, a central part of our agenda should involve creating a truly sustainable economy: one that recognizes limits to growth.

Above all, conservationists should affirm the right of every species on Earth to pursue its unique destiny, free from human-caused extinction. I believe such a course is morally and prudentially superior to uncritically embracing the Anthropocene era.

### **Acceptable and unacceptable change**

I agree with Peter Kareiva and Emma Marris that we have entered the Anthropocene era. Where I part company with them is in their *embrace* of the Anthropocene.

Sometimes, the Anthropocene is presented as a positive good, as when Marris rhapsodizes over how much more biodiverse Los Angeles is today than it would have been one hundred or two hundred years ago, before people came and planted so many species of exotic trees; or, about the many opportunities we have to today to *create* new nature. According to Marris, embracing the Anthropocene is “a much more optimistic and a much more fruitful way of looking at things.... If you only care about pristine wilderness ... you’re fighting a defensive action that you can never ultimately win, and every year there’s less of it than there was the year before.... But if you’re focused on the other values of nature and goals of nature, then you can go around creating more nature, and our kids can have a world with more nature on it than there is now.”<sup>3</sup>

Sometimes, the Anthropocene is seen as regrettable, but *inevitable*. “Look, I don’t like this brave new world any more than you do,” some Anthropocenists say. “But you are just kidding yourself if you think this juggernaut can be stopped, or even slowed. It is a new reality to which we have to adjust, if we hope to achieve maximal conservation.”

There is some truth to this: conservationists do have to make our shifts with “the way things are,” if we hope to achieve conservation victories out in the real world. But conservation also involves *changing* the way things are, and raising the alarm that “the way things are” will lead to great losses. Too often, proponents of the Anthropocene seem more interested in *normalizing* these losses than in stopping them.

For example, in 1973, the US Congress, looking at “the way things were,” passed the Endangered Species Act. The ESA affirmed a national commitment to prevent any and all native species from going extinct due to human activities. The legislation specified that economic goals were not to be allowed to trump the very existence of other species.

Today, according to the US Fish and Wildlife Service, *Ursus arctos*, the grizzly bear, is threatened with extinction due to the effects of climate change. In fact, hundreds of thousands of species are threatened by extinction by climate change; according to the Intergovernmental Panel on Climate Change’s *Fourth Assessment Report*: “Approximately 20–30% of species assessed so far are likely to be at increased risk of extinction if increases in global average warming exceed 1.5–2.5°C.... As global average temperature increase exceeds about 3.5°C, model projections suggest significant extinctions (40–70% of species assessed) around the globe.”<sup>4</sup>

What do Anthropocene proponents have to say about species extinctions? Here is Peter Kareiva, in an article titled “Conservation in the Anthropocene”:

Ecologists and conservationists have grossly overstated the fragility of nature ... In many circumstances, the demise of formerly abundant species can be inconsequential to ecosystem function. The American chestnut, once a dominant tree in eastern North America, has been extinguished by a foreign disease, yet the forest ecosystem is surprisingly unaffected. The passenger pigeon, once so abundant that its flocks darkened the sky, went extinct, along with countless other species from the Steller’s sea cow to the dodo, with no catastrophic or even measurable effects.<sup>5</sup>

About the polar bear in particular, which to many people symbolizes the threat of climate change to wild nature, Kareiva has this to say:

Even that classic symbol of fragility—the polar bear, seemingly stranded on a melting ice block—may have a good chance of surviving global warming if the changing environment continues to increase the populations and northern ranges of harbor seals and harp seals. Polar bears evolved from brown bears 200,000 years ago during a cooling period in Earth’s history, developing a highly specialized carnivorous diet focused on seals. Thus, the fate of polar bears depends on two opposing trends—the decline of sea ice and the potential increase of energy-rich

prey. The history of life on Earth is of species evolving to take advantage of new environments only to be at risk when the environment changes again.<sup>6</sup>

Note the way Kareiva's account normalizes past extinctions and the possible extinction of the polar bear. That's just "the history of life," adapting or failing to adapt to changing conditions. Note the disappearance of any sense of *human agency* for the threat to the polar bear: the polar bear's fate depends on "two opposing trends" as "the environment changes"—not on whether or not humanity ratchets back greenhouse gas emissions. Finally, note the glibness with which Kareiva talks about the extinction of this magnificent beast.

Extinguishing species through the continued expansion of human economic activities is okay with Peter Kareiva, at least as long as we do not harm the "ecosystem services" upon which humanity depends for its own well-being. Well, it's not okay with me.<sup>7</sup> I believe that if our actions threaten to extinguish the polar bear and a large fraction of the species on Earth, then we need to *change* our actions. And it seems to me that any real conservationist should agree. The problem with embracing the Anthropocene is that it accepts an unacceptable status quo.

### **We have a choice**

Thankfully, we have a choice here. It is just not true that our only path is ever further into the Anthropocene. We can instead work to ratchet back the current, excessive human footprint on Earth, and make a place (many places!) for other species to also flourish on our common home planet.

Question: Does this talk about ratcheting back the human footprint, mean that people are "bad"? That they make natural areas "impure" by their very presence? That conservationists want to return to an imaginary, Edenic past of unsullied innocence?

Answer: of course not! People are great. Human culture, with all its achievements, is great. Cities can be great. But all of this is only great *within limits*.

Culture must be balanced by nature, in a well-rounded person or society. People need to limit how much habitat and other resources we engross, in order to leave enough for other species to flourish. An appreciation of limits and a recognition of the need for this balance, I think, are the key differences between those who embrace the Anthropocene and those who seek to create something better.

In any case, I insist that we have a choice in these matters: about whether or not to further the human domination of the world. Consider the conservation goals I suggested earlier:

- We can work to expand the number and size of parks and protected areas, or not. We can work, where possible, to keep biodiversity protection their primary mission, rather than resource extraction or other human economic uses.
- We can work within mixed-use, "working landscapes" to prioritize biodiversity protection rather than commodity production or other human economic uses.
- We can work to lessen human impacts that degrade wildlife habitat, such as air and water pollution. (We know that Everglades National Park is not "pristine," still, we can take steps which will significantly decrease the phosphorus running into the park, or not. It is a choice.)

- We can work to stop the transfer of exotic species into new areas. (We know that international trade will continue to transfer species around the world. But we can take steps to limit those transfers, or throw up our hands. It is a choice.)
- We can work to stabilize and then reduce human numbers, gradually and non-coercively.<sup>8</sup> (We know that it is very likely that the human population will continue to grow over the next few decades. But the United Nations Population Fund estimates that 215 million women around the world have an unmet need for contraception; meeting that need could help reduce the world population in 2060 from a medium or “most likely” 9.4 billion to 8.2 billion people instead. Conservationists can engage with population policy debates, or to continue to neglect them. It is a choice.)
- Finally, we can work to explore alternatives to the endless growth economy; or, like the proponents of the Anthropocene, we can redefine conservation in its service, and cut our goals to fit what the current, life-destroying system gives us. Here again, I affirm that conservationists have a choice. With the evidence continuing to grow that humanity is bumping up against ecological limits, even those who only care about people have good reason to begin to look for alternatives to the economic status quo. Those of us who care about wild nature have even more reason to do so.

We need to move from an economy premised on the goal of ever-more stuff for ever-more people, to an economy designed to provide a sufficiency for a limited number of people. I do not know what this will look like, in detail, and I do not mean to say that land managers and other conservationists should drop all our current efforts to preserve what wild nature we can within the current system. However, we need to be realistic, as the Anthropocene advocates advise. *There is no long-term future for wild nature under the economic status quo.* Along with our current work, then, conservationists need to begin working on the transition to a truly sustainable economy: one that respects ecological limits.

Above all, those of us who care about wild nature need to affirm that it is *wrong* for humanity to displace and dominate nature. It is wrong to drive other species extinct; wrong to create a world in which whether or not other species live or die depends solely on our whims, or on whether they can manage to survive in the interstices of our economic projects; wrong to further tame or displace Earth’s remaining wild lands. Aldo Leopold said it well, sixty-five years ago, in *A Sand County Almanac*: “A land ethic cannot of course prevent the alteration, management and ‘use’ of these ‘resources’ [wild lands and other species], but it does affirm their right to continued existence, and, at least in spots, their continued existence in a natural state.” This generous and just view must remain a cornerstone of our conservation philosophy.

## Endnotes

1. Andrew Revkin, video interview, “Emma Marris Explores Earth’s ‘Rambunctious Garden,’” embedded in Andrew Revkin, “Emma Marris: In Defense of Everglades Pythons,” *New York Times* Dot.earth blog, August 17, 2012.
2. Peter Kareiva and Michelle Marvier, “What is Conservation Science?,” *BioScience* 62 (2012): 962–969.

3. Revkin interview with Marris.
4. Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report* (Geneva: IPCC), 51–52. Online at [www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf).
5. Peter Kareiva, Robert Lalasz, and Michelle Marvier, “Conservation in the Anthropocene: Beyond Solitude and Fragility,” *Breakthrough Journal* (Fall, 2011): 33.
6. Ibid., 34–35.
7. Winthrop Staples III and Philip Cafaro, “For a Species’ Right to Exist,” *Life on the Brink: Environmentalists Confront Overpopulation*, Philip Cafaro and Eileen Crist, eds. (Athens: University of Georgia Press, 2012), 283–300.
8. Philip Cafaro and Eileen Crist, op. cit.

**Philip Cafaro**, Department of Philosophy, Colorado State University, Fort Collins, CO 80523; [philip.cafaro@colostate.edu](mailto:philip.cafaro@colostate.edu)



# Can Organizations Learn?

## Exploring a Shift from Conflict to Collaboration

*Nelly Robles García and Jack Corbett*

BOTH ORGANIZATION THEORY AND PRACTICAL EXPERIENCE tell us that organizations mired in conflict have a more difficult time in accomplishing their goals than organizations that are not. Among other considerations, the transaction costs associated with conflict—money, staff time, lost opportunities—consume resources that otherwise could contribute to pursuing primary organizational goals. Given the reality that agencies involved in managing natural and cultural resources are perpetually resource-poor in that there is never enough of what is needed to meet the demands on the agency, it would seem any advance toward reducing organizational conflict could be valuable in advancing an agency's mission. Conversely, failure to learn and adapt would suggest a significant agency deficiency or that learning is less useful than other, less-obvious outcomes.

This paper explores organizational learning in Mexico's National Institute of Anthropology and History (hereafter INAH, its acronym in Spanish). INAH's responsibility is to support research, analysis, protection, and dissemination of the country's archaeological and anthropological heritage; it manages cultural but not natural resources. Founded in 1939, INAH is housed organizationally in the Secretary of Public Education, a decision reflecting its role in educating the public about the cultural and historical contributions of Mexico's indigenous population to contemporary society. Its jurisdiction ranges from any subsurface archaeological remains anywhere to the exploration and protection of sites ranging in scope from individual houses to pyramids and monumental complexes such as Teotihuacan, Tajin, or Chichen Itza (Olive Negrete and Castro-Pozo 1988).

Here we focus on two World Heritage sites in Oaxaca, in southern Mexico. In 1987, the city of Oaxaca and the nearby archaeological site at Monte Alban were among the first Mexican nominations to World Heritage status. In 2010, an assemblage of caves and related features between Yagul and Mitla also were inscribed on the World Heritage List as "Prehistoric Caves of Yagul and Mitla in the Central Valley of Oaxaca" (hereafter referred to as "Las Cuevas," as the site is known locally). While the colonial architecture of the city of Oaxaca and the spectacular temples and pyramids of Monte Alban are obvious to even the most ob-

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tuse observer, the significance of the rock shelters, pits, and caves distributed along the rough hillsides between Yagul and Mitla is invisible to all but the most determined archaeologists. The central question is whether INAH drew from its sometimes turbulent and conflictual history of managing the cultural resources of Monte Alban any lessons likely to reduce conflict in developing management strategies for Las Cuevas.

### **Understanding context**

Two central features of organizational context are especially relevant here. First, as a central government agency endowed with monopoly power over the archaeological sites and materials of Mexico, INAH considered itself in an unassailable position vis-à-vis potential challengers. In a country where political centralization concentrated agency power in Mexico City, bureaucracies there appeared to have few possible rivals. Although in Oaxaca, as elsewhere, local communities were often the formal owners of the land, presidential decrees placed sites under INAH's oversight for purposes of excavation and development, and these communities had little practical possibility of constraining INAH via governmental structures and processes. While communities owned the land, INAH possessed the legal and financial capacity to determine its use. Second, it is important to recognize that INAH and the local councils governing indigenous communities had very different understandings of how decision processes functioned when they met to address points of ambiguity, disagreement, or conflict. These differences in organizational worldview generated recurring confrontations as INAH sought to assert control over jurisdictional boundaries, land use, resource access, or other areas it considered under its domain while communities pushed back in defense of what they considered to be historical rights or matters central to community survival.

Appreciating INAH's dominant value system in the 1970s–1990s is particularly important in assessing its learning capability. Beyond the great weight attributed to its legal position in a system where written laws and rules define the arena of discourse, INAH's decision-making system placed great emphasis on hierarchy and segmentation. Critical decisions were reviewed at several levels and passed through multiple offices depending on subject matter. Depending on their nature they might also be subject to review by the Council of Archaeology (responsible for all projects in the country) and possibly outside agencies. INAH also attached a high value to expertise to the point where it runs its own university, the National School of Anthropology and History (ENAH for its acronym in Spanish). ENAH trains the vast majority of archaeologists in the country and many of INAH's archaeologists spend some time assigned to ENAH as instructors, managing interns in field projects, reviewing theses, and otherwise contributing to the academic formation of the next generation of archaeologists. One consequence, however, is that the experiences and views of the current generation will be imprinted on the next, a developmental process making change slow and uncertain.

In contrast, Oaxacan village communities generally depend on councils selected in popular assembly through extended discussion, intended to produce a consensus regarding community leadership for periods of three years. Internal friction and feuds are not uncommon but communities strive to present to the outside world an appearance of solidarity and a willingness to engage in overt confrontation in defense of community interests. Tradition and at least formal deference to the principle of consensus offer a sharp contrast to INAH's

emphasis on national law and hierarchical structures. Attention to solidarity and highly developed strategies for resisting INAH's attempts to frame and control agendas—prolonged discussion in indigenous languages in the face of INAH representatives, for example—become mechanisms for pushing back against national government assertion of policies and programs (Robles García and Corbett 2010).

Nowhere is this more evident than in the differing attitudes toward conflict. To INAH, conflict is an impediment to rational organizational behavior and at worst a reflection of organizational failure. Conflicts cost time and money, and may complicate relations with other agencies and jurisdictions, disrupt an array of stakeholders, and impede the attainment of organizational goals. Local conflicts are to be avoided if they might filter up the hierarchy to cause headaches and adverse public reaction in Mexico City. Locally they might be a nuisance to a site manager or state-level director, but in Mexico City they are an embarrassment as they suggest INAH is not capable of managing its responsibilities. For communities, conflict may, at least within limits, be positive. It serves as a rallying point, as the local David takes on the aggressive outside Goliath. It underscores calls for solidarity and suggests the community's long-term interests are at risk. Especially in circumstances where local INAH professionals or managers must confront mobilized communities, physical intimidation is a time-honored mechanism for resistance. While seeking ways to manage and diffuse conflict may appeal to INAH functionaries, their community counterparts may see little reason to give up ways to resist outside domination.

### **The Oaxaca World Heritage experience**

The 1987 announcement of World Heritage status for the archaeological site of Monte Alban led to the demarcation of an official archaeological zone by President Carlos Salinas de Gortari in 1992. The declaration of the zone did nothing to alter ownership of the land included; it remained in the hands of communities or, in some cases, private owners. But it conferred on INAH the authority to manage land use such as housing or practices likely to disturb archaeological materials, e.g., excavating for fill or removing stones for building material. While at remote locations such changes in practice might have little overt impact on the landscape, Monte Alban represents the largest empty space adjacent to the city of Oaxaca, and the attractiveness of finding a housing location with proximity to urban services and employment was matched by the willingness of communities to “sell,” even when legal prohibitions existed, lots for housing or other purposes. The prospect of exchanging lots of approximately 240 square yards for payments equivalent to six months' salary at minimum wage was a strong temptation. That such transactions had no legal basis mattered little as long as everyone from buyers to local authorities pretended they did.

In such circumstances INAH struggled to enforce its authority over land use but had few resources at its disposal. It lacked funds to purchase land outright and faced legal barriers to purchase because frequently no one had clear title. Community officials saw no benefit enforcing the legal claims of INAH against their own neighbors and relatives; after all they had to live in the community. While theoretically INAH could call on federal law enforcement, in practice this was problematic. Beyond the sheer number of cases, few federal agents were tempted to spend their time dispossessing elderly women from hillside shacks when there

was more public approval in chasing narcotics dealers or automobile theft rings. Much of the 5000-acre Monte Alban archaeological zone historically had served as grazing land, a place to collect native foods and herbs in season, a source of firewood, and for other purposes. Though nominally benign, such uses stimulated erosion, led to cooking fires spreading out of control, and threatened other degradation of the hillsides and vegetation of the site. Although INAH staff responded to abuses when they could, the 20-mile perimeter of the archaeological zone, unfenced and largely unpatrolled, was extraordinarily vulnerable to penetration and displacement (Corbett and González Alafita 2002).

### **A dozen years of change**

Starting in the late 1990s, a new management team, recognizing the deficiencies and frustrations of the prevailing model, began an effort to introduce an approach resembling cultural resources management (Cruz González 2012). While the shift in Monte Alban's leadership was more fortuitous than planned, one consequence was a new approach to working with the communities whose lands fell within the archaeological zone. A staff archaeologist assumed the explicit responsibility of acting as community liaison, meeting with community leadership and groups of interested residents on a regular basis. Rather than treating neighbors as a source of unending headaches, the new approach sought to be proactive and to recognize that community leaders pursued quarrels with the archaeological zone as a way of responding to political pressures and other concerns within the community rather than because there existed fundamental problems with the relationship. It became evident that INAH, while having an extensive cadre of anthropologists, had made little use of its own human resources in developing ways to work with testy neighbors.

The creation of a management plan for Monte Alban, the first for any zone in the country, explicitly recognized the significance of attending to the site-society interface—that without attention to the population outside the boundary it would be difficult to manage the land inside it (Robles García and Corbett 2011). This proved a special challenge because INAH is not a land management agency and does not have statutory authority to address land-related questions not associated with cultural resources. During the dry season wildfires starting outside zone boundaries frequently burned uphill into the zone but there were no provisions in the INAH budget for firefighting gear; staff fought fires with brooms and machetes. By approaching outside funders and through training agreements with Oaxaca state agencies and Mesa Verde National Park, Monte Alban developed its own wildfire response capacity that included incorporation of neighboring communities (Robles García and Corbett 2007). This makes response possible before fire enters the zone boundary.

The new strategy also recognized the importance of the archaeological zone as a potential source of income and employment for the local population. While little of the land is fertile enough for significant agricultural production, most of it can be used for grazing. To the extent grazing has been restricted or wood-cutting ended the communities suffer economic losses, yet most of the gain associated with tourist visitation has accrued to the hotels, restaurants, shops, and taxis in the city of Oaxaca. By looking for ways to give community residents preference in hiring for maintenance and custodial work, by creating opportunities to sell crafts or other goods, and by otherwise creating ways to link the archaeological zone

with surrounding communities there has been some success in giving the communities an economic stake in its survival and success rather than see INAH as an interloper on behalf of a distant national government and foreign tourists.

And there have been creative efforts to link to communities in other ways. Monte Alban developed its own plant nursery to nurture more than 30,000 shrubs and trees annually. INAH staff, volunteers, and community members engage in reforestation projects intended to reduce damaging run-off down the hillsides into inhabited areas below, produce collectable fruits, and revitalize much of the zone as a major green space accessible to the city of Oaxaca. A very popular junior ranger program brings children from neighboring communities to Monte Alban during periods of high visitor traffic to act as monitors for fragile structures and otherwise remind visitors of the importance of stewardship with regard to cultural heritage (Robles García and Corbett 2008). When these children go home at night with their INAH cap and whistle they carry the message that Monte Alban is as much theirs as it is INAH's.

### **And now to Las Cuevas**

The 2010 inclusion of Las Cuevas on the World Heritage List creates an interesting challenge in that much of INAH's senior administration in Mexico City are products of the ENAH and a long period of socialization as part of the INAH hierarchy. There has been little reason to expect INAH to embrace the changes in practice seen at Monte Alban since the late 1990s, particularly as INAH's top administrators appointed by President Enrique Peña Nieto were veteran career employees with little interest in new approaches. Their unexpected removal in summer 2013, for reasons unrelated to Oaxaca, triggered uncertainties regarding policy and leadership that to date remain unresolved. Such uncertainties are particularly wearing for middle-level professionals, most of whom work on renewable six-month contracts while trying to put in place institutional arrangements that will take years to mature.

To the extent administrators on the ground in Oaxaca have worked at Monte Alban or are familiar with the community-focused efforts there it is possible early attempts to build effective relations between the World Heritage site and those communities having lands inside the official site boundary will be productive. For example, rather than build a single interpretive center near site headquarters, INAH opted to work with affected communities to make sure each one has a local center. Not only does that contribute to the sense of participation, it also indicates that INAH recognizes the potential such centers may have for generating visitor traffic and perhaps employment. INAH has also begun to look for collaborative arrangements with non-profit organizations that could provide services or opportunities.

