Facilities Management in the National Park Service

The George Wright Forum

The GWS Journal of Parks, Protected Areas & Cultural Sites
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Mission

The George Wright Society promotes protected area stewardship by bringing practitioners together to share their expertise.

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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On the cover: An aerial view of two very prominent assets in the National Park Service's facilities portfolio: in the foreground, the Martin Luther King, Jr., Memorial; in the background, the Lincoln Memorial. NPS photo by Diana Bowen.

SOCIETY NEWS, NOTES & MAIL

Opportunities to become more involved with the George Wright Society

Do you have an interest in getting more involved with the George Wright Society? The GWS Board is looking at various ways to expand the Society's capacity so as to improve the services and products we provide. To this end, we are soliciting interest by GWS members in providing help in those areas where we could use some assistance. Specifically, we are looking for individuals with expertise and experience in:

- Development and fundraising, including networking with potential donors
- Non-profit organizational and program development
- Financial management
- Coordination of the various diversity initiatives that GWS supports (Park Break, Native Participant Travel Grants, George Melendez Wright Student Travel Scholarships, etc.)

For those who might be interested in joining us in our quest to improve park stewardship, this assistance might come in the form of volunteer time, a structured internship, or, possibly, part-time paid employment. If you have expertise and experience in any of these areas and are interested in contributing such to the George Wright Society, you can let us know by sending a note to dharmon@georgewright.org. Or, feel free to contact any of the GWS Board members if you have questions or would like to explore options further.

If this appeal interests you, we encourage you to also consider submitting your name in nomination for one of the open Board positions (see accompanying announcement).

We are excited about ideas for how your skills and expertise may be utilized in order to strengthen the Society as a leader in protected area stewardship.

Call for nominations, 2014 GWS Board of Directors election; federal employees able to run again

Each year, two seats on the Board of Directors come up for election. This year, one seat is held by Gary Davis, who is reaching the end of his second term and is ineligible to run again. The other is held by Lynn Wilson, who has indicated that she will run for a second term. We are now accepting nominations of GWS members who would like to be for these two seats. The term of office runs from January 1, 2015, through December 31, 2017. Nominations are open through July 1, 2014.

A long-awaited ruling that came out last year from the Office of Government Ethics has once again opened the door for active-duty US federal employees to serve on the boards of outside organizations such as the GWS. Federal government employees who wish to serve on the Board must be prepared to comply with all applicable ethics requirements and laws; this may include, for example, obtaining permission from one's supervisor, receiving ethics training, and/or obtaining a conflict of interest waiver.

The nomination procedure is as follows: members nominate candidates for possible inclusion on the ballot by sending the candidate's name to the Board's nominating committee. The committee then, in its discretion, determines the composition of the ballot from the field

of potential candidates. Among the criteria the nominating committee considers when determining which potential candidates to include on the ballot are his/her skills and experience (and how those might complement the skills and experience of current Board members), the goal of adding to and/or maintaining the diversity on the Board, and the goal of maintaining a balance between various resource perspectives on the Board. It also is possible for members to place candidates directly on the ballot through petition; for details, contact the GWS office.

To be eligible, both the nominator and the potential candidate must be GWS members in good standing (it is permissible to nominate one's self). Potential candidates must be willing to travel to in-person Board meetings, which usually occur once a year; take part in Board conference calls, which occur several times per year; help prepare for and carry out the biennial conferences; and serve on Board committees and do other work associated with the Society. Travel costs and per diem to the annual Board meeting are paid for by the Society; otherwise there is no remuneration.

To propose someone for possible candidacy, send his or her name and complete contact details to: Nominating Committee, George Wright Society, P.O. Box 65, Hancock, MI 49930-0065 USA, or via email to info@georgewright.org. All potential candidates will be contacted by the nominating committee to get background information before the final ballot is determined. Again, the deadline for nominations is July 1, 2014.

From Civil War to Civil Rights

Marty Blatt

"From Civil War to Civil Rights" is the designated slogan for the National Park Service's Civil War sesquicentennial commemorations, which coincide with the fiftieth anniversary of the Civil Rights movement. The slogan, which only came about after intense internal debate within the Park Service, attempts to convey the idea that the war was not a self-contained event in history, i.e., that it was "won" and then the country moves on. By intentionally connecting events of 150 years ago to the Civil Rights movement of 50 years ago and to ongoing civil rights struggles, the Park Service (NPS) is trying to demonstrate how events in history are connected and how history is relevant to our lives today. These are important, commendable goals. However worthwhile, this approach, if not fully realized, can lead to moving quickly from 1865 to 1965. To do so would be to omit the complex stories and terrible violence of Reconstruction and Jim Crow.

The National Park Service has a Civil War to Civil Rights (CW2CR) initiative. Under this umbrella, there have been a wide range of excellent programs. However, close examination of a thirty-second video produced by the CW2CR initiative reveals the significant downside of this approach. I recognize that this video is one brief program among a whole host of undertakings but still it is important to consider. We see images related to the Civil War and then the Civil Rights struggles, culminating in an image of the new Martin Luther King, Jr., memorial. Here is the script in its entirety:

> One hundred fifty years ago America was torn apart by a *bloody* Civil War.
> Hundreds of thousands died.
> Four million enslaved people were freed and the Union was preserved.