Yet INAH's engagement of the Las Cuevas communities does not take place on a blank canvas. Other federal agencies compete with INAH for influence, budget allocations, and patronage. To the extent INAH's reputation as a potentially heavy-handed regulator precedes it, other agencies may gain favor by extending services. The secretary of communications and transportation has a responsibility for road-building, not protecting vestiges of ancient irrigation works or house sites, and the Federal Electrification Commission is more interested in building transmission lines than protecting cultural landscapes. Las Cuevas is adjacent to the growing service center of Tlacolula de Matamoros, making its empty lands attractive options for housing or commercial construction. Theoretically, an interagency planning secretari-

at resolves differences and facilitates coordination, but in practice its effectiveness depends more on good will and political skills of respective local managers than on official agreements signed by distant and distracted cabinet secretaries.

Indeed, one of the more significant lessons from the experience at Monte Alban is the critical importance of team-building in negotiating productive relationships with local communities. Imaginative leadership must work with and be supported by a team designed to meet local circumstances, not institutional traditions. For this reason, INAH's local staff includes not only archaeologists and architects but botanists and a veterinarian. By highlighting ways in which protection of wildlife species or an understanding of plant evolution may attract visitors otherwise disappointed by a lack of pyramids and temples, INAH's collaborative relationship with communities may bypass the long period of site-society conflict that marked the first World Heritage designation. Decisions regarding policies and personnel within INAH will help us understand how much it has learned regarding avoid conflict with external actors.

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- Nelly Robles García**, Instituto Nacional de Antropología e Historia, Jardín Etnobotánico, Sala IV, Reforma 501, Centro Histórico, Oaxaca, Oaxaca 68000; nellym\_robles@yahoo.com.mx
- Jack Corbett**, Hatfield School of Government, Portland State University, Portland, OR 97207



# Spiritual Outcomes of Park Experience: A Synthesis of Recent Social Science Research

*Paul Heintzman*

## Introduction

IN RECENT YEARS THERE HAS BEEN INCREASING EMPIRICAL RESEARCH on park experience and spirituality. In the vast majority of these studies, participants self-define spirituality. This paper summarizes and synthesizes this recent empirical research using the behavioral model of outdoor recreation as a framework (See Figure 1) that allows for the inclusion of many factors involved in the relationship between park experience and spirituality. Due to space restrictions only 16 of these studies are reviewed and synthesized in this paper. Antecedent conditions include personal history and current circumstances, attitude and motivation, sociodemographic characteristics, and spiritual tradition. Setting components include being in nature, being away to a different environment, and place processes such as place attachment and place meanings. Recreation components include activity, free time, solitude, and group experiences. The paper further explains how these conditions and components may lead to outcomes of spiritual experiences, spiritual well-being, and leisure-spiritual coping. The model presented takes into account the complexity of the park experience and spirituality relationship. This research synthesis is important as it may help park managers to better understand the processes that link park experience with spiritual outcomes and to educate park visitors about these processes.

## Antecedent conditions

Antecedent conditions refer to people's characteristics prior to their park experience. Personal history and current circumstances may influence the park experience. Examples of personal history include "baggage," such as fear that one brings to the park experience and which prevents one from being sufficiently relaxed and receptive to be open to spiritual experiences in a wilderness park setting, as noted by Fox (1997) in her study at Australia's Croajingolong National Park. Another example of personal history, identified by Foster (2012) in his study of Boundary Waters canoeists, is spiritual mentorship, which refers to how parents, relatives, friends, guides, visual media, fiction, and non-fiction may influence a person's spiritual experience in nature. A third example of personal history is Stringer and McAvoy's (1992)

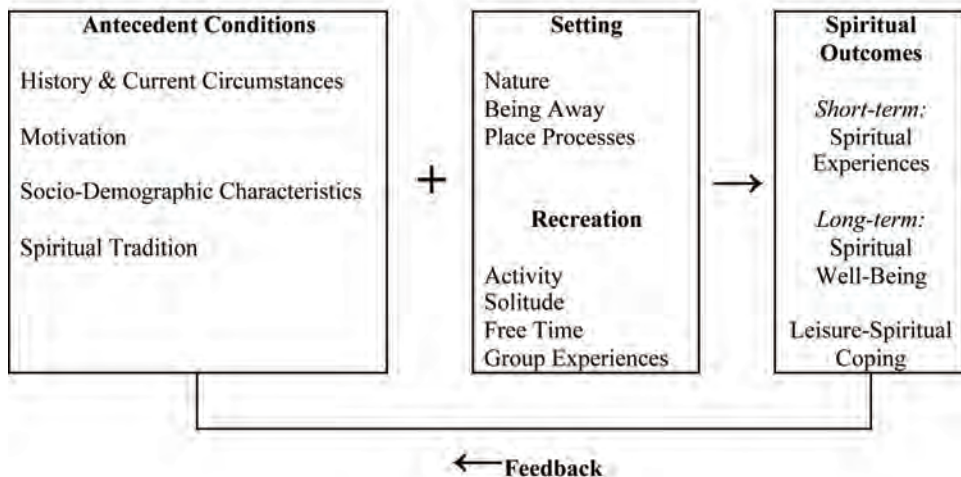
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**Figure 1.** Park experience and spirituality outcomes.

finding that “prior awareness of one’s own spirituality,” as well as previous spiritual experiences, contributed to spiritual experiences during canoe and hiking trips in wilderness areas. In addition they found that in terms of current circumstances, “needing to confront and deal with personal questions” (p. 18) contributed to spiritual experiences during a trip.

People’s motivations and attitudes in regard to visiting parks can be considered antecedents. While some park visitors may not be seeking spiritual outcomes (Stringer and McAvoy 1992; Heintzman 2007), quantitative studies suggest that 46% to 82% of park visitors seek or experience spiritual outcomes (Brayley and Fox 1998; Heintzman 2002, 2012; Lemieux et al. 2012), although these outcomes may not be the most valued (Behan et al. 2001). In a qualitative study, Stringer and McAvoy (1992) found that “predisposition toward spiritual reflection and/or experience” (p. 18) contributed to spiritual experience.

Sociodemographic characteristics are also considered antecedent conditions. For overnight campers at Ontario Parks in Canada, the degree to which introspection/spirituality added to satisfaction with the park experience was greater for males than for females, increased with age and education level, and decreased in households with higher incomes (Heintzman 2012). This gender difference was also true for day visitors to Ontario Parks (Heintzman 2002). Similarly, in a study of visitors to two Canadian parks, Lemieux et al. (2012) found that females rated both spiritual well-being motivations for visiting a park and the spiritual well-being benefits received from visiting a park higher than that of males, while those in the lowest- and middle-income groups tended to rate spiritual benefits higher than those in higher-income groups.

Finally, spiritual tradition should be considered. For example, for park visitors with Christian understandings of spirituality, nature is viewed as God’s creation, which is entwined with their spirituality (Heintzman 2008; Foster 2012). Similarly, in a study of US national park visitor experiences, while the researcher attempted to remain open to the many deities that might be mentioned by park users, the spiritual themes were dominated by ref-

erences to God and visitors related to the national park lands as a creation of God (Hoover 2012).

## Setting

Park settings produce opportunities for spiritual outcomes for two main reasons. First, the natural setting of parks elicits a variety of outcomes, including a sense of wonder and awe (Fox 1997); connection with God or a higher power (Heintzman 2007, 2008); a sense of peacefulness, calm, stillness, and tranquility (Fox 1997; Heintzman 2007); therapeutic benefits (Fox 1997); and peak experiences that facilitate spiritual expression (McDonald et al. 2009). The biophysical characteristics of *bona fide* park wilderness and direct contact with nature (Fredrickson and Anderson 1999), as well as the natural backcountry setting (Marsh 2008), have been associated with spirituality. Ontario Parks camper and day visitor studies (Heintzman 2002, 2012) included statistically significant relationships between the type of park visited and the degree to which introspection/spirituality added to visitor satisfaction. Visitors at wilderness parks rated introspection/spirituality the highest, those visiting natural environments were next, while visitors at recreation parks rated it the lowest.

Second, being away appears to be as important as the natural setting for park visitors. Stringer and McAvoy (1992) observed that greater opportunities for, and enhancement of, spiritual experiences were usually ascribed to lack of constraints and responsibilities during a wilderness area visit compared with participants' everyday lives. Being away at a park has been associated with the opportunity to get away from the everyday routine to focus on spirituality (Heintzman 2007, 2008), sacredness of life (McDonald et al. 2009), and escape from information technology (Foster 2012), all of which have been associated with spirituality. Being in nature may be important for some park visitors and being away may be significant for others, but often the combination of these two factors is conducive to spirituality (Foster 2012).

Place processes may be a third reason why park settings produce opportunities for spiritual outcomes. The spiritually inspirational characteristics of parks have been linked to the phenomena of "place attachment" and "sacred space" as visitors have developed a sense of "at-homeness" and identification with the wilderness areas they visited (Fredrickson and Anderson 1999). Also, spiritual place meanings have been associated with sacred sites by visitors at the Apostle Islands (Salk et al. 2010).

## Recreation

In a study of US national park visitor experiences, spiritual themes such as spiritual affirmation, spiritual connections including deeper connections with God, and deities as creators and protectors were closely associated with recreational experiences in these parks (Hoover 2012). These spiritual themes were the second-most prevalent themes after social themes.

The type of recreation activity engaged in at a park influences spirituality. While diverse park activities have been associated with spirituality (Stringer and McAvoy 1992), Ontario Parks' campers who spent most of their time at a park in more nature-oriented activities (e.g., viewing/photographing nature, guided hikes/walks) rated higher on the degree to which introspection/spirituality added to their satisfaction than did participants who spent most of their time in activities such as biking and motor-boating (Heintzman 2002, 2012). Similarly,

Behan et al. (2001) found that spiritual benefits were valued more by foot travelers than by mountain bikers, as it was easier for non-mechanized travelers to focus on nature.

The intensity of a recreation activity during a park visit may also influence spirituality. The physical challenge of canoeing in the Boundary Waters and hiking in the Grand Canyon (Fredrickson and Anderson 1999), adventure, and mental and physical exercise (Marsh 2008) have all been associated with spirituality.

The type of spiritual outcome may also be influenced by the type of park activity engaged in. Canoeists have been found to have had spiritual experiences focused on interconnections with people while mountain hikers described spiritual experiences involving appreciation of wilderness beauty (Stringer and McAvoy 1992). Canoe paddling has also been found to offer an opportunity for spiritual reflection as it provides time to consider the difference between park conditions and everyday life (Foster 2012). Solitude has led to peace, tranquility, a chance for an inner journey, time for self-reflection (Fox 1997), and renewal resulting from contemplation of life's deepest questions, which can be difficult or impossible during everyday life (Fredrickson and Anderson 1999). The importance of solitude for spirituality has also been reported by canoeists in a provincial wilderness area who participated in a solo experience (Heintzman 2007), and by backcountry adventurers (Marsh 2008). Ontario Parks campers who visited a park alone rated introspection/spirituality higher than those who visited a park with others (Heintzman 2012). In the case of group experiences in wilderness, unscheduled time in nature when one is free to do as one chooses, has been viewed as a critical component in spiritual experiences (Stringer and McAvoy 1992).

Group experiences in wilderness areas, including the sharing of experiences, opinions, and ideas (Stringer and McAvoy 1992); working as a team (Fox 1997); "group trust and emotional support," "sharing common life changes," and a "non-competitive atmosphere" (Fredrickson and Anderson 1999); and the opportunity to discuss with others, to share stories and personal life experiences, and to have friendships and camaraderie (Heintzman 2007) have all been associated with spirituality. Conversations and discussions on one canoe trip facilitated ongoing spiritual friendships (Heintzman 2008). Being part of a male-only or female-only group has also played an important role in spiritual outcomes (Fox 1997; Fredrickson and Anderson 1999; Heintzman 2008). In some cases a balance of solitude and group experiences is helpful to spirituality (Heintzman 2007): "There is a dynamic of tension between interaction and solitude: Both enable a spiritual meaning" (Marsh 2008: 292).

### **Spiritual outcomes**

The combination of antecedent conditions, setting, and recreation components may lead to spiritual outcomes. Spiritual experience in nature has been characterized by emotions of awe and wonderment at nature; feelings of connectedness, heightened senses, inner calm, joy, inner peace, inner happiness, and elatedness (Fox 1997); intense and often positive emotions (Stringer and McAvoy 1992); peacefulness, including peace with oneself and the world (Heintzman 2007); and religious-like or self-transcending feelings of peace and humility (Fredrickson and Anderson 1999). McDonald et al. (2009) discovered that participants' peak experiences in wilderness areas within Australian National Parks facilitated the sacredness of life, meaning and purpose, and transcendent "unseen" dimensions of spiritu-

ality. Within an urban park setting, Chiesura (2003) found that the emotional dimension of park experience included feelings related to unity with oneself and unity with nature, which they described as a spiritual component of the park experience. Chiesura explained that this component reflects a need to elevate the mind and soul beyond daily thinking as well as to feel part of, and in harmony with, a larger whole. She concluded that “the tranquil atmosphere of the park inspires reflection, meditation and a general feeling of harmony between oneself and the surroundings” (p. 135).

Some studies suggest spiritual experiences in parks influence daily life. Fox (1997) claimed that feelings of empowerment, clarity, and inner peace led to inner strength and self-control, which affected both work life and family life by making participants feel more in control and stronger regarding relationships, roles, and personal goals. Stringer and McAvoy (1992) used post-trip interviews (i.e., 3–45 days after the trip) to conclude that wilderness experiences appeared to have some impact on participants’ lives one month later. Just over half of the participants in McDonald et al.’s (2009) study observed that their wilderness peak experiences were significant in their life because the restorative elements of wilderness, such as the absence of distractions, human-made intrusions, and time constraints, along with solitude, provided time and space to think about meaning and purpose in relation to suffering, the limits of human life, and nonmaterial pleasures.

Another outcome is spiritual well-being. Lemieux et al. (2012) found that 73.4% of park visitors perceived spiritual well-being benefits or outcomes from connecting with nature, being inspired by nature, and seeking the meaning/purpose of life while visiting parks. The impact on spiritual well-being for men on a canoe retreat in a provincial wilderness area 5–7 months later was associated primarily with the memory and recollection of the experience and less with specific behavioral change. Development and enhancement of spiritual friendships was the main impact on spiritual well-being 8–10 months after a different men’s canoe trip along a provincial waterway park (Heintzman 2008). Chiesura (2003) examined whether an urban park experience was perceived as important for the participants’ general well-being. She discovered a spiritual component related to the stimulation of a spiritual connection to nature that was seen as a source of energy that enriches life.

“Leisure-spiritual coping” refers to the ways that people receive help, in the context of their leisure, from spiritual resources (e.g., higher power, spiritual practices, faith community) during periods of life stress. Women who had experienced a major life change (e.g., deterioration of personal health, major career change, death of a loved one) found a canoe or hiking trip in wilderness areas provided the opportunity to leave everyday life stresses and experience spiritual rejuvenation (Fredrickson and Anderson 1999).

## Conclusions

These research findings may be most beneficial to park managers in terms of their understanding of the park and spirituality relationship rather than their ability to provide specific guidance to bring about spiritual outcomes. Research indicates that the park experience and spirituality relationship is multifaceted and complex. Thus, park managers need to keep in mind this complexity and the components of the framework presented in this article. Managers should be aware of the important role that antecedent conditions play in park spiritual

outcomes, and that spiritual outcomes are associated with a wide range of park recreation activities (e.g., Stringer and McAvoy 1992), but that certain activities (e.g., more nature-oriented activities) tend to be more associated with spirituality than are others (e.g., Heintzman 2002, 2012).

To some extent research suggests that promoting spiritual outcomes amongst park visitors may be related more to choices that visitors make than to management actions. However, park managers, through educational programs and materials, can empower visitors who seek spiritual outcomes to make choices that will result in these types of outcomes.

In regard to setting characteristics, the following implications are particularly relevant. First, given that nature and naturalness, as opposed to developed recreation areas, have been found to be associated with spiritual outcomes, the naturalness of a park needs to be upheld. Second, because being away in a different environment is important for spirituality, distractions and developments associated with civilization should be minimized. Third, given that spirituality tends to be associated more with nature-oriented activities (e.g., viewing/photographing nature) than with activities that are less focused on nature, providing opportunities for nature-based recreation is relevant. Fourth, since solitude in nature settings is important for spirituality (e.g., Heintzman 2012), actions to maximize solitude are encouraged. Given these implications, park management focused on maintaining solitude and naturalness, along with inclusion of spiritual outcomes in classifications of park benefits and in the use of limits of acceptable change (LAC) and similar planning frameworks, is recommended.

Some research suggests that a focus on an overall high quality of park service rather than on specific management actions may be the best strategy to enhance spiritual outcomes in park settings (Heintzman 2002, 2012). Nevertheless, as a significant positive relationship has been found between spirituality and participation in activities such as guided hikes, visiting historical/nature displays, visiting viewpoints and lookouts, and viewing or photographing nature (Heintzman 2002, 2012), provision of nature interpretation and educational opportunities by park managers may enhance spiritual outcomes. These interpretation and educational activities could also include facilitation of introspection for park users (Brayley and Fox 1998).

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**Paul Heintzman**, Leisure Studies, University of Ottawa, Ottawa, ON K1N 6N5 Canada; pheintzm@uottawa.ca

# Protecting Historical Heritage: The Commemorative Integrity Evaluation Program at Parks Canada's National Historic Sites

*Patricia E. Kell*

## Introduction

A FIRE RIPS THROUGH A HISTORIC BUILDING. Archaeological remains wash away with the erosion of the shore. Precious artifacts are stolen from a site. Such events force us to confront the loss of historic value from historic sites. But as an ongoing activity in good management, the state of our sites needs to be measured and, when there are deficiencies, corrective actions should be taken. Parks Canada's commemorative integrity evaluation program was designed to respond to this need—so that the agency would know what condition its most valuable cultural resources were in, could share this information with the public, and use it to focus corrective action.

Parks Canada manages the National Program of Historical Commemoration, which has seen the designation of over 950 national historic sites across the country, as well as the commemoration of persons and events of national historic significance. Canada's national historic sites are owned by not-for-profit organisations, by provincial and municipal governments, by corporations and private citizens; and over a fifth are owned by the federal government. The Parks Canada Agency administers 167 national historic sites, with a mandate to protect and present these nationally significant examples of Canada's cultural heritage and foster public understanding, appreciation, and enjoyment in ways that ensure their commemorative integrity for present and future generations.<sup>1</sup>

The concept of commemorative integrity is enshrined in the Parks Canada Agency Act. It refers to the health and wholeness of a national historic site. It reflects the condition or state of a site when the site retains the heritage value for which it was designated. The reasons why a place is of national significance (also sometimes called the reasons for designation or commemorative intent) and the limits of the place (also known as the designated place) are identified in the designation.

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The definition of commemorative integrity includes three elements.<sup>2</sup> To be in a state of commemorative integrity:

- The resources directly related to the reasons for designation as a national historic site must not be impaired or under threat;
- The reasons for designation must be effectively communicated to the public; and
- The site's other heritage values must be respected in all decisions and actions affecting the site.

### **Purpose of commemorative integrity evaluations**

In 1994, Parks Canada adopted a cultural resource management policy.<sup>3</sup> This policy marked a departure in the way the agency managed cultural resources, going from an approach which was materials-focused to a values-based system. In order for this to function in practice, it became necessary to define where value lies at each site. The documents used for this are called commemorative integrity statements. For each site, the commemorative integrity statement constitutes an analysis of the resources at the site against the reasons for designation—the nationally significant values—and other historic or heritage values. In addition, a section of the document articulates heritage messages that should be communicated, including the reasons for designation, context messages around those reasons, and messages related to other heritage values.

Beginning in 1990, Parks Canada also embarked on the production of “state of the parks” reports. The objective was to share with Canadians not only performance against core government accountabilities but performance against the mandate to protect natural and cultural resources. The concept of “state of” reporting pushed Parks Canada to develop a means to quantify and report systematically on the condition of national historic sites. By the turn of the century, four reports had been produced and it was clear that a more consistent and sustainable approach to generating and reporting information was required. The commemorative integrity evaluations program was the response.<sup>4</sup>

The goal of the program was to produce consistent, reliable, and comprehensive information about the state of the 167 national historic sites administered by Parks Canada. This information would then be reported in the state of the parks reports, and over time has also become central to performance management in the departmental performance report.<sup>5</sup> The evaluations have made it possible to express the state of conservation of the national historic sites individually and as a group, as well as of individual resources and management practices within the sites.

### **Methodology**

The design of the commemorative integrity evaluations drew directly from the definition of commemorative integrity, the format of commemorative integrity statements, and the contents of the 1994 cultural resource management policy.<sup>6</sup> The result was a questionnaire in three sections, paralleling the three parts of the definition of commemorative integrity.

The first part of the evaluation looked at the condition of each resource at a national historic site. The list of resources was taken from the commemorative integrity statement. Analysis of condition was based not only on a resource-type based definition of good, fair and

poor, but also on the historic values that were associated with each resource. For example, ruins could receive a good rating, providing that the ruinous state was a value of the place. To the extent possible, information was culled from existing records of condition, for example through the asset management system or the collections management database.

The second section considered whether the reasons for designation and other messages identified in the commemorative integrity statement are effectively communicated. The criteria considered the presence and prominence of messaging, the media used, and other qualities related to communications that were required in the policy; for example, that where there are multiple interpretations of a historical event, a range of perspectives will be presented. Periodic visitor surveys provided critical information on the effectiveness of the communications efforts.

The third section of the commemorative integrity evaluations looked at whether the management practices required in policy were being followed at the site. These practices included inventorying the cultural resources and evaluating them to determine their historic value; evaluating impacts of proposed activities and, when appropriate, influencing the activities of others, for example in leases and licenses; determining whether records are kept up-to-date; and determining whether monitoring and corrective measures are undertaken.

In each of the three sections of the evaluation, ratings were given based on a good–fair–poor system, with associated definitions for each kind of question. These ratings were rolled up into overall ratings in each component using a red–yellow–green system. The overall commemorative integrity for a site could be expressed either as a triad of colors (e.g., green–green–green, where the three colors relate to condition of the resources, effectiveness of communications, and selected management practices, respectively). The triad of colors could also be converted to a numerical score from one to ten (Figure 1). These numerical scores were then averaged in order to express the overall state of health of the system of national historic sites. A corporate goal was established in 2008 to raise this overall numerical index from 6.0 to 6.6 by 2013.

In 2001, a ten-year schedule of evaluations was established covering all national historic sites administered by Parks Canada. The evaluations were typically carried out over a two-day period, at the site, with participation from site staff, professional staff familiar with the site (for example, archaeologists and historians), and three staff from elsewhere in the organization who could bring objectivity and national consistency to the ratings. In some cases, external partners and stakeholders were also invited to participate in the evaluations.

### **Successes of the program**

As noted above, the goals of the program were two-fold: to better understand the state of commemorative integrity at Parks Canada's national historic sites and, based on that understanding, to improve it. In terms of these goals, the program has been highly successful. Parks Canada achieved its goal of improving the overall state of commemorative integrity from an average of 6.1 to 6.7, ahead of schedule (Figure 2).

Many issues identified through the red rating system—particularly conservation issues—were addressed. “Is it red?” became a shorthand to describe things which were importantly in need of attention. At Inverarden House, the evaluation focused attention on the problem




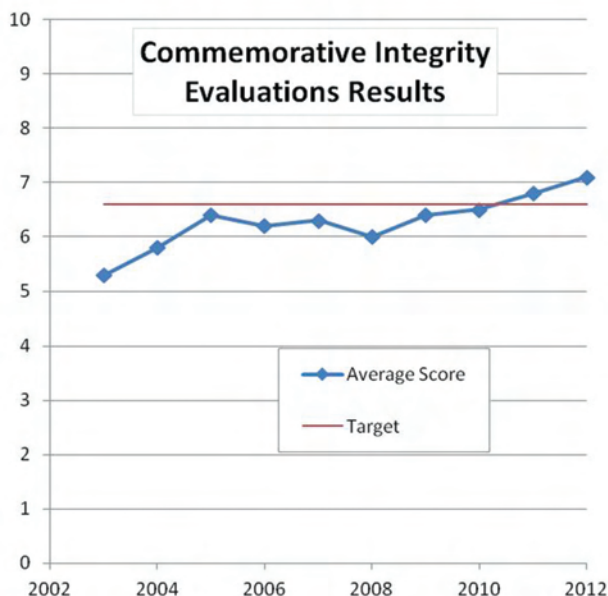
Score	State of Commemorative Integrity
10 	No Impairment
9 	Minor Impairment
8 	
7 	
6 	Significant Impairment
5 	
4 	
3 	Major Impairment
2 	
1 	Severe Impairment

Figure 1. Results from the evaluation of the condition of resources, effectiveness of communications, and management practices expressed as a numerical score from one to ten.

with mold, which was removed and ventilation was improved. At Twin Falls Tea House, the evaluation supported improvements to the building foundation. At Jasper House, a remote archaeological site, the evaluation encouraged improved access to the site and views of the site. At Prince of Wales Tower, the results on the effectiveness of communications front supported better messaging at the site.

The commemorative integrity evaluations program also generated more systematic and better data about our national historic sites than had existed previously. While site staff have always had a strong understanding of what they were managing, access to consistent information about resources and practices across the system was more difficult. The evaluations have made it easier to look at issues from a broad perspective rather than on a site-by-site basis.

Though not particularly designed with continuing education in mind, the evaluations became an important means of sharing best practices in cultural resource management. The cultural resource management policy set fairly clear direction on what was expected of managers and when it was adopted enjoyed a relatively vigorous training program. By the time the evaluations were taking place, in part because of staff changes, the level of awareness about



**Figure 2.** By focusing on results, Parks Canada achieved its goal of improving the overall state of commemorative integrity.

the requirements of the policy was not universally high. The evaluations—especially the third component on selected management practices—proved a useful catalyst to look at what was expected and to reflect on how it could be best implemented in the operational realities of any particular site.

The commemorative integrity evaluations were one of the few activities that allowed staff from many parts of the organization to work together on a shared project. There were opportunities for sharing of information and perspectives from site to site across the agency and for the transmission of knowledge and experience from older staff to those in an earlier phase of professional growth. The positive working relationships that were fostered through these experiences continue to pay dividends today.

### Moving forward

While the commemorative integrity evaluations have served the agency well, all such programs deserve to be revisited periodically. The cycle of original evaluations has come to an end and the corporate goal articulated for 2013 has been achieved. There is no doubt that the evaluations set a new standard in terms of systematically and consistently looking at cultural resources, messaging, and management practices across the agency. Notwithstanding these considerable strengths, there have been some weaknesses and as we consider now what will come next, it is important to take stock of these, as well.

Ten years of experience with the evaluation methodology have brought to light some areas where the data could be improved. For example, in the original design there was no



clear or consistent distinction between condition, *per se*, and the condition of historic value. While in general terms the methodology could fully credit a ruin as being in good condition, it has not been able to reflect the distinction between a building that is structurally stable with its original system intact and one that is stable because its original structural system has been unsympathetically replaced with a steel skeleton. The condition of heritage value and the condition of an asset need to be more clearly distinguished.

Similarly, the methodology did not include a metric to express permanent loss of heritage value. The national historic sites program has a process to de-designate or re-list sites that have permanently lost their commemorative integrity, but the evaluations arguably should be able to reflect incremental steps towards that terminus. In other words, the program can accommodate catastrophic loss of commemorative integrity but the evaluations do not reflect cumulative impacts.

A final methodological challenge emerged because the evaluations paid attention to every resource and rated each individually, and then rolled up those results into overall results. The results were not formally “averaged” but the consequence of a process which attempted to simultaneously reflect both the good and the poor was that all results tended to the middle. Both extreme excellence and real problems were sometimes masked in a pervading cloud of middling yellow.

In December 2012, a renewed cultural resource management policy<sup>7</sup> was approved. This exciting development addresses some fundamental shifts in the way we need to manage pressures on cultural resources and the agency in the 21<sup>st</sup> century. It sets out a new practice for cultural resource management, one that is more focused on those resources which are most closely linked to the national significance of the places we manage, more sensitive to the need to set priorities, and more open to a respectful but not exhaustive approach to meeting our conservation goals. It also places a premium on the relationship between resources and how they are shared with Canadians. In comparison with these currents, the commemorative integrity evaluations program tried to do too much—to evaluate all resources, regardless of their degree of value, to include all messages and contextual messages, and to take on all the direction on practices and activities from the 1994 policy. Our challenge will be to hone in on what is most salient for making the critical conservation decisions of the future.

Finally, when we look outside our own borders, the dialogue around integrity taking place with respect to World Heritage provides some fresh inspiration. In the *Operational Guidelines for the Implementation of the World Heritage Convention*,<sup>8</sup> integrity is defined as a measure of the wholeness and intactness of the cultural heritage and its attributes (s. 88). In order to be considered for designation, the property and/or its significant attributes should be in good condition, and the impact of deterioration processes controlled. Notions of “significant proportion” and “relations and dynamic functions” (s. 89) push us to think about thresholds and systems in a way that the old evaluations paradigm did not accommodate.

## Conclusion

Since 2001, Parks Canada has undertaken a systematic campaign to measure, consolidate, share, and improve management of the state of commemorative integrity of our national historic sites. For those who have been involved, it has often been an enriching opportunity to

come to know these sites more intimately and to appreciate their value more fully. It has been a gift to work with colleagues from across the country, across functions, and across languages and professional fields, all committed to protecting and presenting these magnificent historical treasures for Canadians.

When asked what the legacy of the commemorative integrity evaluations program is, my colleagues cite its importance in putting cultural resources at the center of a structured discussion involving a range of points of view. They acknowledge its importance in bringing together a wealth of information about our national historic sites in ways that could be accessed and compared. They value its utility in bringing forward issues and trends that required further attention, and in spurring conservation action.

As we look now towards the next generation of commemorative integrity evaluations, we will build on these many strengths, while positioning a renewed approach to evaluating commemorative integrity within the current economic and social realities.

## Endnotes

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5. See for example, Parks Canada Agency, *Performance Report for the Period Ending March 31, 2008* (Ottawa: Parks Canada Agency, 2008) 41–44.
6. See references 2 and 3 above.
7. See [www.pc.gc.ca/eng/docs/pc/poli/grc-crm/index.aspx](http://www.pc.gc.ca/eng/docs/pc/poli/grc-crm/index.aspx).
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**Patricia E. Kell**, Heritage Conservation Branch, Parks Canada, 25 Eddy Street (25-5-P), Gatineau, QC K1A 0M5 Canada; [patricia.kell@pc.gc.ca](mailto:patricia.kell@pc.gc.ca)

# Co-managing Parks with Aboriginal Communities: Improving Outcomes for Conservation and Cultural Heritage

*Greg Leaman*

## Introduction

SOUTH AUSTRALIA IS ONE OF EIGHT AUSTRALIAN STATES AND TERRITORIES. It covers approximately 98 million hectares and has a population of 1.65 million, of which about 1.8% are Aboriginal people.

The South Australian formal protected area system includes over 400 parks and reserves encompassing over 21 million hectares, or more than 21% of the state. Many of these areas are significant to Aboriginal people.

A similar area of the state is Aboriginal freehold land. Due to its size, remoteness and relatively intact and undeveloped condition, much of the Aboriginal freehold land can make a significant contribution to the conservation of biological diversity and natural systems in South Australia.

This paper provides a brief overview of South Australia's approach to co-management of parks. Governance arrangements, management effectiveness, community engagement, and equity considerations are discussed using the Vulkathunha–Gammon Ranges National Park as a case study.

## Co-management framework

In July 2004, the National Parks and Wildlife Act 1972 was amended to enable establishment of co-operative management arrangements over national parks and conservation parks in South Australia through statutory co-management agreements between the minister for environment and conservation and the relevant Aboriginal group. The amendments also enabled national parks and conservation parks in South Australia to be constituted over Aboriginal-owned lands (Figure 1).

The changes to the National Parks and Wildlife Act created a three-tiered framework for the co-management of Aboriginal-owned or government-held national parks and conservation parks:

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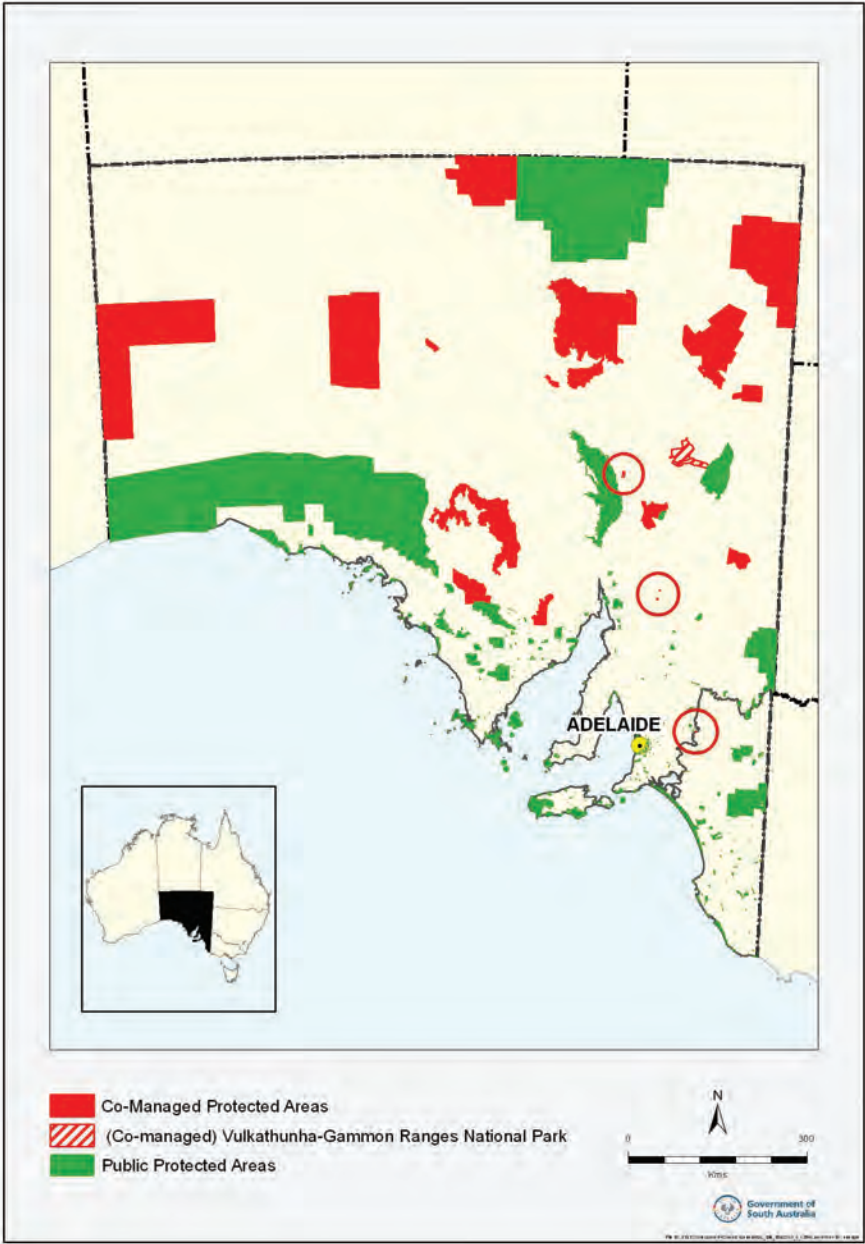


**Figure 1.** Co-management arrangements provide for the handback of traditional lands for management as parks and reserves.

- *Aboriginal-owned parks.* Aboriginal-owned national parks and conservation parks are under the control of, and managed by, co-management boards. A co-management board for an Aboriginal-owned park has a majority of members from the relevant Aboriginal group and is chaired by a person nominated by the Aboriginal owners.
- *Crown-owned parks managed by a co-management board.* Co-management boards may be established for Crown-owned national parks and conservation parks, in which case the board has management control of the park. Membership of a co-management board for a Crown-owned park is determined by agreement between the minister and the traditional owners.
- *Crown-owned parks with a co-management advisory structure.* A statutory advisory structure may be established for a Crown-owned national park or conservation park to provide management advice. However, it does not have management control. The functions and membership structure of an advisory committee are determined by agreement between the minister and the relevant Aboriginal group.

Ten co-management agreements are now in place under the new arrangements. These encompass approximately 8.9 million hectares, or around 42% of the formal reserve system in South Australia (Figure 2).

**Figure 2.** Co-managed protected areas in South Australia.





## **Vulkathunha–Gammon Ranges National Park: A case study**

The Vulkathunha–Gammon Ranges National Park provides a useful case study for examining the governance arrangements, management effectiveness, stakeholder involvement and equity considerations associated with a Crown-owned park co-managed by a board under the South Australian framework.

The park is located in the visually spectacular northern Flinders Ranges, approximately 750 kilometers north of Adelaide (Figure 2). It incorporates a range of arid ecosystems and habitats, supports a number of species of conservation significance, and is popular with bushwalkers and those who enjoy outdoor recreation in South Australia's distinctive “out-back” environment.

The park is part of the traditional country of the Adnyamathanha people for whom it is of special cultural significance. It contains evidence of their past occupation and a wide range of important cultural features and continues to be used for traditional purposes.

### **Governance and institutional setting**

A co-management agreement over the Vulkathunha–Gammon Ranges National Park was signed by the state and the Adnyamathanha Traditional Lands Association in 2005. Management responsibility for the park transferred from the director of National Parks and Wildlife to the Vulkathunha–Gammon Ranges National Park Co-management Board.

Management of the park is undertaken in accordance with the National Parks and Wildlife Act, the National Parks and Wildlife (Vulkathunha–Gammon Ranges National Park) Regulations 2005, the co-management agreement, and the park management plan.

The co-management agreement explicitly recognizes that the quality of the natural environment in the park is due to a combination of the traditional care it has received from Aboriginal people for many thousands of years, its history as grazing land under a pastoral lease, and conservation measures applied by the state since its dedication as a park in 1970. The agreement sets out how the park will be managed and provides for the use of the park by Adnyamathanha people in such a way that their cultural, economic, social, and environmental aspirations are enhanced in a manner consistent with the management objectives for the area. The agreement seeks to ensure that the quality of the park's natural environment is enhanced and its cultural significance to Aboriginal people is recognized and protected (Figure 3). The co-management agreement is based on four principles:

- To ensure the continued enjoyment of the park by the Adnyamathanha people for cultural, spiritual, and traditional uses;
- To ensure the continued enjoyment of the park by members of the public;
- To ensure the preservation and protection of Aboriginal sites, features, objects, and structures of spiritual or cultural significance within the park, and;
- To provide protection for the natural resources, wildlife, vegetation, and other environmental features of the park.

The co-management board comprises eight members (plus deputies) appointed for a four-year term, with four representatives from the Adnyamathanha Traditional Lands Asso-





**Figure 3.** Co-management arrangements have increased the focus on cultural site management in the Vulkathunha–Gammon Ranges National Park.

ciation, three from the Department of Environment, Water, and Natural Resources, and one other nominated by the minister. The minister appoints the chairperson from the members. The board is currently chaired by an Adnyamathanha representative. Decisions of the board are by majority and all members, including the chair, have one vote. In the event that the board is unable to reach a decision, the matter is referred to the minister, although this situation has not arisen to date.

The board meets quarterly. Agendas are set by the chair and all board members are encouraged to contribute to the agenda. Strategic planning is undertaken by the board on a two-year cycle to identify priorities and set forward agendas.

The functions and powers of the board are set out in the National Parks and Wildlife Act and the regulations. The powers may be delegated, and many have been delegated to staff from the department who undertake the day-to-day operations of the park on behalf of the board.

The board is required to submit an annual budget as part of the department's budget development process each year. Funding is at the discretion of the minister and the department. However, the board may seek and apply for funds from other sources.

The co-management agreement must be reviewed by the minister and the Adnyamathanha Traditional Lands Association every five years and may be amended or varied by

agreement of the parties at any time. The agreement may be terminated by the parties under certain conditions, in which case the park ceases to be co-managed and reverts to a park under the control of the minister and under the management of the director of National Parks and Wildlife.

The minister must consult the board before introducing any new legislation into Parliament that would apply solely to the park or significantly affect the rights or powers of the board.

### **Management effectiveness and evaluation**

Under the National Parks and Wildlife Act, the minister must prepare a management plan for all national parks and conservation parks. The management plan must “set forth proposals in relation to the management and improvement of the reserve and the methods by which it is intended to accomplish the objectives of the Act in relation to that reserve.” Once adopted, the provisions of a management plan must be carried out and no management actions may be undertaken unless they are in accordance with the management plan. In the case of a co-managed park managed by a board, the minister must prepare the management plan in collaboration with the co-management board.

A management plan for the Vulkathunha–Gammon Ranges National Park was prepared by the co-management board and adopted by the minister in 2006.

The board must implement the management plan and prepare an annual report to the minister which addresses matters specified in the act, regulations and co-management agreement. The minister is required to table the annual report in State Parliament.

### **Community engagement**

The co-management agreement for the Vulkathunha–Gammon Ranges National Park is between the minister (on behalf of the state) and the Adnyamathanha Traditional Lands Association (representing the traditional Aboriginal owners). The co-management arrangements were developed over an 18-month period. This was preceded by a long period, in excess of 30 years, where the Department and local park rangers developed working relationships with the traditional Adnyamathanha owners. The agreement was signed with the support of the local Adnyamathanha community.

The co-management agreement recognizes “that the Adnyamathanha people and the State wish to make a significant contribution towards the reconciliation of Indigenous and non-Indigenous people” and that “the Adnyamathanha people have an acknowledged aspiration that the park be granted to them in freehold and continue to be managed as a national park.”

The National Parks and Wildlife Act requires public consultation on management plans. The broader community and stakeholders were actively engaged in developing the 2006 management plan for the park. The consultation process involved public input at the early stages, including targeted consultation with special interest groups within and outside government, followed by a statutory three-month public exhibition and consultation phase. Prior to its finalization and adoption, the plan was also reviewed by the South Australian Nation-

al Parks and Wildlife Council (a statutory advisory committee to the minister representing a range of statewide interests).

The management plan includes objectives and strategies specifically aimed at involving the community in the management of the park including neighbors, nearby communities, Adnyamathanha groups, volunteer groups, scientific institutions and researchers, and special-interest community and business groups.

An important priority for the board has been developing partnerships with neighboring landholders to achieve broader landscape-scale conservation as well as cultural, tourism, and recreation outcomes.

Park neighbors and the Adnyamathanha community are regularly invited to attend board meetings and meet with the board in the park to discuss issues of mutual interest and encourage community relationships. "Open days" are also held in the park to showcase the work of the board and engage the community. The co-management arrangements for the park appear to have strong support from the wider community.

## **Equity**

Funding for management of co-managed parks is provided by the South Australian government. Some costs are recouped through fees for entry, camping, and other services; commercial tourism operators; and leases and licenses. However the Vulkathunha-Gammon Ranges National Park has relatively low levels of visitation and use, so revenue is very limited. This would be the case whether or not the park was co-managed.

Under the co-management agreement, the Aboriginal owners are not required to pay entry, camping, or any other fees for the use of or access to co-managed parks for cultural purposes.

Our experience to date indicates that co-management adds to the cost of managing a park. These costs relate to payment of (very modest) sitting fees to nongovernmental board and committee members, meeting costs (including travel and accommodation), provision of administrative and executive support to boards and committees, governance training for board members, and cultural awareness training for all board members and management staff. These costs represent a positive investment in capacity-building for both Aboriginal and non-Aboriginal board members and staff, and in relationship-building between the co-management partners.

The co-management agreement for the park requires that preference be given to Adnyamathanha people in park employment. The board must be consulted on the number and classification levels of employees required for the park as well as membership of selection panels. Currently all staff who are based at and work in the park are Adnyamathanha people.

The co-management agreement requires that all non-Adnyamathanha board members and staff who work in the park are required to undertake cultural awareness training as determined by the board in consultation with the Adnyamathanha people. The minister and the board must also give preference to Adnyamathanha people when contracting for the provision of works and services in the park.

The co-management agreement provides for access to traditional resources by the Ad-

nyamathanha community (for example hunting and the taking of plants and eggs) subject to conservation considerations. This provides an opportunity for the continuance of traditional hunting and gathering practices, which can contribute to better economic, social, and health outcomes for the Adnyamathanha community.

The co-management agreement contains specific provisions to protect Adnyamathanha culture, traditional knowledge, and intellectual property. For example, all promotional material for the park that includes Adnyamathanha cultural information must be approved by the Adnyamathanha representatives on the board prior to publication. The interpretation of Adnyamathanha culture in the park by licensed commercial tour operators also requires board approval.

The board may also make recommendations to the relevant minister with respect to the naming or renaming of features of the park and must consider the Adnyamathanha names for features when making such recommendations. This has been an area of keen interest for the board and further contributes to equitable management arrangements.

### **Summary and conclusions**

The relationship to land (“country”) is central to Aboriginal culture, identity, spiritual beliefs, and well-being. Access to country is critical to maintaining this relationship and can provide additional social, health, and economic benefits for Aboriginal people. Traditional knowledge and land management practices can also inform and improve contemporary approaches to science and park management and enhance park visitor experiences.

The innovative co-management framework established in South Australia provides the opportunity to progress the reconciliation agenda, contribute to Indigenous self-determination, and help address Aboriginal disadvantage. Co-management also provides a range of potential benefits for conservation and improved park management.

The Vulkathunha–Gammon Ranges National Park in South Australia provides a useful case study of governance, community engagement, and management and equity considerations under a successful co-management arrangement.

The South Australian Department of Environment, Water and Natural Resources is continuing to work closely with Aboriginal people to identify further opportunities and consider how the framework can be improved and applied to other areas of the state.

**Greg Leaman**, National Parks and Wildlife, Department of Environment, Water and Natural Resources, GPO Box 1047, Adelaide, South Australia, 5001, Australia; greg.leaman@sa.gov.au

# Dissecting Credibility: Components of Credibility for Science/Resource Management Professionals

*Jerry M. Mitchell, Christie Anastasia, Ben Bobowski, and  
Giselle Mora-Bourgeois*

## Background/purpose

THE NATIONAL PARK SERVICE (NPS) IS DEVELOPING THE CAREER FIELD ACADEMY, a learning and development program for employees in all career fields. Seven career field tracks are being developed, including one for natural resource professionals. Development of the Career Field Academy's curriculum for natural resource professionals began in earnest in 2010, building on several previous efforts that included the assessment and identification of important career field competencies (NPS 1996).

One of the important competencies identified by NPS for natural resource professionals was "professional credibility," defined as "not only scientific knowledge and abilities, but also contributions to science and scientific endeavors which are recognized by peers in government agencies and the academic community as providing a solid foundation and leadership in the level and type of natural resource work performed." The following associated sub-competencies were identified:

- Ability to develop an active network of professional interaction with peers in the scientific community;
- Ability to publish articles in peer-reviewed publications and/or make presentations at scientific meetings;
- Ability to maintain a level of scientific knowledge and skill in application that are recognized by peers in government agencies and the academic community as credible and providing a basic foundation for work provided;
- Ability to carry out peer review of scientific reports, and to participate in developmental assignments as a member of teams reviewing natural resource programs;
- Ability to establish and maintain networks in fields outside own discipline as directed or with guidance; and
- Ability to participate in professional meetings in field of expertise.

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Teaching “credibility” to build competencies requires study, planning, and curriculum development. The authors were part of a natural resources work group coordinated by the natural resource career field training manager, National Park Service, Washington Office of Learning and Development.

### **Credibility of scientists/science professionals**

Scientific credibility has been the subject of numerous papers. In the politics of science, truth and credibility are not one and the same (Shapin 1995). Credibility is the product of complex and contingent social and cultural processes. There can be no one recipe for how to produce credibility. The means by which credibility is developed, maintained, distributed, contested, and lost are often believed to be too complex and contingent to generalize. However, there are elements of credibility to consider regardless of circumstance.

Some see a more simplistic interpretation in which their knowledge is enough to establish their credibility. However, no claim of knowledge has inherent credibility (Alagona 2008). All claims of knowledge must win their credibility through social and cultural processes, and conditions under which all claims of knowledge achieve credibility may differ depending on subject matter. As Shapin notes, knowledge alone is not power. Statements of fact mean different things to different people. The truth does not “shine by its own light.”

Scientists often make the mistake of believing that credibility and objectivity are directly linked—that credibility derives from the transcendent power of unbiased science, and that the appearance of advocacy can only damage their professional reputations (Gill 2001). And while that objectivity contributes to credibility, the literature offers no evidence for a clear universal relationship between credibility and objectivity. Alagona observes that scientists with the most public credibility are not those who have cultivated a reputation of objectivity among their peers. Rather, they are the ones who have devoted their time to public service and participation in collaborative planning efforts, articulated their biases and opinions, worked to find common ground among their fellow citizens, and respected the ideas of non-experts who have every right to participate in a democratic decision-making process (Rigg 2001).

The role of scientists and science professionals is often described using several models. The traditional understanding suggests that where science is relevant to policy processes, the role of the scientist is to facilitate management decisions by providing objective scientific information to managers and policy-makers, who in turn have the primary responsibility to debate management options, interpret scientific information, and make decisions (Lach et al. 2003). In this model, scientists lose their credibility if they cross the line between science and policy or management. In natural resource management, however, the emerging model has scientists engaged in public decisions, actively involved, interpreting the scientific data and findings, and thus, finding themselves in a special position to advocate for specific management policies and alternatives. Wagner (1999) indicates that ecologists should avoid advocacy of public policy options. Scientists can help lay out the value implications and consequences of policy alternatives, but they should keep their environmental value judgments to themselves.

The traditional tools used by scientists for judging credibility in the scientific arena—conceptual models, quality of journals, and even data generated—are not strong factors for



managers, interest groups, or members of the public in determining a scientist's credibility (Lach et al. 2003). For these groups, a scientist's credibility appears to be based on his or her disciplinary reputation, on the practical nature of the research conducted, and on the experience and knowledge of place-specific sites. His or her credibility is the ability to deliver research results that managers and others can use, and to communicate with other groups. The scientific culture values publication and peer review; managers and the public value communication of research results, on-site trips, and demonstrations (Lach et al. 2003).

Being credible to all camps—other scientists, managers, the public, and others—requires different complementary emphases, integrated and balanced.

### **Teaching credibility**

How would we help employees understand credibility? How can we help them understand the elements of credibility, and the investments they need to make in these elements, and how to build credibility with different audiences?

Prior to curriculum development, the work group assessed how the competency—credibility—would manifest in “tasks” and what those tasks would look like when performed well. What does “credibility” look like? How do we build credibility in individuals, teams, collaborations, and organizations?

The authors assessed, analyzed, and discussed these tasks and “pictures” of credibility, and drew conclusions included in the Credibility Model (below). They also consolidated current guidance related to scientific integrity, including the code of conduct.

### **Building credibility**

Professional credibility is larger than scientific credibility, but certainly scientific credibility is core to performance in the natural resources job series.

For NPS natural resource professionals, their credibility will ultimately define them professionally. It will either give them great opportunities or limit their options. The National Park Service and other agencies need their natural resource professionals to be credible, because opportunities and options extend to these organizations as well.

Each of the authors knows examples of science professionals who were not at the top of the professional credibility scale. Yes, some of these were because of less-than-stellar science, but most were because of missed opportunities, lack of effort, or unawareness of the need to demonstrate certain things related to credibility. Some may not put in the effort to remain current in their science. Others may think anything other than their science is unimportant. As Alagona (2008) noted, some think knowledge should be enough to be seen as credible.

Things happen in the course of a career. Some things are planned, some are not. Some people are deliberate about their science and scholarship, and may or may not be deliberate on other matters that reflect upon their professional credibility, such as interactions with managers and the public. Building proficiency at something, and eventually becoming recognized as credible, can be happenstance or it can be planned out as part of a career, and diligently built, maintained, and protected.

Science professionals need to be active in their science community. That means being current, networking, publishing, getting and participating in peer review, knowing and abiding by the code of conduct, etc.

But there is more to professional credibility. The Credibility Model (Figure 1) and accompanying table (Table1) illustrate and discuss the various components/elements of credibility for natural resource professionals.

Most new natural resource professionals in the NPS (and other agencies) have an intuitive understanding of what may be required to build some level of credibility. However, knowing the elements of credibility and being more deliberate in building that credibility will aid them not only early in their career, but also as they plan for the next phase of their career, when their jobs will become more complex with more responsibilities.

A few points for consideration:

- Natural resource stewards may have a better chance of achieving credibility if they begin building a clear picture of how to remain current in their discipline, and also advance their science and scholarship as leaders and participants in a wide variety of professional activities, including how to collaborate in professional organizations and societies (G. Davis, personal communication 2012). Natural resource professionals will

**Figure 1.** The Credibility Model: Components of credibility for scientists and resource management professionals.



benefit from knowledge of how to be fully functioning members of professional communities, ranging from local associations, through regional and national societies, to international and honorary/elected academies (such as American Association for the Advancement of Science and National Academy of Sciences). Service to these societies is likely most effective if woven into career plans, not only to remain current, but to help

**Table 1.** The components of credibility and their attributes: scientists and resource management professionals.

Professional Credibility		
Components/	Attributes	Related Characteristics
Scientific Credibility	Adept at scientific method and follows scientific standards	Showing scientific and scholarly integrity including code of conduct
	Publications	Maintaining professional skills through publications
	Peer Review	Participating in peer review process
	Scientific networking, leadership and collaboration	Using networking and collaboration to amplify and extend personal and program capabilities
Expertise	Credentials	Knowledge/Expertise, arising from your college education and independent studies
	Certifications	Being recognized through a formal procedure by an accredited or authorized person or agency, as having the attributes, characteristics, understanding, experience, qualifications and/or status, to meet requirements or standards needed to conduct or carry out an activity
	Competence	Able to effectively, efficiently and/or successfully put those credentials and certifications to work, and be relied upon to do so.
Integrity	Consistency	Consistency of actions, values, behavior, measures, principles, expectations, outcomes. That consistency strengthens your reputation; inconsistency erodes it. Whom do you respect for their integrity? Why? Watch them under difficult circumstances and see what you can learn from them.
Trustworthiness	Trust	Your words are truthful. People believe what you have to say because it is coming from you.

them remain aware of credentials and collaborations needed to get there. If early in a career individuals have awareness that at some point in their career, they may be called upon to contribute as leaders in these professional communities (through planning and service), they will be prepared to do so.

- Natural resource professionals will benefit significantly if they have the knowledge, skills, and abilities to interact and communicate effectively with a variety of audiences, including managers, co-workers, and the public. Credibility is likely to grow if they interpret the results of their own work and explain science, scientific findings, applicability to management, and relevance to a site or place, and do so in a way that preserves their reputation for objectivity and adherence to appropriate scientific conduct. They also will benefit through a willingness to build and maintain a reputation for integrity and trustworthiness with these audiences.
- Natural resource professionals can best grow their careers if there is transparency and understanding of the career ladders arching to the highest levels in federal service, such as senior technical positions equivalent to senior executive service positions. There are myriad career opportunities for scientists and scholars, and those new to their careers need to know the opportunities, risks, and pathways. Opportunities to shoulder levels of responsibility, complexity, internal and external politics, and public visibility at future stages of a career can arise or disappear due simply to credibility.
- The process of building credibility requires analysis and reflection upon many things. The Career Field Academy for natural resources will emphasize including this analysis and reflection in career planning.

## Conclusions

Although this is often offered as a complex topic or an over-simplified one, the concepts of credibility are multifaceted and can be distilled down to some fundamental elements, for learning and practice.

If science professionals are deliberately aware of, plan for, and intentionally build around these components of credibility, they are likely to significantly increase their effectiveness in early career phases, and build a foundation for credibility in subsequent, more complex assignments. The ability to apply the components described above in combination with career ladder opportunities will aid in the development of professionals and their successes in being fully-functioning members of professional communities at local, regional, national and even international levels. A willingness to serve, and prepare themselves to lead when called upon, will be career-defining characteristics.

The NPS Career Field Academy for natural resources will emphasize components of the model (presented) in its training and development curriculum.

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- Jerry M. Mitchell**, 10846 Half Moon Pass, Littleton, CO 80127; [jmmcam03@hotmail.com](mailto:jmmcam03@hotmail.com)
- Christie Denzel Anastasia**, National Park Service, Denali National Park and Preserve, P.O. Box 9, Denali National Park, AK 99755; [christie\\_anastasia@nps.gov](mailto:christie_anastasia@nps.gov)
- Ben Bobowski**, Rocky Mountain National Park, 1000 Highway 36, Estes Park, CO 80517-8397; [ben\\_bobowski@nps.gov](mailto:ben_bobowski@nps.gov)
- Giselle Mora-Bourgeois**, National Park Service Center for Urban Ecology, 4598 MacArthur Boulevard NW, Washington, DC 20007; [giselle\\_mora-bourgeois@nps.gov](mailto:giselle_mora-bourgeois@nps.gov)

# Establishing the Science Foundation to Sustain High-elevation, Five-needle Pine Forests Threatened by Novel Interacting Stresses in Four Western National Parks

*A.W. Schoettle, J. Connor, J. Mack, P. Pineda Bovin, J. Beck, G.M. Baker, R.A. Sniezko, and K.S. Burns*

HIGH-ELEVATION, FIVE-NEEDLE WHITE PINES are among the most picturesque trees in many national parks as well as other federal, state, and private lands in western North America. These trees often live to a great age; the trees' gnarled trunks give testimony to fierce winds that buffet them on exposed rocky sites. Ancient limber pines (*Pinus flexilis*) in Rocky Mountain National Park occupy the edge of Trail Ridge Road, and a remarkable old giant stands sentinel on the shore of Lake Haiyaha. Limber pines accompany Rocky Mountain bristlecone pines (*P. aristata*) on the exposed ridges around Mosca, Medano, and Music passes in Great Sand Dunes National Park and Preserve and Great Basin bristlecone pines (*P. longaeva*) top Wheeler Peak and Mount Washington in Great Basin National Park. Whitebark pines (*P. albicaulis*) grace the rim of Crater Lake and slopes of Mount Scott in Crater Lake National Park. Although the species may occur in only small areas within a park, they are ecologically invaluable to landscape dynamics and biodiversity and are vital for watershed protection (Tomback and Achuff 2010).

Whitebark and limber pine are declining across many parts of their range in the United States and Canada because of invasion by the non-native pathogen *Cronartium ribicola* that causes the lethal disease white pine blister rust (WPBR) and because of outbreaks of native mountain pine beetles (*Dendroctonus ponderosae*), which are further exacerbated by fire exclusion and a changing climate (Keane and Schoettle 2011). These conditions have resulted in inadequate population size to sustain recovery processes in some whitebark pine ecosystems and has led to whitebark pine's endangered species status ("warranted but precluded") under the Endangered Species Act (US Fish and Wildlife Service 2011). Foxtail pine (*P. balfouriana*), southwestern white pine (*P. strobiformis*), Great Basin bristlecone pine, and Rocky Mountain bristlecone pine have not yet experienced the major declines observed in northern distributions of limber and whitebark pines, but they too are in imminent dan-

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ger from WPBR and beetles. Restoring declining populations and sustaining the remaining healthy populations present unique challenges for land managers.

In the early to mid-1900s, several parks, including Crater Lake and Rocky Mountain, participated in efforts to eradicate *Ribes* species, the alternate host to WPBR, in attempt to slow the pathogen's spread. The practice was later deemed ineffective and abandoned in the West, and the rust continues to invade forest ecosystems. A full spectrum of infection intensities and impacts to the white pines are displayed within the national park system. The northern parks, such as Glacier, Mount Rainier and North Cascades, closest to the point of accidental introduction of the pathogen, have been infected for more than 60 years and have the heaviest impacts. Only 5–10% of the whitebark pine trees in Glacier National Park remain alive today due to WPBR and bark beetles. More moderate impacts can be found in Crater Lake National Park, the Greater Yellowstone Ecosystem, and other mid-latitude parks and monuments. Further south, WPBR was confirmed in Great Sand Dunes National Park and Preserve in 2003 (Blodgett and Sullivan 2004) and Rocky Mountain National Park in 2010 (Schoettle et al. 2011). Though impacts by WPBR are currently low in Rocky Mountain National Park, mountain pine beetle has caused high mortality among the pines and recovery of the limber pine forests may be significantly impacted in the presence of WPBR (Field et al 2012). New infection centers are being found yearly in the Southern Rockies; it is clear that the pathogen is still spreading and is now a permanent resident of our landscapes.

### **Intervention in wilderness: A management challenge**

While not all national park lands are designated wilderness, there is agreement that the parks' backcountry is to be managed consistent with the wilderness philosophy. The Wilderness Act of 1964 provides guidance regarding intervention in wilderness areas. Central concepts in the act include the goals of restricting trammeling and preserving naturalness. Naturalness as a desired attribute of wilderness character implies both a lack of human impact (i.e., trammeling) and control (Cole and Yung 2010). Directional selective factors introduced by human activities, such as invasion by a lethal non-native disease such as WPBR, impacts the naturalness of a wilderness and challenges the concept of naturalness as a goal when it is likely that restricting trammeling (i.e., intervention) will not lead to recovery. In the face of impacts and threats such as WPBR and climate change, managers must decide between (1) increasing historical fidelity with intervention, (2) accepting change that will result from less intervention or control, and (3) transforming the ecosystem into a future state not true to the past but with greater resilience (Aplet and Cole 2010). Case-by-case analyses are needed to balance the maintenance of wilderness character with management for ecosystem health. As such, strategies to build the science foundation to provide site-based understanding of ecosystem conditions, processes, and trajectories under different intervention options (including the no action option) have been developed and are being implemented to assist managers in making informed decisions in a timely manner.

### **Building the science foundation to sustain and restore healthy ecosystems**

In this paper, we review the progress of Rocky Mountain, Great Basin, Great Sand Dunes, and Crater Lake national parks in building a science foundation to aid in the development

of conservation strategies for high-elevation, five-needle pine ecosystems (Table 1). Due to the current impacts or threat of impacts, each of these parks considers their five-needle pine species of conservation concern. The science provides an assessment of the ecosystems and reduces the uncertainty related to possible outcomes of interventions and consequences of inaction. Depending on the intensity of impact, efforts are focused on developing (1) restoration activities in declining landscapes (“restoration strategy”) and/or (2) proactive interventions in threatened ecosystems to mitigate future impacts (“proactive strategy”) (Keane and Schoettle 2011). Rocky Mountain, Great Basin, and Great Sand Dunes national parks are currently following the proactive strategy approach and Crater Lake National Park the restoration strategy approach. Restoration treatments can slow impacts and rebuild impacted populations and proactive interventions can help prepare the landscape for invasion to mitigate the severity of future impacts. These programs may also provide conservation areas or refugia for the pines. The goal of both approaches is to conserve the species and promote self-sustaining five-needle pine ecosystems in the presence of WPBR using available tools and methods that are compatible with land use designations. Interagency collaboration between the national park service and US Forest Service has facilitated the progress of these programs in each park.

Sustaining population resilience requires maintenance of recovery capacity after disturbance and genetic diversity to support adaptive capacity over time. Therefore, conservation approaches must consider a long-term and evolutionary perspective and adaptation to climate change (Schoettle et al. 2012). Tree longevity is not enough for multigenerational sustainability; sustainability depends on an intact regeneration cycle and, in the presence of WPBR, increased disease resistance to support recovery capacity. These conservation programs include in situ and ex situ genetic conservation, evaluating parent trees for genetic resistance to WPBR, pine regeneration dynamics, planting trials, and monitoring forest health stressors. These programs provide a science foundation from which conservation plans are currently being drafted for Crater Lake National Park (Beck and Holm 2013) and Rocky

**Table 1.** Status of white pine blister rust in the four western National Parks discussed in this paper. RM bristlecone pine refers to Rocky Mountain bristlecone pine; GB bristlecone pine to Great Basin bristlecone pine.

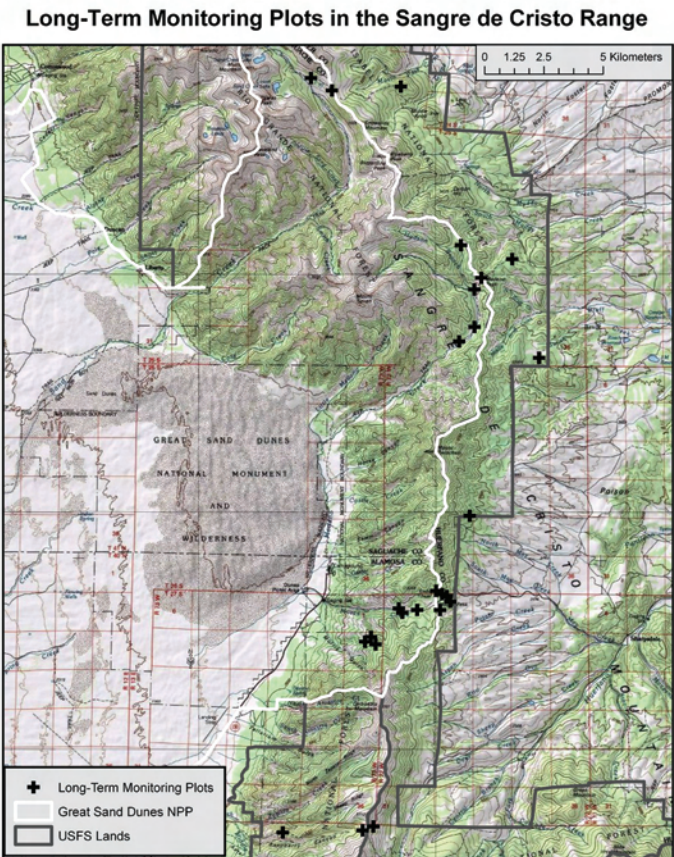
National Park	Species	WPBR first confirmed	Current WPBR incidence	Active program initiated
Great Sand Dunes	Limber pine	2003	13%	2004
	RM bristlecone pine	2003	localized	
Rocky Mountain	Limber pine	2010	0% (eradicated?)	2008
Great Basin	GB bristlecone pine	—	0%	2011
	Limber pine	—	0%	
Crater Lake	Whitebark pine	1941	25% widespread	2003

Mountain National Park. They provide knowledge pertinent to the greater geographic areas and contribute to knowledge on the pines, WPBR, and disturbance dynamics in these mountain ecosystems.

**Sampling framework**

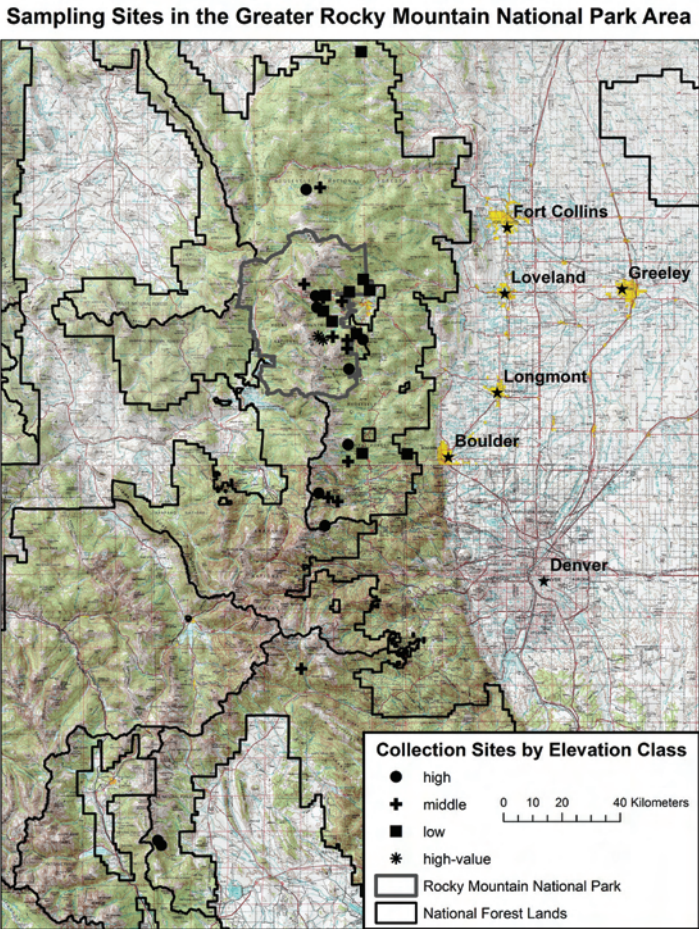
Each of the four parks discussed here has established a different sampling design for their high-elevation pine programs. Crater Lake National Park initiated WPBR incidence assessments in 2000 and 2002 by establishing 24 transects in whitebark pine stands (Murray and Rasmussen 2003); additional transects and plots have been added to the network recently (Smith et al. 2011; McKinney et al. 2012). At Great Sand Dunes National Park and Preserve, 28 long-term monitoring plots were installed in 2004 radiating out from the initial WPBR infection center (Figure 1; Burns 2006). In 2008, Rocky Mountain National Park and the US

**Figure 1.** Location of long-term monitoring plots in and around Great Sand Dunes National Park and Preserve (adapted from Burns 2006). The plots were first installed in 2004 and remeasured in 2012 and 2013. Plots include Rocky Mountain bristlecone and limber pine trees; seed collections of both species have been made in the Mosca Pass area.



Forest Service established 17 limber pine sites in the park and 10 sites outside the park to serve as the sampling framework for the limber pine conservation project (Figure 2; Schoettle et al. 2011). This cross-boundary network of sites (populations) was stratified by elevation to capture the full breadth of limber pine habitats in the greater geographic area. In addition, long-term monitoring plots were installed in 10 of the 17 sites within the park in 2013. Great Basin National Park established three areas of concentration in 2011 and further sampling is planned.

**Figure 2.** Network of limber pine sites in (17 sites and 2 high-value tree sites) and around (10 sites) Rocky Mountain National Park that serve as the sampling framework for the limber pine conservation program (adapted from Schoettle et al. 2011). The sites were selected to represent the diversity of limber pine habitats in the park. The sites are stratified by elevation; the mean elevation of low, moderate, and high elevation sites is 2740 m, 3080 m, and 3320 m, respectively (full elevation range of the sites is 2450–3430 m). Seed collections, forest health and regeneration assessments, and verbenone deployment have been the focus in these limber pine populations. In 2013, long-term monitoring plots were installed in 10 of the sites within the park.





**Ex situ genetic conservation**

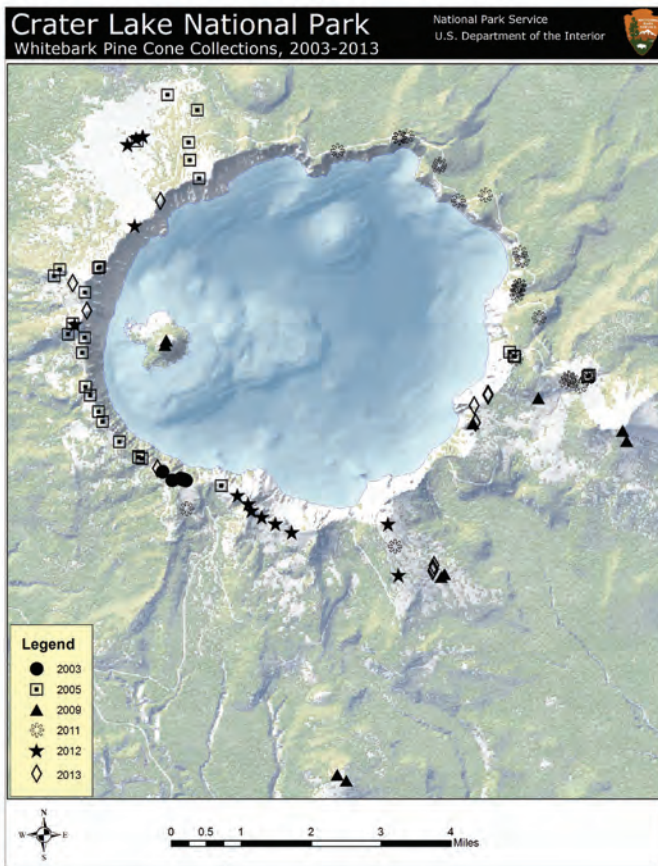
Across these four parks, extensive seed collections are now archived and comprise some of the first gene conservation collections for the parks (Table 2). These collections provide insurance against impacts of climate change, seed material for testing progeny of parent trees for resistance to WPBR, and baseline materials for genetic studies to detect changes in diversity in the future. Initial whitebark pine seed collections in Crater Lake National Park were obtained from healthy trees in stands heavily impacted by WPBR for resistance testing, an approach utilized in tree improvement programs for the commercial white pine species, and more recently has expanded throughout the park’s whitebark pine distribution (Figure 3). Similarly, Rocky Mountain bristlecone and limber pine individual-tree seed collections in Great Sand Dunes National Park and Preserve are concentrated near the WPBR infection areas and not directly associated with the plot networks. A sampling approach more typical for conservation programs has been adopted by Rocky Mountain and Great Basin national parks, where WPBR is thought to be currently absent. Individual-tree seed collections and a bulked seed collection have been collected from each of the 27 limber pine populations in and around Rocky Mountain National Park (Figure 2). Seed collections of Great Basin bristlecone pine began in 2011 in Great Basin National Park and more extensive collections are planned park-wide for both Great Basin bristlecone and limber pine.

**In situ protection and conservation**

Active protection of seed trees from mountain pine beetle and fire, when feasible, is ongoing.

**Table 2.** The number of individual-tree and bulked seed collections made to date from five-needle pine species in each of the four parks, the number of seed lots currently in WPBR resistance testing at the USFS Dorena Genetic Resource Center (Cottage Grove, OR) and, for those tests that are completed, the number of individual-tree seed lots that demonstrated signs of WPBR resistance is reported in parentheses (number with resistance/number tested). The seed collections are also archived for ex situ conservation. Rocky Mountain bristlecone pine from other locations in Colorado have shown evidence for genetic resistance to WPBR, yet no lots from within Great Sand Dunes National Park and Preserve have been tested. This table does not differentiate among the types of resistance found yet it is accepted that populations with greater diversity of resistance mechanisms will be the most resilient. In most cases, additional testing is needed to comprehensively quantify the diversity of WPBR resistance types present in each species and park. “RM bristlecone pine” refers to Rocky Mountain bristlecone pine; “GB bristlecone pine” to Great Basin bristlecone pine.

National Park	Species	Individual-tree seed collections	Seed lots in WPBR resistance testing	Resistance found?
Great Sand Dunes	Limber pine	39	23	Yes (6/23)
	RM bristlecone pine	13	(0 from park)	(Yes)
Rocky Mountain	Limber pine	213 + 44 bulk	124 + 16 bulk	Yes (18/87)
Great Basin	GB bristlecone pine	9 + 1 bulk	9 + 1 bulk	In process
	Limber pine	Planned	Planned	Planned
Crater Lake	Whitebark pine	101	70	Yes (16/35)



**Figure 3.** Whitebark pine seed tree locations in Crater Lake National Park by seed collection year.

These trees are an important component of the long-term conservation strategy. When progeny tests from these trees indicate that the seed tree has heritable resistance to WPBR, additional seed collections are made to build seed stocks for planting or seeding. In Crater Lake National Park in recent years, mountain pine beetle has surpassed WPBR as the primary mortality agent of whitebark pine and has killed several seed trees with genetic resistance to WPBR; mountain pine beetle has likewise caused extensive mortality of limber pine in Rocky Mountain National Park. In these parks and Great Basin National Park, an anti-aggregation pheromone (verbenone) is used to repel mountain pine beetle and provide in situ protection of the seed trees from which seed collections have been and continue to be made. Additional mature limber pine trees are also protected from mountain pine beetle in Rocky Mountain National Park to help support natural regeneration as well as several limber pine trees that are of high value to park visitors. The seed trees in both Rocky Mountain and Crater Lake national parks are listed as resources at risk for potential protection from wildfire. Mountain pine beetle activity is low in Great Sand Dunes National Park and Preserve, so in situ protection of the seed trees has not been necessary thus far.



## **WPBR resistance trials**

Reducing the effect of disease on survival and fecundity by increasing heritable disease resistance is essential to sustaining impacted pine populations. WPBR resistance testing is a progeny test requiring artificial inoculation of pine seedlings with *C. ribicola* in a nursery setting followed by disease assessments. The testing process can take two to seven years, depending on the resistance mechanism being investigated. Several testing centers administered by the US Forest Service operate in the western United States (Snieszko et al. 2011); the testing of the plant material from these parks is being conducted at Dorena Genetic Resource Center (Cottage Grove, Oregon). Past studies revealed disease resistance in each North American five-needle pine species and the current studies demonstrate an encouraging frequency of genetic resistance within the national parks (Table 2).

Because the seed sources from Rocky Mountain National Park and Great Basin National Park were sampled without bias toward disease-free trees in the field (in areas with no WPBR present), these resistance trials provide estimates of the baseline frequencies of resistance in the native pine populations. These frequencies and their geographic distributions provide valuable information for designing, prioritizing, and evaluating management options (Schoettle et al. 2013). Healthy populations in which resistance is present at moderate frequency can be (1) seed sources for outplanting in similar habitats with less resistance and (2) managed to facilitate rust resistance selection and therefore accelerate the evolution of resistance throughout the population once WPBR invades (Schoettle and Snieszko 2007). A common garden study for limber pine was also conducted for Rocky Mountain National Park seed sources to identify genetic differentiation among populations and guide seed transfer decisions should outplanting or assisted migration be recommended.

## **Planting trials and natural regeneration dynamics**

In populations with few or no WPBR-resistant parent trees, planting or direct-seeding resistant stock may be needed to sustain the community. In addition, planting may be recommended to increase the population size, if natural regeneration is sparse. Planting studies help define the techniques for high seedling survival and can verify field expression of rust resistance identified in the WPBR resistance trials. Crater Lake National Park has installed four whitebark pine restoration plantings since 2009 (total of 939 seedlings). Survival has been over 77% so far and as high as 90% for one trial four years after planting. Limber pine plantings at Great Sand Dunes National Park and Preserve have also demonstrated over 70% survival four years after planting (Casper et al., in preparation). These and other trials suggest that planting can be successful and feasible in these high-elevation habitats. Thus far, planting in Crater Lake and Great Sand Dunes national parks has been outside of designated or proposed wilderness. Planting WPBR-resistant seedlings may be acceptable within some wildernesses after following the proper National Environmental Policy Act (NEPA) process, as it has been practiced with whitebark pine in Glacier National Park for the past 10 years and is being considered on national forest wilderness lands in the Pacific Northwest. Rocky Mountain National Park is 95% wilderness and a strategic plan being developed will help in deciding appropriate actions for both inside and outside wilderness.

For the high-elevation, five-needle pines, generation time is very long and seedling estab-

lishment after disturbance is protracted. These species are tolerant of stresses under which they have evolved, but are not well equipped, without additional regeneration opportunities, for rapid adaptation to novel stresses such as WPBR in a changing climate (Field et al. 2012). A study three decades after the stand-replacing Ouzel Fire of 1978 revealed high regeneration capacity of limber pine in Rocky Mountain National Park (Coop and Schoettle 2009); geographic variation in regeneration among the limber pine study sites in and around Rocky Mountain National Park will add further information. At Great Sand Dunes National Park and Preserve, seedling densities of limber pine and Rocky Mountain bristlecone pine are being assessed through repeat measurement of the established plot network.

### Integration and application

Building a timely, solid science foundation assists in the careful consideration of the consistency of interventions, and consequences of no interventions, with park and wilderness policies and values as the ecosystems are challenged by non-native diseases or other factors. This knowledge reduces the uncertainty in projecting outcomes of interventions or inactivity to improve trade-off analyses as managers assess their options; it can also feed into economic analyses as well (Bond et al. 2011). Under wilderness conditions where the impacts of inadvertent human trampling through WPBR introduction and climate change may be grave, the concept of maintaining naturalness may not provide sufficient guidance for wilderness management. A shift toward another concept may be needed; perhaps one that focuses on maintaining diversity to support natural processes of continued evolution. Through productive interagency collaborations and partnerships, each of these parks is using science to responsibly and creatively conserve and manage their resource for increased resilience to these novel interacting stresses.

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- A.W. Schoettle**, US Department of Agriculture–Forest Service, Rocky Mountain Research Station, 240 West Prospect Road, Fort Collins, CO 80526; [aschoettle@fs.fed.us](mailto:aschoettle@fs.fed.us)
- J. Connor**, Rocky Mountain National Park (retired), 1000 Highway 36, Estes Park, CO 80517
- J. Mack**, Rocky Mountain National Park, 1000 Highway 36, Estes Park, CO 80517; [John\\_Mack@nps.gov](mailto:John_Mack@nps.gov)
- P. Pineda Bovin**, Great Sand Dunes National Park and Preserve, 11500 State Highway 150, Mosca, Colorado 81146; [Phyllis\\_Bovin@nps.gov](mailto:Phyllis_Bovin@nps.gov)
- J. Beck**, Crater Lake National Park, P.O. Box 7, Crater Lake, OR 97604; [Jen\\_Beck@nps.gov](mailto:Jen_Beck@nps.gov)
- G.M. Baker**, Great Basin National Park, Baker, NV 89311; [Gretchen\\_Baker@nps.gov](mailto:Gretchen_Baker@nps.gov)
- R.A. Snieszko**, US Department of Agriculture–Forest Service, Dorena Genetic Resource Center, 34963 Shoreview Road, Cottage Grove, OR 97424; [rsnieszko@fs.fed.us](mailto:rsnieszko@fs.fed.us)
- K.S. Burns**, US Department of Agriculture–Forest Service, Forest Health Protection, 740 Simms St., Golden, CO 80401; [ksburns@fs.fed.us](mailto:ksburns@fs.fed.us)

## Two More Views on the Future of Wolves at Isle Royale National Park

### Island Complications: Should We Retain Wolves on Isle Royale?

*Tim Cochrane*

#### The “natural” assumption

Most people who are familiar at all with Isle Royale assume that the national park’s famous populations of wolves and moose are “natural” residents of the archipelago. Thus, the impending decision of what to do if wolves became extirpated on Isle Royale seems to be an easy managerial one: replacement wolves should be brought in. But a historical view of major mammals on Isle Royale in the last hundred years reveals a much more complicated situation.

The first major published study on the wolves and moose of Isle Royale, L. David Mech’s *The Wolves of Isle Royale*, makes this very point. In a summary table of the “History of Isle Royale Mammals,” Mech makes an astounding observation: namely, that all the large mammals on Isle Royale have changed in the 20th century. Coyotes and lynx have gone and wolves appeared. Woodland caribou were extirpated and moose arrived and have become the dominant herbivore. Red fox arrived circa 1925. Otter were missing for much of the 20th century but now are quite common.<sup>1</sup> And a little earlier, in the late 1800s, beaver were nearly extirpated.<sup>2</sup> This radical composition turnover may be an effect of island biogeography. One primary indication of island biogeography is that the island(s) being studied have only a subset of the animals and plants found on the nearest mainland. Island biogeography also routinely maps species turnover on islands, as species “wink out” and different ones “wink in.”<sup>3</sup> But also quite often a species winks out and then recolonizes on its own, as happened with otter and beaver at Isle Royale.

This fact of potential periodic and extensive change needs to be built into any discussions of augmenting wolf numbers in the near term. We need to acknowledge the possibility that the winking out of wolves on Isle Royale might be a natural phenomenon of island biogeography. But unfortunately, our yardstick for making such decisions is compromised: what appears to be the natural island fauna in the 20th century is actually a chimera, greatly altered by human actions.

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A recent article in *The George Wright Forum*, “Should Isle Royale Wolves be Reintroduced? A Case Study on Wilderness Management in a Changing World,” argues, among its conclusions, that long-term predator-prey studies are rare and invaluable. I agree. But to continue with this line of thought, I’d like to add further time depth, and in some cases comparative context, to the question of potentially supplementing wolves at Isle Royale. I wish to add historical context, because the history of moose and wolf presence on Isle Royale is more complex than the recent *George Wright Forum* article had space to articulate and consider. Further, discussion of the reintroduction question often ignores or downplays select facts in favor of a more compelling argument. What is needed, I believe, is a concerted effort to put pertinent facts on the table because the situation is complicated and thus all perspectives must be considered to reach the best possible decision.<sup>4</sup> As one of the article’s co-authors, Michael Nelson, suggested to me in an email, such a decision should also include experts in what these animals mean to the American public or those who best understand biological symbolism.<sup>5</sup>

### **How did moose and wolves get to Isle Royale?**

That moose and wolves made it to Isle Royale by their own agency is the bedrock of the prevailing narrative that considers their presence in the national park to be natural. For moose, it is thought that they arrived by swimming across the relatively narrow portion of Lake Superior that separates Isle Royale from northern Minnesota and Ontario. There is, however, an alternative scenario of how moose may have arrived on Isle Royale. It was documented by a Minnesota Department of Natural Resources biologist, Bill Peterson, who worked in Grand Marais on Minnesota’s North Shore, not far from Isle Royale. In a 1998 article he wrote:

In the early 1950’s, Dr. [Lyman B.] Clay<sup>6</sup> stopped at a gas station in Mafeking, Manitoba.... An elderly man, perhaps in his 70’s, noticed Dr. Clay was from Minnesota and asked him how the moose were doing on Isle Royale. Dr. Clay informed him there were many moose on the island and they were doing well. The old man then related that he had lived in Minnesota when he was young and in about 1907 (perhaps 1905) he had been hired by the state of Michigan to work that winter with a crew live trapping moose near Baudette, MN. They captured either 11 or 13 moose but, in late winter, he became ill and was unable to accompany the others as they hauled the moose to Two Harbors, MN, where they were loaded onto barges and taken to Isle Royale.<sup>7</sup>

Peterson then described how the potential newspapers that might have substantiated this are unavailable, that this story seems somewhat far-fetched to him, and then questions why moose would be trapped from as far away as Baudette, Minnesota, which lies near the Manitoba border? As someone trained to evaluate oral history and narratives, I think there are elements to this story that give it credibility (namely its specificity of place and activity).<sup>8</sup> There is also the possibility that this story is only partially correct: the entity at that time with the money and interest to make this happen was not the state of Michigan, but rather the Washington Harbor Club, a private club with some of the most well-to-do Duluth businessmen of the day. The club owned various buildings on the southwest end of Isle Royale



near where the national park's Windigo facilities are today. The club members also owned railroads that ran from Baudette to Duluth and Two Harbors, and so had the physical means to transport moose by railcar to Two Harbors.

This alternative story—that a small number of moose were put in pens on a fish tug at Two Harbors in 1905 or 1907 and then freighted over—provides a more practical explanation for the population explosion of moose, whose herd numbered more than 3,000 by the early 1930s, than does the prevailing narrative.<sup>9</sup> Further, this explanation does not depend on the exceptional event of a male and female moose swimming miles to a grey mass on the horizon (Isle Royale) that they might not be able to smell in the wave troughs of Lake Superior seas.

For wolves, the prevailing narrative holds that the founding population crossed an ice bridge from northern Minnesota or Ontario sometime between 1948 and 1950. Then, in 1952, four wolves were brought to Isle Royale from the Detroit Zoo by an earnest wolf advocate named Lee Smits. The results of this purposeful re-introduction have long been assumed to have failed, that is, none of the four bred with the wild wolves and contributed to

**Figure 1.** This 1930s photograph of moose trapping at Siskiwit Bay, Isle Royale, for shipment to the Upper Peninsula demonstrates how moose were live-trapped in crates. The photograph illustrates how moose could have been trapped for shipment to Isle Royale two decades earlier. While there are a series of photographs of the 1930s moose trapping and transporting moose across Lake Superior to the mainland, there are no known photographs or newspaper articles of the purported moose shipments to Isle Royale ca. 1910. Courtesy of Isle Royale National Park historic photo collection.



the genetic make-up of Isle Royale's current wolf population. However, to date the genetic research is inconclusive and we can only definitively say that the wolf population "was originally founded by only one female and two males."<sup>10</sup> Earlier mitochondrial DNA (mtDNA) research also suggests the wolves "descended from a single founding female" and that there is the "presence of a rare genotype in Isle Royale wolves."<sup>11</sup> The genetic founding question remains unanswered and thus leaves open the door for alternative interpretations. Could the founding female have been a wolf from the area of Ontario around Lake Nipigon having a mtDNA haplotype that was thought to be rare in 1990, when the first genetic studies were done?<sup>12</sup> Or could the founder have been one of the Detroit Zoo wolves, a female nicknamed "Queenie"? Moreover, could another of the zoo wolves, a male called "Big Jim," have survived long enough to interbreed?<sup>13</sup>

The possibility of the potential genetic role of Big Jim or Queenie has not been part of the public discourse on whether wolves should be re-introduced or their current low numbers augmented. Instead, recent news has highlighted the 1997 arrival of a male immigrant, nicknamed the "Old Gray Guy," who had an important impact on wolf genetics on the island.<sup>14</sup> What is implicit in the stories about the Old Gray Guy is that his immigration was a natural phenomenon. This fits the prevailing narrative and is virtually the opposite of the implicit message about Queenie and Big Jim, which is that their presence was unnatural and therefore inappropriate in a national park. If more widely known, the possible role these zoo wolves may have had in founding the Isle Royale wolf population would be a counterpoint to the naturalness story into which the Old Grey Guy so nicely fits. Those of us in the National Park Service (NPS) who have told the natural migration story of wolves to countless park visitors should heed this counterevidence and pause a moment. It appears these storytellers, including myself, have a bias towards a natural immigration storyline for wolves and moose. Could it be that virtually all of us—biologists and park rangers alike—told this story to the public hundreds of times because we wanted there to be an absolutely natural start to the wolf population on Isle Royale? That it simply fits how we wanted the story to go?

As an aside, there was and is a counter-story in play among a small group of island residents. A number of Isle Royale commercial fishermen have long maintained that the Detroit Zoo wolves did contribute to the make-up of the Isle Royale wolf population, but their story was dismissed by academically trained biologists.<sup>15</sup>

If it seems a long shot that one or both of the zoo wolves could have contributed to the genetics of Isle Royale wolves, so too is the prospect of a male and female both crossing over from the mainland, as the prevailing narrative claims. Not only is there no evidence of it ever occurring prior to the putative crossing in the 1948–1950 period, wolf dispersals more commonly consist of an individual, not a pair or a whole pack. Dispersing wolves tend to be young, on average between one and two years old, and male and females tend to disperse at roughly the same rates. However, there is some new evidence to suggest male and female wolves disperse differently, that is, females favoring "more forest cover" and routes with lower risk. If these points are reliable, then the most likely immigrant to Isle Royale would be a young male.<sup>16</sup> In a nutshell, either wolf establishment scenario (or some combination thereof) is extraordinary.

## Why didn't moose and wolves arrive earlier?

One trope in the published history of moose–wolf research is a persistent warning about the two species' threatened existence on Isle Royale. In one of the first official reports of moose–wolf interactions on the island came the comment: "They [moose] cannot survive long without assistance."<sup>17</sup> There have been similar such warnings about wolves because of inbreeding (genetic depression) or invasive disease (canine parvovirus). Most recently, it is suggested that climate change is or will be the primary issue for moose health and the reason why future wolf immigration over Lake Superior ice to the park will become either exceedingly rare or impossible. The evidence of the latter is very convincing, especially for someone like me who can view Isle Royale daily from his office and see whether an ice bridge has formed (and is surviving pressure changes, lake currents, and winds). Today, ice rarely stretches beyond the protected confines of Grand Portage Bay and does not come close to extending all the way to Isle Royale.

But my main point is to reverse the question. If today there are far fewer ice bridges to the mainland on which wolves can immigrate to Isle Royale, why, then, wasn't there an earlier immigration to Isle Royale when ice bridges were more common? In 1875, for example, the ice was so thick that a team of draft horses were driven over the ice from Silver Islet (outside of present-day Thunder Bay, Ontario) to McCargoe Cove on the north side of Isle Royale.<sup>18</sup> If ice bridges were more frequent and lasted longer in prior centuries, then why don't moose or wolf bones show up in the middens of the ancients who worked the native copper mines thousands of years ago or in Ojibwe encampments from a couple of centuries ago?<sup>19</sup>

Why didn't moose and wolves appear on Isle Royale during the historic period? Fortunately, we have a few pertinent documents that throw some light on mainland conditions that may have impacted migration of mammals to Isle Royale. These conditions are primarily anthropogenic. If this is correct, we need to shift the presumption about the naturalness of wolves and moose arriving on Isle Royale to, at minimum, that of a narrative about unintended consequences of human actions on a regional scale. Or recasting these topics, climate change is but an acceleration of anthropogenic unnaturalness that predates the arrival of moose and wolves on Isle Royale.

So, why hadn't moose and wolves made it to Isle Royale prior to circa 1905 and circa 1950, respectively? For moose, a male *and* female must swim the 12–25 miles across Lake Superior, either together or one soon after the other. A wolf (or a pair of them) crossing on ice seems comparatively much more possible and requires less of an effort. And the ice bridge was at times "substantial": for example, in the 1870s regular mail service by dog team went over the ice from Grand Portage to Island Mine, Isle Royale.<sup>20</sup>

A reasonable explanation of why moose and wolves are relatively late migrants to Isle Royale is that their numbers on the nearby mainland were comparatively low. Hunting of big game, first by fur traders and then by Ojibwe men to stave off hunger after the golden years of the fur trade were over, depressed moose numbers in the region. A noted ethnohistorian, Charles A. Bishop, writing of the area west and northwest of Lake Nipigon, said that "prior to 1800, both furs and game were plentiful and Indians could obtain enough pelts to supply their trade needs with ease.... By the 1820's moose had been totally exterminated, while

caribou had grown extremely rare.... Except for one stray moose seen in 1833 this is the last mention of a moose killed in the Albany District until 1893.”<sup>21</sup> The lack of moose in the Lac Seul District was paralleled with the dearth of moose at Fort William in Thunder Bay, immediately north of Isle Royale.<sup>22</sup>

So for a number of decades during the 1800s there were few moose immediately north of Isle Royale available to immigrate to the island—clearly a human-caused consequence. It is interesting to note that while woodland caribou were also regionally scarce, a small population lived on Isle Royale during the 1800s, as Ojibwe hunters would go there to hunt them.<sup>23</sup>

However, with the arrival of logging great change came to the region, resulting in a reversal in numbers of moose and others species. From 1870 to 1910, the Lake Superior region-wide cutting of white and red pine, and the subsequent dramatic ecological change brought about by the logging, initially favored herbivores such as moose (and, today, white-tail deer).<sup>24</sup> The cutting of the pines changed the forest composition so that aspen and birch increased, and forest fires in the cutover areas became more frequent, all of which are favorable to herbivores. The end of the era of old-growth cutting, increasingly effective game laws, increased numbers of moose in the region, and the appearance of moose on Isle Royale all coincide.<sup>25</sup>

The increase in herbivores also meant an increase in prey species in the region, giving wolves more to eat; thus their numbers should have increased. The likelihood of wolves dispersing to Isle Royale over an ice bridge should also have risen dramatically, except for the effects of wolf trapping in Ontario. A driving force in trapping was the relatively high price of pelts in Ontario in the 1920s and 1930s.<sup>26</sup> The important trend to note is that from 1925 to 1940 an average of 2,990 wolves were harvested annually in Ontario. After that, with the onset of World War II and Canadian men’s participation in the war effort, no wolves were trapped and their numbers must have rebounded significantly. Eight or ten years after the cessation of wolf trapping in Ontario, the first wolves are observed on Isle Royale. While this evidence is certainly circumstantial, there appears to be a temporal coincidence between price of wolf pelts, the absence of trapping in Ontario, a likely shortage of Ontario trappers during World War II, and the appearance of wolves on Isle Royale.

**Figure 2.** Coyote pelts at a Chippewa Harbor fishery in 1926, prior to the establishment of the park. Occasionally fishermen would overwinter on Isle Royale and their trapping results could range from the very successful (as in this photograph) to the meager. Courtesy of Isle Royale National Park historic photo collection.





## Should we intervene?

If all this is true, then it is a succession of human actions—inadvertent intervention to be sure—that has had a direct role in wolves “naturally” appearing on Isle Royale. But even if moose and wolves had arrived on Isle Royale as a very direct consequence of human action, does that change the question of whether we should intervene to maintain the wolf population in the national park? For comparison, neither wolves nor moose are present on Michipicoten Island, an archipelago in northeastern Lake Superior that is similar in distance from the mainland as is Isle Royale.<sup>27</sup> Due north of Isle Royale and much closer to the mainland, wolves made it to the Slate Islands, hunted woodland caribou, and then left in the 1990s. Could the arrival of moose and wolves on Isle Royale be more an aberration than an inevitable event?

Furthermore, if recent immigrants to the park were aided directly or indirectly by human actions, does that make them “exotic species” as defined by NPS management policies? NPS defines exotic species as those “that occupy or could occupy park lands directly or indirectly as the result of deliberate or accidental human activities....”<sup>28</sup> The newly crafted resource management recommendation for the NPS, *Revisiting Leopold: Resource Stewardship in the National Parks*, is written, in part, as a policy response to the array of environmental changes such as climate change that are confronting national parks. The report calls for an expanded scientific capacity to guide resource management “to steward NPS resources for continuous change that is not yet fully understood, in order to preserve ecological integrity....” Wolves are clearly native to the region, but perhaps not to Isle Royale. Might their indigeneness to the region and their place in the ecological process in the region outweigh their potential non-native history on Isle Royale? Because wolves are part of a “largely self-sustaining and self-regulating” Isle Royale ecosystem, should we overlook their questionable “natural” tenure? If so, we should at least make this decision transparently.

Intervention can be an important tool to maintain a park’s ecological resiliency. But “intervention” as a concept exists on a continuum of human actions that range from unintended consequences (wolf trapping on Ontario) to intervention (radio collaring of wolves and moose on Isle Royale, closures of zones to protect denning areas, closure of the park to dogs and cats) to intentional manipulation (the introduction of the Detroit Zoo wolves).

A historical view of Isle Royale’s mammalian history suggests there are both known and likely unknown limits to species persistence through time. It is likely that many animal species’ tenure on the island is episodic, ranging from a single colonizations of short duration to persistence lasting decades. It may not always be anthropogenic forces that result in a species winking out or another winking in; an example is the episodic presence of sharptail grouse at Isle Royale. A historical view of the relatively short and possibly atypical residence of wolves suggests the proposed reintroduction could become a recurring need to sustain the health and persistence of the population. Do we want to reintroduce wolves to Isle Royale National Park every 50 or so years?

To further explore how much intervention is appropriate, it’s useful to turn to a long-used Isle Royale metaphor, namely, that the national park is an “outdoor laboratory.”<sup>29</sup> Vucetich et al. are proposing a level of intervention for wolves which bespeaks of the park as more of a laboratory. If intervention is too frequent, then Isle Royale stops having the feel of an

outdoor laboratory, and its wilderness character is diminished to boot. Periodic interventions would run counter to one component of the Wilderness Act, namely, that “the imprint of man’s work” must be “substantially unnoticeable.” But Isle Royale has not been unimpacted for quite some time. Regional, national, and global impacts have greatly altered the naturalness of the Isle Royale lands and waters, even if the results are sometimes hard to see.

### **Authenticity and integrity**

Two concepts informing and providing some guidance to the prospect of intervention are the ideas of “authenticity” and “integrity.” Both concepts are used widely in cultural resources discussions and “cultural and historical authenticity” is a goal articulated in the *Revisiting Leopold* report.<sup>30</sup> If an ecosystem has integrity or authenticity, then you don’t intervene. If the system is thought to have lost integrity, then intervention makes more sense. Vucetich et al. define wolves and moose as a necessary part of ecosystem health of Isle Royale. But are ecosystem health and biological integrity the same, or are the differences substantial enough that they matter? To be more specific, could a genetically renewed wolf population contribute to ecosystem health but be contrary to the biological integrity of the park? Further, ecosystem health or functioning must be viewed through the lens of the nature of a distant and modest-sized archipelago. Getting to, and the ability to persist on, Isle Royale is a quintessential condition of life on the island; or, restated, it has always functioned differently than a mainland ecosystem. To do a good job of intervening, we must be crystal clear about what are goals and then approach them with humility and caution, as unintended consequences are highly probable.

The backdrop condition on Isle Royale is that it has become harder to find monetary support for the moose–wolf research. Financial support for the study competes with other biological topics and within a limited park budget and staffing scenario. Thus it is important to place the potential of further renewed moose–wolf research in the context of other research needs.

While the wolf–moose study is the first among equals in length, breadth of conclusions and applications, world renown, productivity, etc., other scientific efforts are important, necessary, and ongoing. It is important to acknowledge that the moose–wolf study has provided Isle Royale National Park with a cachet and reputation that it would not otherwise have. And it is important to acknowledge that the park has, largely because of the wolf–moose study, a long-standing tradition of top-tier scientific endeavor. But is that research as important, or more important, than having an authentic mammalian composition?

Any wolf reintroduction decision should ideally be informed by a determination of whether Queenie or Big Jim had a founding effect among Isle Royale’s wolf population. And the origin of moose on Isle Royale should play a part in such a consideration. If purposeful introduction of moose and wolves is the origin of these species in the national park, then it’s hard to argue that the default species should be moose and wolves, despite the remarkable science that has been done or the very public celebration of these animals as Isle Royale icons.<sup>31</sup> On the other hand, can the important and path-breaking science—based on moose and wolves—outweigh some of the “complications?” Can the long-term data generated from studying moose and wolves have a value above and beyond the restricted indigenosity of



these animals on Isle Royale? Do we acknowledge that “what’s done is done,” and make the best of the present resident animals as if it were natural? And yet once “rescued,” the wolf population will always be viewed with an “asterisk” or as an “altered data set.” Or are the data generated from monitoring the winking out of wolves (and moose?) on Isle Royale as or more important than continuing the scientific status quo through wolf genetic intervention?

Most of the limited number of mammals residing in Isle Royale National Park today have run a gauntlet of more than 200 years of sweeping anthropogenic forces. Out of this choppy history it’s difficult to conclude what is “natural.” But it is the unchanging geographic situation of Isle Royale, its remoteness in Lake Superior, that has been and should continue to be the primary determining fact in the national park’s management. Its character and integrity as a remote archipelago must be acknowledged and heeded. To supersede the insular character of Isle Royale by reintroducing wolves is arguably toying with its biological and historical authenticity—and, perhaps, with the most fundamental biological-given of island life, which is the screening Lake Superior has done through the millennia of which animals and plants make it there.

## Conclusion

What needs to be done is to put all the relevant facts and reasonable options on the table for all to consider. Regularly scheduled biological interventions or “rescues” seem unreasonable to me and violate “island rules” of the difficulty of getting and staying there. There clearly need to be some limits and rules made for any future interventions. Accelerating climate change compounds the decision of what large mammals might last on Isle Royale, not to mention whether they might cross the waters. Further impacting any acceptable decision is that today’s visitors to Isle Royale want it to be a remarkable, geographical wonderment, which is nicely reinforced through the presence of charismatic large mammals—moose and wolves.<sup>32</sup>

Are there other reasonable options in response to the extirpation of wolves? Could a wolf-less Isle Royale National Park be “exchanged” for one in which lynx is a major predator? Working on a nearby reservation with Ojibwe who have treaty rights on Isle Royale, I hear the question asked, “Why can’t I hunt Isle Royale moose?” Could this be a means to manage moose numbers if wolves are extirpated?<sup>33</sup> In the broadest and most informed forums, the National Park Service needs to define what is an acceptable intervention. Do we agree that we should, as a goal, manage the park as close to once-natural conditions as is possible? Does this include indirect and direct intervention? How often are we prepared to intervene?

The biological history of Isle Royale has radically swung in terms of its mammalian make-up. This is, in part, a function of island biogeography. But, if so, then how do we incorporate this precondition into our decision-making about wolf reintroduction? Many people want wolves to continue on Isle Royale because they think that to do so is normal and natural—a position which is not necessarily substantiated by the facts. What is our ethical responsibility to let the public know wolves (and moose) reside on Isle Royale through a particular set of circumstances that may not be natural? And that extirpation—winking out—is common in island ecosystems? We must provide this information before visitors can arrive at an informed opinion about wolf intervention. Finally, how do we as a society manage the national

park true to its biogeographic character with biological integrity, while honoring the public's desire to have special animals present (today this means wolves and moose) that embody the distinctiveness of the archipelago?<sup>34</sup>

## Disclaimer

The views expressed in this article are the author's alone and do not represent those of the National Park Service.

## Endnotes

1. L. David Mech, *The Wolves of Isle Royale*, Fauna of the National Parks of the United States Fauna Series no. 7 (Washington, DC: US Government Printing Office, 1966), p. 17. See also Peter A. Jordan, Brian E. McLaren and Scott M. Sell, "A Summary of Research on Moose and Related Ecological Topics at Isle Royale, U.S.A.," *Alces* 36 (2000), p. 236; and James T. Harris, "Wildlife in a Changing Environment," in *The Great Lakes Forest: An Environmental and Social History*, edited by Susan L. Flader (Minneapolis: University of Minnesota Press, 1983), p. 78.
2. Sometime in the 1800s beaver were practically extirpated at Isle Royale by trapping. The original General Land Office surveyor, William Ives, noted only old and abandoned beaver dams in 1847. Some fifty years later, in the early 1890s, the Wendigo Mine Company doctor, William P. Scott, found only abandoned beaver houses. William Ives Survey Notes, unpublished, Isle Royale National Park Archives, Houghton, Michigan; and William P. Scott, "Reminiscences of Isle Royale," *Michigan History Magazine* 9:3 (1925), p. 408. Beaver were rare on the Ontario mainland adjacent to Isle Royale by 1780, because of the impacts of the large fur trade companies. See "Depletion of Beaver" in R. Cole Harris, editor, *An Atlas of Canada: From the Beginning to 1800* (Toronto: University of Toronto Press, 1987), plate 63.
3. Thomas W. Schoener, "The MacArthur-Wilson Equilibrium Model: A Chronicle of What it Said and How it was Tested," in *The Theory of Island Biogeography Revisited*, edited by Jonathan B. Losos and Robert E. Ricklefs (Princeton: Princeton University Press, 2010), p. 67. Vucetich et al. prefer the use of the term "extinction" in their article rather than "extirpation." While "extinction" has a wider colloquial application, what we are really discussing is the potential extirpation of wolves on Isle Royale. The article particularly highlights the scientific consequences of a wolf die-off, especially the bracketing off of valuable data and knowledge, or data and study extirpation, if you will. I use the terms "winking" in and out as it is used in island biogeography literature and is a counterpoint to the more dramatic (and consequential) term "extinction."
4. The question of reintroducing wolves to Isle Royale is impacted by the small pool of discussants directly involved, the nature of their personal relationships, and vested interests of many. I have thus concluded that some disclosure of my relationship to the "wolf researchers" is warranted. First, I have been an admirer of Rolf Peterson's work for many decades. However, I am not a biologist. That admission, however, should not disqualify me from commenting on the article in question as the issues surrounding "intervention" and "naturalness" is as much philosophical and linguistic as biological, and so not exclusively the domain of wildlife biologists. I further acknowledge that Rolf Peterson and now John Vucetich do remarkably thoughtful, rigorous, and highly focused as well as broadly based research. And I strongly believe that research should be encouraged and nurtured in a manner than has not always occurred in the past. I also share these scientist's interest in Isle Royale National Park as a long-term research focus, but from a humanistic perspective of the island's rich cultural history.
5. Michael P. Nelson, personal communication, September 11, 2012.
6. Lyman Clay (1911–1989) was a medical doctor who once had a summer home at Rock Harbor, Isle

- Royale. For a short time, he was the park doctor during the summer months when he was in residence.
7. Bill Peterson, "The Elusive Origins of Isle Royale's Moose," *The Moose Call* 8 (December 1998), pp. 12–13. Peterson also published this account in a local newspaper, the *Cook County* [Minnesota] *News Herald*, July 12, 1999. See also Jordan et al., "A Summary," p. 236. It is difficult to confirm this story. However, we do know that at this time that the state of Minnesota was permitting the shipping of live and dead moose, with a fee of only 50 cents per animal. For example, in 1908 the state of Minnesota permitted 32 moose to be shipped within and beyond the state boundaries. "Shipment of Big Game," Game and Fish Distribution Records, Game and Fish Commission, State of Minnesota Archives, Minnesota Historical Society, St. Paul, Minnesota. We also know that the state of Michigan purposefully introduced white-tailed deer to Isle Royale circa 1912. George Shiras 3rd, *Hunting Wild Life with Camera and Flashlight: A Record of Sixty-five Years' Visits to the Woods and Waters of North America—Volume 1, Lake Superior Region* (Washington, DC: National Geographic Society, 1935), p. 189.
  8. See for example, Axel Orlrick, *Principles for Oral Narrative Research*, translated by Kirsten Wolf and Jody Jensen (Bloomington: Indiana University Press, 1992); Barbara Allen and William Lynwood Montell, *From Memory to History: Using Oral Sources in Local Historical Research* (Nashville: American Association for State and Local History, 1981).
  9. A "third" explanation about how some moose may have arrived at Isle Royale was told by long-time Isle Royale resident Edgar Johns. In an oral history interview he stated that "the Indians at Grand Portage noticed a 'herd of moose' leaving the Canadian shore at Pine Bay for Isle Royale. Behind them were some brush wolves [i.e., coyotes]." Johns family members lived in Grand Portage at the time. Interview by Helen M. White, Minnesota Historical Society, St. Paul, Minnesota. Fisherman Stan Sivertson indirectly gave this account some credence when he said moose and coyotes show up at the same time, around 1913. Stanley Sivertson interview by Lawrence Rakestraw, 13 September 1965, Isle Royale National Park archives. The phrase "herd of moose" seems questionable; perhaps it was meant to signify a few moose. Moose ordinarily do not move as a herd in winter time, or cross large stretches of ice.
  10. Jennifer R. Adams, Leah M. Vucetich, Philip W. Hedrick, Rolf O. Peterson and John A. Vucetich, "Genomic Sweep and Potential Genetic Rescue During Limiting Environmental Conditions in an Isolated Wolf Population," *Proceedings of the Royal Society B*, 30 March 2011, p. 1.
  11. R.K. Wayne et al., "Conservation Genetics of the Endangered Isle Royale Wolf," *Conservation Biology* 5:1 (March 1991), p. 48.
  12. Rolf O. Peterson, personal communication, January 9, 2013.
  13. The other Detroit Zoo wolf that may have interbred with wild wolves was a male called "Big Jim." What we know definitively about these animals is scant. What we know of Queenie's parents is that she was the offspring of "a male wolf-coyote hybrid from downstate Michigan," and a mother "from the west, most like the S[outh] Yukon...." Paul Brown, natural resource manager, Isle Royale National Park, personal communication, September 10, 2012. Big Jim's mother was "a 'black' lobo from the Canadian northwest.... [H]is father, a Michigan timber wolf." And "Both of surviving wolves are of similar stock...." They were inoculated against rabies and distemper, comparatively tame, and were fed fish offal and dog food for less than a week at the Edisen Fishery. Big Jim and Queenie lived for a minimum of 41 days after their release from pens at Edisen Fishery; after that point, sightings stop either because there were few staff on the island to observe them, or else they had died. If they learned to eat fish offal, they could have survived on the plentiful supplies from multiple commercial fisheries that dropped the offal at isolated "gut bays." Thirteen fisheries were in operation in 1952, located throughout the national park, and fall would be the maximum harvest time for lake trout, lake

herring, and menominee. To give a sense of scale, the 13 fisheries, with approximately 26 fishermen, held licenses permitting maximum total gill net footage of over 1 million feet. Offal would have been available until November and thus conceivably the zoo wolves did not need to kill moose until later. Isle Royale superintendent to Lee Smits, September 26, 1952; Lee Smits to NPS director, May 8, 1952; Smits to Isle Royale superintendent, May 2, 1953; Smits to Isle Royale superintendent, June 15, 1953, all located at Isle Royale National Park archives; and “Isle Royale National Park, 1953 Fishing Table,” Isle Royale National Park archives. Ultimately their fate over the 1952–1953 winter is unknown. Their survival would be a remarkable story, as they were zoo raised and thus knew nothing about hunting moose. Despite the long shot of their survival, Isle Royale residents told stories about Big Jim for years. However, few stories were told about Queenie, perhaps because sightings of her were rare, she was smaller and thus less conspicuous, and thus her fate unknown. “Wolf Planting Project,” memorandum, Isle Royale superintendent to chief ranger, August 26, 1952, Isle Royale National Park archives. One of the report’s bullets says “Very rare mtDNA, possible derived from Detroit zoo wolf female.” Anonymous, “Main Events in ISRO Wolf History,” Isle Royale National Park, 2012, Houghton, Michigan.

14. John A. Vucetich and Rolf O. Peterson, Michigan Technological University, “Ecological Studies of Wolves on Isle Royale, 2010–11,” March 11, 2011, and Jennifer Donovan, “Poop Reveals an Immigrant in Isle Royale Wolves’ Gene Pool,” *Michigan Tech News* March 31, 2011.
15. Pete Edisen’s fishery was chosen as the place where the four zoo wolves could acclimate to Isle Royale conditions. Interview with Peter and Laura Edisen by Lawrence Rakestraw, September 3, 1965, and interview with Ed and Ingeborg Holte by Lawrence Rakestraw, September 10, 1965, Isle Royale National Park Oral History collection. Confidential Memorandum, August 26, 1952, Isle Royale Chief Ranger to Isle Royale Superintendent, Isle Royale National Park files, Houghton, Michigan. Pete and Laura Edisen were intimately involved in the wolf “experiment” as the four wolves when first released caused them “considerable trouble” destroying one nylon fish net and three small rugs on a clothesline.
16. L. David Mech and Luigi Boitani, *Wolves: Behavior, Ecology, and Conservation* (Chicago: University of Chicago Press, 2003), pp. 12, 14; Adrian Treves, Kerry A. Martin, Jane E. Wiedenhoft, and Adrian P. Wydeven, “Dispersal of Gray Wolves in the Great Lakes Region,” in *Recovery of Gray Wolves in the Great Lakes Region of the United States: An Endangered Species Success Story*, edited by Adrian P. Wydeven, Timothy R. van Deelen, and Edward J. Heske (New York: Springer, 2009), p. 200.
17. James Cole, “Isle Royale Wildlife Investigations, Winter of 1956–57,” Isle Royale National Park files, Houghton, Michigan.
18. *Duluth Minnesotan*, March 13, 1875.
19. Terrance J. Martin, “Prehistoric Animal Exploitation on Isle Royale,” in Caven Clark, *Archeological Survey and Testing, Isle Royale National Park, 1987–1990 Seasons* (Lincoln, NE: Midwest Archeological Center, 1995), p. 212.
20. *Duluth Minnesotan*, January 9, 1875. This is a solicitation for a contract mail carrier who was expected to travel to Isle Royale from Grand Portage once a week. The contract stipulated the mail carrier would leave Grand Portage by 7 a.m. and arrive at Island Mine, Isle Royale, by 5 p.m. the same day. The contract was for winter travel by dog team as well as presumably by mackinaw sailboat in the summer months. Regular ice bridges are the assumption behind this mail contract.
21. Charles A. Bishop, *The Northern Ojibwa and The Fur Trade: An Historical And Ecological Study* (Toronto: Holt, Rinehart, and Winston, 1974), pp. 11–12, 116.
22. A Hudson Bay Company factor at Fort William [today part of Thunder Bay, Ontario] would remark in 1824: “Formerly there were moose deer—at this time not one is to be seen, being literally extinct...”

Hudson Bay Company Archives, Winnipeg, Manitoba, B-231-e, John Haldane, "Report on the State of the Country and Indians in Lake Superior Department, 1824."

23. Timothy Cochrane, *Minong—The Good Place: Ojibwe and Isle Royale* (East Lansing: Michigan State University Press, 2009), pp. 81–83.
24. Rolf O. Peterson and Robert J. Krumenaker, "Wolves Approach Extinction on Isle Royale: A Biological and Policy Conundrum," *The George Wright Forum* 6:1 (1989), p. 14.
25. Mech, *The Wolves of Isle Royale*, p. 20; Jordan et al., "Research on Isle Royale," p. 236.
26. Milan Novak et al., *Furbearer Harvests in North America, 1600–1984* (Toronto: Ontario Ministry of Natural Resources, 1987), pp. 248–249. Beginning with World War II years, from 1940 through 1955 there was no trapping of wolves in Ontario.
27. Michipicoten Island is an island archipelago like Isle Royale (with geological, biological, and historical similarities) but one-third its size. Ontario Ministry of Natural Resources, *Michipicoten Island Provincial Park, Interim Management Statement* (Toronto: Ontario Ministry of Natural Resources, 1986), p. 4; David C. Whyte, *Introduction to Michipicoten Island: Lake Superior's Wild Heart* (privately printed, 2001), p. 21.
28. National Park Service, *Management Policies 2006* (Washington, DC: Government Printing Office, 2006), p. 43.
29. An early use of the metaphor is found in Mech, *Wolves of Isle Royale*, p. 3.
30. National Park Service, *Revisiting Leopold: Resource Stewardship in the National Parks* (Washington, DC: National Park Service, 2012), pp. 12–13.
31. It is informative to note that wolves are not resident on other Lake Superior archipelagoes or offshore islands—the Slate Islands, Caribou Island, or Michipicoten Island.
32. Timothy Cochrane, "Folklore and the Geographical Character of Two Natural Parks—Isle Royale and Michipicoten," *American Folklore Society*, October, 1987. There is a long-standing tradition of celebrating exotic features of Isle Royale, be it solid masses of native copper, prehistoric copper mining, greenstones, "Rein deer," huge and plentiful lake trout, and, now, wolves and moose. The complement of major animals on Isle Royale (now and in the past) often is a *de facto* counterpoint to those found in much of the Midwest, further emphasizing the national park as being a different place.
33. Some of these Ojibwe are members of the moose clan and have family history ties to Isle Royale. And, ironically, Grand Portage (and other Ojibwe Bands) recently elected to not permit wolf trapping or hunting on their reservation, unlike elsewhere in the state of Minnesota. The Ojibwe tribes cited cultural connections to wolves as a reason to not permit their "take." In short, they have long-standing traditions and beliefs about these animals, and Isle Royale is part of their traditional territory.
34. Thank you to select staff at Grand Portage National Monument, Isle Royale National Park, and the Western Great Lakes Inventory and Monitoring Network (National Park Service) that have read and commented on this paper.

**Tim Cochrane**, Grand Portage National Monument, P.O. Box 426, Grand Portage, MN 55605; [tim\\_cochrane@nps.gov](mailto:tim_cochrane@nps.gov)

# The Case for Watchful Waiting with Isle Royale's Wolf Population

*L. David Mech*

## Introduction

IN “Should Isle Royale Wolves be Reintroduced? A Case Study on Wilderness Management in a Changing World,” Vucetich et al. concluded with the hope that their analysis “motivates broader discussion that deepens understanding of the specifics on Isle Royale and the underlying principles” (2012: 137). This article represents an attempt to continue that discussion.

The authors traced the history of the Isle Royale National Park (IRNP) wolf (*Canis lupus*) population, emphasized the possible effect of canine parvovirus (CPV) on the wolf population, reported a recent decline in the wolf population, discussed the effect of climate warming on possible natural recolonization, and laid out a rationale for genetically rescuing the wolf population. In a follow-up article, the same authors advocated “conservation or re-introduction” without specifying what they meant by “conservation” (Vucetich et al. 2013).

To best understand the current status of the IRNP wolf population, an updating is necessary. In early 2012, researchers found only nine wolves (Vucetich et al. 2012), and in early 2013, eight, including at least four females, most four years old or younger (Mlot 2013; Vucetich and Peterson 2013). The research team observed courtship behavior in one pair but not in another, although the team indicated its observation time was low. However, many female wolves in northeastern Minnesota do not breed in any given year before five years of age (Mech and Seal 1987; Mech and Barber-Meyer, unpublished). Wolf litters average six at birth (Mech 1970), and litters of pups surviving in summer on IRNP have averaged 3.4 (Peterson and Page 1988). Food conditions in 2013 appear to be excellent for pup production and survival. The wolves were well-fed in winter 2012–2013, just before and during the breeding season. The wolf kill rate of moose (*Alces alces*) was three times that of 2011–2012, calf recruitment was one of the highest ever recorded on IRNP, and the moose-to-wolf ratio was well above average (Vucetich and Peterson 2013). Thus, potentially in 2013 or 2014, the IRNP wolf population could increase by over 60%, as it has done before.

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**Table 1.** Publications featuring warnings about the perceived demise of Isle Royale wolves.

If the IRNP population does rebound, the event will be just the latest in a long series of recoveries from perceived crises (Table 1).

I agree with Vucetich et al. (2012; 2013) that any decision made about intervening in the natural course of the IRNP wolf population will be momentous, so the issue deserves a great deal of pondering and discussion. Implications of intervention or non-intervention are relevant to (1) wilderness policy, (2) scientific research, and (3) island ecology. Vucetich et al. (2012: 131) discussed all three and, regarding wilderness policy, concluded that “intervention would enhance and honor wilderness values of Isle Royale.” They prefaced that conclusion by explaining that disease (CPV) and climate warming had anthropogenic causes, so presumably human intervention would be justified. According to Vucetich et al., “The salient point is that the recent decline in wolf abundance is associated with a chain of events that began with the introduction of CPV by humans in the early 1980s” (2012: 129).

Thus the roles of both CPV and climate change bear special scrutiny. Evidence that CPV had reached IRNP wolves was discovered in 1988 when two of four wolves were positive for exposure to the disease (Peterson et al. 1998). The next year, two of four IRNP wolves were marginally positive, but no sign of the disease was found again for about two decades (Vucetich et al. 2012). CPV kills primarily pups (Eugster and Nairn 1977; Meunier et al. 1981), so the presence of its antibodies in non-pups only indicates exposure to the disease, not anything about its population effect.

It is true that the IRNP wolf population crashed from 50 wolves in 1980 to 14 in 1982, but that crash was well documented to be caused by malnutrition and intraspecific strife. “In this study, cause of death was determined for nine additional wolves, including seven that were killed by other wolves and two that succumbed to malnutrition” (Peterson and Page 1988: 94). The only possible evidence for CPV having a population effect at that time was the lack of pups observed in winter 1981–1982 (Peterson et al. 1998). However, that was the year following the two years of abnormal highs of 33–50 wolves (or 61–92 wolves/1,000 sq km; Fuller et al. 2003), when food shortage and intraspecific strife prevailed. Lack of pup production and/or survival during those years would not be surprising in any wolf population (Mech 1977; Mech et al. 1998).

Other evidence against CPV being the cause of the 1981–1982 pup failure is that during the next several years pups survived each year, as many as 13 surviving during the period 1982–1983 (Peterson and Page 1988). Nor was evidence of CPV found in any of the six IRNP wolves sampled from 1990 to 1994. Thus there is not even any evidence that CPV caused apparent pup failure during that period (Peterson et al. 1998). In addition, the highest CPV seroprevalence found on IRNP was 50%, whereas in the nearby Minnesota wolf population CPV was not associated with a negative population change until seroprevalence increased to 80% (Mech and Goyal 1995). Therefore, despite the emphasis on CPV as the cause of a major disruption of the IRNP wolf–moose system beginning in 1980 (Wilmsers et al. 2006; Vucetich et al. 2012), the evidence for CPV involvement is very sparse, and a more cogent explanation is malnutrition and intraspecific strife (Peterson and Page 1988).

Regarding climate change, Vucetich et al. (2012) attributed two adverse influences on the IRNP wolf–moose system to it: (1) a recent moose decline, and (2) reducing chances of wolves immigrating to the island.

Although Vucetich and Peterson (Michigan Technological University 2007) and Vucetich et al. (2012) cited evidence that climate warming might have played a role in recent moose decline in Minnesota, they fail to mention the contradictory evidence that in North Dakota, at the same latitude as Isle Royale and Minnesota, moose are expanding their range despite higher temperatures than in Minnesota or IRNP (<http://www.nrri.umn.edu/moose/information/NDmoose.html>). In addition, IRNP moose numbers have doubled in the past two years (Vucetich and Peterson 2013). Thus evidence for climate warming adversely affecting moose is equivocal.

As for climate change possibly affecting wolf immigration to IRNP, it is true that increasing mean temperatures could reduce chances of Lake Superior freezing between IRNP and the mainland. However, it is also true that climate warming could actually increase those chances. One of the effects of climate change is increased variability, including more extreme local weather conditions (Gitay et al. 2002; Fraser 2004). Such extremes could increase the usually rare, several-week-long cold and calm conditions that foster ice formation on Lake Superior. Therefore, whether climate change will restrict natural recolonization of wolves to IRNP is unknown. Certainly the number of nearby mainland wolves available to disperse to IRNP has greatly increased during the past three decades (Erb and Don Carlos 2009). As recently as 1997 a wolf crossed to the island (Adams et al. 2011).

Scientific research is a second major issue critically affected by any decision about possible intervention in the IRNP wolf population. The history of wolf research on IRNP beginning in the late 1950s (Mech 1966) is rich, varied, and well-detailed by Vucetich et al. (2012). The question for the future is what kind of follow-up study will be possible with various scenarios of intervention or non-intervention. Although the IRNP studies have produced many important scientific discoveries, one of the most significant findings, especially for wolf recovery and conservation, involves the documentation of the ability of the island's small wolf population to persist and to sustain high levels of inbreeding.

Founded by a single female and two males (Adams et al. 2011), the IRNP wolf population was thoroughly inbred yet persisted from 1949 through 2013 at densities at least as high

as on the mainland (Mech 1966; Jordan et al. 1967; Peterson 1995; Vucetich et al. 2012). The IRNP wolves were as closely related as siblings (Wayne et al. 1991), and in the late 1990s the population's inbreeding coefficient was 0.81 (Adams et al. 2011). A single male immigrant contributed to the population starting in 1998, and in four years the inbreeding coefficient was 0.22 and rising (Adams et al. 2011).

Despite the high level of inbreeding, the wolves seem to have behaved and functioned ecologically like any outbred population and their ecology has been valuable to compare with that of other populations in areas such as Yellowstone National Park (Smith et al. 2003). Some evidence indicates that inbreeding has caused skeletal abnormalities in IRNP wolves, although those conditions have not translated into demographic abnormalities (Raikonen et al. 2009). There is still some question about whether the skeletal abnormalities are truly a result of inbreeding, however, because similar abnormalities have been found in other wolf populations on the mainland surrounding IRNP (Ware and Holahan 2010). However, if these abnormalities are a result of inbreeding, that finding will add significantly to the information accumulating about the persistence of this small, isolated wolf population. "Persistence to the present does not reliably indicate future performance" (Vucetich et al. 2010: 533), so any future information the unique IRNP wolf population can provide about the effect of inbreeding on population persistence will add immeasurably to what we know so far.

This wealth of information about the most-inbred, wild population of wolves ever is invaluable not only to understanding basic wolf genetics and behavior, but also to the entire field of conservation genetics. In addition, the future demographic dynamics of the IRNP wolf population and its interactions with moose will also be highly informative.

The IRNP moose population recently reached a nadir along with that of the wolves, but in 2012–2013, the moose population achieved one of its highest recruitments, and the moose-to-wolf ratio increased from its all-time low of 15 in 2006 to 122 in 2013 (Vucetich and Peterson 2013). If the wolf population performs as expected in the next several years, how long will it take before its predation overtakes the non-burgeoning and youthful moose herd? If wolf numbers fail to increase, how high will moose numbers grow? Much concern has surrounded the fate of the IRNP moose because of hypothesized climate change effects (Vucetich and Peterson 2007; Fleisher 2008). How will these effects play out if wolves increase again? What if wolves decrease? These and so many other questions can be answered in the next several years.

A third realm that would be influenced by any decision regarding intervention into the IRNP wolf population relates to the effects of wolves on natural ecosystems. Although the existence and importance of such effects are somewhat controversial and might have been overemphasized in some areas (Mech 2012; Marshall et al. 2013), wolves have influenced IRNP vegetation via their predation on moose (McLaren and Peterson 1994). The question of whether such effects are positive or negative is a matter of judgment, and Vucetich et al. (2012) presented pro and con arguments pertaining to wolf-generated "ecosystem health" and "moral value" on IRNP. Suffice it to say here that any such concerns are premature at this time because IRNP still harbors a functioning wolf population that could well persist for many years with or without human intervention.

In summary, then, although the subject of possible human intervention in the IRNP wolf population has been raised (Vucetich et al. 2012; 2013), weaknesses are apparent in the rationale presented (anthropogenic influences already impinging on the IRNP population). In addition, a strong argument can be made that the scientific value of non-intervention is greater than that of intervention, and the question of IRNP ecosystem health will not be relevant for an unknown, but possibly long, period—the time it takes for the wolf population to become extinct.

In the medical field, when a threatening condition is detected that is not immediately causing distress, physicians often counsel “watchful waiting.” We have been watchfully waiting for the IRNP wolf population’s demise for almost 25 years (Peterson and Krumenaker 1989). Had we intervened at the first alarm, much of the island’s most revealing and scientifically significant discoveries would never have been made. In any case, the precautionary principle would weigh heavily in favor of non-intervention because once intervention is imposed, that condition can never be undone, whereas non-intervention can always be countered by intervention.

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- L. David Mech**, US Geological Survey, Northern Prairie Wildlife Research Center, 8711 37th Avenue SE, Jamestown, ND 58401-7317 (mailing address: The Raptor Center, University of Minnesota, 1920 Fitch Avenue, St. Paul, MN 55108); [mechx002@umn.edu](mailto:mechx002@umn.edu) ; [david\\_mech@usgs.gov](mailto:david_mech@usgs.gov)



# Discernment and Precaution: A Response to Cochrane and Mech

*John A. Vucetich, Rolf O. Peterson, and Michael P. Nelson*

CONSIDER THE FOLLOWING LINE OF THINKING. For islands that are small and isolated, extinction is an authentic element of their biological integrity. A critical purpose of a park is to protect biological integrity. From those two points it would be best to refrain from conserving wolf predation as an ecological process in Isle Royale National Park and allow Isle Royale wolves to go extinct—if that is what should come to pass. Furthermore, wolves and moose might never have existed on Isle Royale were it not for human actions. As such, Isle Royale wolves and moose might be exotic species. A critical purpose of a park is to minimize and mitigate against human influences, especially exotic species. Consequently, we should celebrate the extinction of wolves and moose from Isle Royale if they were to go extinct. This seems to be the line of thinking that underlies Cochrane's paper in this issue (Cochrane 2013). The soundness of this line of thinking can be evaluated with several considerations.

Yes, of course, Isle Royale is well characterized by its island nature—a condition where extinction is common. However, being prone to extinction is not what makes Isle Royale distinctive. Humans have made most of the planet's ecosystems prone to species extinction. What makes Isle Royale globally distinctive is being inhabited by an un-persecuted top predator, a large herbivore whose condition is not dominated by the influence of hunting, and a forest protected from commercial logging. Such landscapes used to be commonplace across the planet. Today, we have relegated these kinds of landscapes to small, isolated “islands” that are prone to extinction. It might be perverse to opt for extinction on Isle Royale, because extinction is a natural feature of islands, at the expense of actively conserving an example of biological integrity that was once commonplace but now profoundly rare because of widespread carnivore extinctions.<sup>1</sup>

The line of thinking underpinning Cochrane 2013 also depends on the belief that Isle Royale moose might be exotic species. That conclusion depends on wildly speculative evidence.<sup>2</sup> Moreover, there are no credible plans to remove moose from Isle Royale or harvest them with the intensity that would be required to replace the influence of wolf predation.<sup>3</sup> So long as moose are present, Isle Royale's biological integrity and ecosystem health depends vitally on the presence of wolf predation. Allowing for the extirpation of wolf predation and the harm to ecosystem health that would ensue seems a peculiar reaction to speculation that moose inhabit Isle Royale because people brought them.

## **Isle Royale wolves, an exotic species?**

Cochrane (2013) also forwards several lines of thought intending to develop the belief that

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wolves are a kind of un-natural phenomenon on Isle Royale, that they are an exotic species, and that National Park Service policy would suggest that their loss should be encouraged and celebrated. In developing this belief, Cochrane observes, for example, the absence of archaeological evidence indicating the presence of wolves on Isle Royale between ca. 5000 BCE and the time when historic records become available (ca. 1750 CE). It is doubtful that wolves, very rare carnivores, would reliably appear in Isle Royale's archeological record. As such, that absence of evidence is not evidence of wolves' absence. Even in historic times, the presence of wolves cannot be reliably ruled out.<sup>4</sup>

Cochrane also speculates that captive-born wolves released by humans may have contributed to the gene pool of Isle Royale wolves. Even if that speculation were true,<sup>5</sup> it would not make Isle Royale wolves an exotic species—because wild-born wolves had colonized Isle Royale several years before.

Finally, Cochrane believes that wolves' arrival on Isle Royale in the mid-20th century is, in part, attributable to logging practices on the mainland that made wolves more abundant than would otherwise have been the case, which in turn increased their probability of colonization. Some discernment is required. Virtually every ecological event of conservation value has a causal chain tracing back to humans. To believe that every indirect effect of humans on nature is a blight on nature would be to think that essentially all of nature is blighted. Such an attitude is deeply misanthropic. It would be stunning to think that NPS policy would favor an absence of wolf predation on Isle Royale on the wild speculation that they are an exotic species or blighted because humans have influenced them.

### **Inbreeding depression**

Mech (2013) defends the position that it would be best to refrain from conserving wolf predation on Isle Royale through genetic rescue. That conclusion seems based largely on two basic premises that could be expressed as: (1) Isle Royale wolves are unlikely to go extinct as a result of inbreeding depression, and (2) the scientific disciplines concerned with extinction risk and conservation genetics would benefit more from observing Isle Royale wolves in the absence of genetic rescue.

The first premise seems to depend, in part, on a line of reasoning roughly expressed as: (1) periods of low recruitment rate, such as that observed in recent years on Isle Royale, are not uncommon in wolf populations and are not evidence of elevated risk of extinction due to inbreeding depression; (2) limited ability to acquire food is a more plausible explanation for low recruitment; and (3) the recent period of food limitation on Isle Royale, like other such periods in the past, is expected to be temporary. This line of thinking seems at least weakened by observing that the rate at which wolves acquire food has been a poor predictor of recruitment rate for Isle Royale wolves (Marucco et al. 2012), and population growth rate has been lower than expected given the rate at which wolves acquire prey for each of the past five years (2008–2012).<sup>6</sup> A plausible explanation for those results is that inbreeding depression has had an important influence on recruitment in the Isle Royale population. Nevertheless, low rates of recruitment, *per se*, are not the primary evidence for thinking that inbreeding depression places Isle Royale wolves at considerable risk of extinction.

Mech (2013) also cites Ware and Holahan (2010) to doubt that “skeletal abnormalities are truly a result of inbreeding, however, because similar abnormalities have been found in other wolf populations on the mainland surrounding [Isle Royale].” That study has not been made available to us or recorded in an open venue where it can be evaluated. One concern is that the frequency of lumbosacral transitional vertebra (LSTV) in a population depends on the standards used to determine whether any particular specimen should be classified as exhibiting LSTV (Lappalainen et al 2012; Ondreka et al. 2013). Even if the high incidence of malformities in Isle Royale wolves were dismissed as evidence, the tendency for those malformities to have increased over time is very much indicative of inbreeding depression (Räikkönen et al. 2009).<sup>7</sup> Most importantly, if those malformations were overlooked entirely, the evidence that Isle Royale wolves have been exhibiting high rates of inbreeding and inbreeding depression is considerable (i.e., Adams et al. 2011).<sup>8</sup>

With respect to the second premise, a great deal is known about the negative effects of inbreeding depression on extinction. Expecting to gain additional significant knowledge by observing nuanced genetic details about the extinction of Isle Royale wolves would be like hoping to gain significant knowledge about the effects of diet on heart disease by observing the heart rate of a patient with heart disease in the last moments of his or her life.<sup>9</sup> By contrast, relatively little is known about how to most effectively implement genetic rescue, which is a potentially valuable tool for conserving many populations across the planet. Documenting the effects of genetic rescue on Isle Royale wolves would result in significant gains in knowledge on that subject.<sup>10</sup>

### Other issues

We have highlighted that considerable scientific uncertainty exists about how climate change affects moose (e.g., Vucetich et al. 2013). In that regard we are in agreement with Mech (2013). While that uncertainty is relevant, it does not, to our understanding, support any argument against the value of conserving wolf predation on Isle Royale.

Mech (2013) concludes that evidence is “sparse” for thinking that canine parvovirus (CPV) has importantly influenced the population dynamics of Isle Royale wolves. One reason offered is that food shortage is a more plausible explanation for the 1980–1982 population decline. We do not doubt that food limitation played a role in that decline.<sup>11</sup> However, that observation is not evidence that CPV has been unimportant—multi-causality is a hallmark of ecological phenomena. Other reasons offered rely on the apparently limited effect that CPV had on one outbred population (e.g., Mech and Goyal 1995). Those reasons neglect to account for variation among populations in susceptibility to disease (e.g., Tobler and Schmidt 2010), and that variation can arise from a variety of causes, including being food stressed or severely inbred (e.g., Spielman et al. 2004). Mech (2013) raises other concerns about CPV that can also be refuted, but space does not permit us to do so here. Most importantly, if decisions about managing Isle Royale wolves depend on understanding the influence of CPV on Isle Royale, then that topic should be reviewed by a panel of disease specialists (see footnote 7). Any such review would have to address the concern that the two most significant population declines in the history of Isle Royale wolves (1980–1982 and 2009–2013) coincide with the only two periods in their history during which exposure to CPV has been detected.

## Precautionary principle

We appreciate developing a decision about Isle Royale wolves that is mindful of scientific opportunity; however, concern for ecosystem health and biological integrity is very likely the more important foundation for this management decision.

With respect to concern for ecosystem health, it is relevant to ask, are Isle Royale wolves certain to go extinct in the next few years? No. Might they pull out of this period of low abundance in a scenario akin to that observed in the late 1990s?<sup>12</sup> Yes, it is possible. Many things are possible. Our concern is not for what is possible. Our concern is for what is likely<sup>13</sup> and for application of the precautionary principle. The problem with allowing wolves to go extinct and then reintroducing a new population is that that action would very likely be associated with a significant gap in predation on Isle Royale. This, in turn, would result in damage to Isle Royale's ecosystem that might be irreversible.

A gap in predation's influence has already begun, as the lowest predation rates ever observed on Isle Royale occurred in 2012 and 2013. The result has been a 70% increase in moose abundance. Increased moose abundance caused by low predation has the potential to cause considerable, long-standing harm to Isle Royale's ecosystem health.

Here is a brief summary of the details behind this concern. Throughout most of Isle Royale, where balsam fir trees live, those trees are either old canopy trees, established roughly a century ago at about the time moose first arrived to Isle Royale, or they are shorter than about 1.5 meters (Brandner et al. 1990). The short fir trees are important food for moose during winter and are kept short by moose browsing. Older canopy trees are the only source of seeds to regenerate the species. Because of their age, the canopy trees have been rapidly dying and will soon be functionally absent (Frelich et al. 2012).

Some small balsam fir trees might have had a chance to grow into the canopy in the 1980s. However, any such growth was prevented by dramatic increases in moose abundance that resulted from a crash in the wolf population. That crash was likely caused and exacerbated by a wolf disease that humans inadvertently introduced.

However, the moose population recently (2005–2011) experienced the most protracted period of low abundance ever observed. That low abundance was, in part, attributable to predation. During that period, the shorter fir trees began growing at an unprecedented rate. By 2013, many were approaching a height (>3 meters) where they will both begin to produce seeds and grow into the canopy. This potential growth into the canopy is an event that has not occurred in more than a century, and it is much less likely to occur if predation rates remain functionally absent for any significant period of time. Discontinuity in predation is significant because restoring predation after its absence does not necessarily restore an ecosystem (e.g., Schmitz 2004). For example, the absence of wolf predation in Yellowstone allowed elk to outcompete beavers, greatly reducing the abundance of willow and beaver. The resulting alterations to hydrology appear to be not readily reversible, even after restoration of wolves (Marshall et al. 2013).<sup>14</sup> That pervasive influence of top predators means a discontinuity in predation is likely to have unanticipated negative effects on ecosystem health (Terborgh and Estes 2010).

Mech (2013) states that “concerns [about ecosystem health] are premature at this time because [Isle Royale National Park] still harbors a functioning wolf population that could

well persist for many years with or without human intervention.” Our concern is that the functional loss of wolf predation began two winters ago in January 2012 when predation rates hit record-low levels and may not return unless active conservation measures are taken. The watchful waiting suggested in Mech (2013) is associated with considerable risk of long-lasting damage to Isle Royale’s ecosystem health.

Mech (2013) also states that whether the “effects [of top predators] are positive or negative is a matter of judgment.” We agree. It happens to be the judgment of luminaries such as Aldo Leopold, whose view is aptly captured by his oft-repeated aphorisms, “To keep every cog and wheel is the first precaution of intelligent tinkering” and “A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.” Finally, if an aspect of nature is valued, it seems more appropriate to conserve it rather than to let it be lost with the hope that it can later be restored. For these reasons associated with the precautionary principle, genetic rescue appears to be the most appropriate response.

## Endnotes

1. Circumstances on Isle Royale may be globally unique. We are unaware of any other place on the planet inhabited by an un-persecuted top predator, a large herbivore whose condition is not dominated by the influence of hunting, and a forest protected from commercial logging—the beauty of which is also witnessed by thousands of human visitors each year. Those natural processes would seem to be a crown jewel for the National Park Service that can be readily preserved for the foreseeable future.
2. For example, primary evidence for thinking that Isle Royale moose are exotic is an unidentified elderly man saying, in the parking lot of a gas station in Manitoba in the early 1950s, that humans brought moose to Isle Royale. Secondary evidence is that Tim Cochrane believes it is unlikely that moose would have colonized Isle Royale by swimming, given the distance and cold temperature of the water. Documented movements of moose among islands off the coast of British Columbia, Norway, Sweden, and Finland indicate that moose are more than capable of such movements. There are also eyewitness accounts of moose swimming long distances in the waters between Isle Royale and Canada. In addition, the colonization of any terrestrial mammal to an island would seem to be an unlikely event—yet it happens. Colonization, like so many natural phenomena, is undeniably remarkable, but not untenable. If humans had brought moose to Isle Royale in the early 20th century it would have been a newsworthy event. One of us (ROP) reviewed newspapers from the north shore of Minnesota (Two Harbors, MN) in the early 20th century and found no reporting of such an event.
3. Cochrane (2013) indicates that implementing a moose harvest should be considered as a means of replacing the effect of wolf predation. In a typical year, wolves kill about 100 Isle Royale moose. To implement a moose harvest of that intensity in a place as remote as Isle Royale during the spring, fall, or winter when the weather is frequently prohibitive seems untenable. There is also reason to be concerned with the outrage that many citizens would likely express against such a plan.
4. For example, a photo from the 1930s of Otto Olson with the pelts of canids that he

trapped on Isle Royale includes a specimen that could, on the basis of its size, easily be a wolf.

5. The plausibility of various elements of wolves' history on Isle Royale, as conveyed in Cochrane (2013), depends on a biological understanding of wolves in general and on Isle Royale in particular with which we do not agree. Space limitation precludes elaboration.
6. This result assumes the relationship between kill rate and growth rate is best described by a logarithmic relationship; see Vucetich and Peterson (2004).
7. Since the early 1960s, the incidence of malformation has increased to the point that every collected specimen born after 1995 has exhibited some kind of vertebral malformity.
8. To say that considerable evidence exists for believing that inbreeding depression places Isle Royale wolves at great risk of extinction is not to say that we alone are impressed by the weight of evidence. We have also solicited the views of others with expertise in conservation genetics, including L. Boitani, University of Rome; R. Frederickson, University of Montana; P. Hedrick, Arizona State University; R. Lacy, Chicago Zoological Society; O. Liberg, *Swedish* University of Agricultural Sciences; L. Waits, University of Idaho; R. Wayne, University of California–Los Angeles. It also appears to be the collective judgment of experts in conservation genetics who are familiar with the Isle Royale case that inbreeding depression places the park's wolves at considerable risk of extinction. In scientific discourse, when two sets of scholars (e.g., Mech [2013] and us) disagree about the significance or interpretation of scientific evidence, the solicitation of expert opinion in a robust manner from a number of experts is an important basis for better understanding (Sutherland 2006; Martin et al. 2012).
9. Again, the view expressed in this paragraph appears to be the collective judgment of experts in conservation genetics who are familiar with the Isle Royale case. One technical concern with expecting to learn anything significant by observing the time to extinction for the Isle Royale population is that the inherent variability of times to extinction, as a statistical phenomena, is notorious. That inherent variability severely limits what can be learned about extinction risk and the factors that influence extinction risk by observing the time to extinction of a single population (Foley 1994; see also Vucetich and Waite 1999).
10. Some natural resource managers assert, as we understand it, that significant scientific knowledge would result from observing the effect of moose on Isle Royale in the absence of wolf predation. Yet the degradation of ecosystem health in the absence of top predators is thoroughly studied. National parks, in particular, have contributed greatly to knowledge of that subject (e.g., Yellowstone, Rocky Mountain, and Great Smoky Mountains national parks). Moreover, in the mid-20th century, awareness of the damage caused by moose in the absence of wolf predation on Isle Royale led conservation leaders, including Aldo Leopold, Adolph Murie, and Sigurd Olson, to conclude that wolves should have been introduced to the national park at that time.
11. We clearly indicated as such in Peterson et al. (1998).
12. Throughout the 1980s and early 1990s, Isle Royale wolf abundance was low—likely due to the combined influence of disease and inbreeding depression. The species' rebound was almost certainly attributable, at least in part, to the genetic rescue that occurred



when an immigrant wolf arrived on Isle Royale in 1997.

13. Mech (2013) also explains that the climate is expected to become increasing variable and that variability might increase the frequency of particularly cold winters that would produce ice bridges upon which wolves might use in immigrating to Isle Royale. That expression of optimistic possibility is at odds with what is likely to occur. In particular, while climate is expected to become more variable, that variability is expected to be associated with an increased frequency of warm winters and a decreased frequency of cold winters (e.g., Meehl et al. 2009) and reduced ice cover on Lake Superior (Wang et al. 2012).
14. The abundance of beaver colonies on Isle Royale also increased by approximately 60% with the collapse in predation that began in 2012. A prolonged period of elevated beaver abundance would also very likely have considerable and long-lasting impacts on forest dynamics.

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**John A. Vucetich**, School of Forest Resources and Environmental Sciences, Michigan Technological University, Houghton, MI 49931; javuceti@mtu.edu

**Rolf O. Peterson**, School of Forest Resources and Environmental Sciences, Michigan Technological University, Houghton, MI 49931; ropeters@mtu.edu

**Michael P. Nelson**, Department of Forest Ecosystems and Society, Oregon State University, Corvallis, OR 97331; mpnelson@oregonstate.edu



P.O. Box 65  
Hancock, Michigan 49930-0065  
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