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But the struggle for civil rights, equality, and human dignity continues.
America's national parks tell the story of the Civil War and the Civil Rights Movement.
The dream endures.
To learn more, visit the NPS website.

The website address is provided as the video fades to black.

So, you might ask, what's wrong with this script? First, use of the passive voice allows for agency to be avoided. Slavery was the principal cause of the war, virtually all scholars agree, but here the nation "was torn apart." By what? By whom? How? Why? Again, the producers employ the passive voice telling us the enslaved "were freed and the Union was preserved." Who was responsible? A benevolent Lincoln? A combination of social forces? And then we skip straight to the Civil Rights movement, so the question could be raised—what exactly is this "struggle" that continues? Even staying within the length of thirty seconds, the producers could have framed this quite differently.

Now when we visit the NPS website focused on the Civil War, there is virtually nothing that addresses Reconstruction. This is a serious omission because the abandonment of Reconstruction, argues the distinguished scholar Eric Foner of Columbia University, was "a disaster not only for black America but also for the national commitment to democracy." This is a crucial moment in American history that NPS should not elide by skipping so quickly from the Civil War to Civil Rights. Further, Foner laments the abysmal state of Reconstruction in public history. Of the National Park Service's hundreds of historical sites, "only the Andrew Johnson Homestead in Tennessee deals centrally with Reconstruction (in what can charitably be called a dated manner)."[1]

Foner has been a true friend of public history in general and NPS in particular. After taking Gettysburg National Military Park to task in a *New York Times* op-ed several years ago for not foregrounding slavery as the cause of the war, the superintendent, John Latschar, invited Foner to work with NPS to help get the story right and he agreed to do so. Along with historians Nina Silber and James McPherson, Foner actively worked with NPS staff at Gettysburg in the development of the park's new visitor center where slavery is a prominent part of the narrative. Foner has worked with other NPS sites, including collaboration on projects this author has developed in Boston.

A decade and a half ago, Foner collaborated with NPS Director Bob Stanton (the first and only African American director) and Secretary of the Interior Bruce Babbitt to seek to create an NPS park dedicated to Reconstruction. Foner recommended at that time and still advocates today for the Sea Islands of South Carolina. In a May 18, 2000, letter to Secretary Babbitt (which he shared with this author), Foner outlined why the islands are an ideal venue. The Sea Islands, Foner maintains, offer numerous advantages for a Reconstruction national park site, starting with their historical importance. Reconstruction began on the islands when Union forces took control at the end of 1861. There followed the Port Royal Experiment in which northern missionaries, army officers, Treasury officials, and the former slaves sought to shape the transition to freedom. The islands are already home to a number of national historic landmarks connected with Reconstruction. Among these is the Robert Smalls house in Beaufort, home of one of the most prominent black leaders of the Reconstruction era.

His life exemplifies many of the broad historical issues connected with emancipation and the politics of Reconstruction. (LuAnn Jones, NPS staff historian, and Bob Sutton, chief historian, recently published *The Life and Legacy of Robert Smalls of South Carolina's Sea Islands,* Eastern National, 2012). There is also the Penn Center Historic District, centered on the Penn School, founded in 1862 by northern missionaries who came to South Carolina to educate the former slaves. There are other significant sites as well. On the Sea Islands, some of the earliest black soldiers were recruited, and the first efforts to distribute land to former slaves were made. During Radical Reconstruction, the Sea Islands became a center of black political power, home to many prominent black politicians. In summary, Foner argues, Reconstruction on the Sea Islands involves all the crucial issues of the era—land, labor, education, politics, and in general the ways Americans white and black alike responded to the destruction of slavery. It is an area, Foner maintains, of pivotal significance in that turbulent era. Further, he asserts, the course of events in the Sea Islands would enable NPS to portray the period as one of considerable immediate and long-term success, not the abject failure so often depicted.

In this author's view, it is an embarrassment that NPS today does not have a single site dedicated to the history of Reconstruction. The Sea Islands initiative was unsuccessful in the early 2000s for a variety of reasons. This would still be the best option but is not the only possibility. It should be possible to take advantage of the sesquicentennial of the Civil War, which will run through 2015, and also the sesquicentennial of Reconstruction, ongoing now and which will run through 2027. With the nation's first African American president in his second term, surely this might be a time for the administration to advance this particular agenda. With success, we could be assured that the public history of this nation as embodied in the roster of our national parks is much more complete, however difficult the history of Reconstruction may be for many.

One promising development regarding NPS inclusion of the history of Reconstruction is the work of historians Kate Masur, of Northwestern University, and Greg Downs of City College of New York. They have compiled a list of currently existing NPS sites with potential Reconstruction relevance. The list grew out of a meeting they had with Sutton and Jim Grossman, executive director of the American Historical Association. Masur and Downs may advise parks on how they might include and/or enhance their treatment of Reconstruction. There is also the possibility of networking parks with other Reconstruction scholars. In a recent email to this author, Sutton indicated that NPS has just received approval and funds to produce a Reconstruction handbook with Masur and Downs providing assistance regarding topics and authors. Sutton is exploring the possibility of working with these scholars to do webinars related to Reconstruction. Sutton hopes, he related, that a Reconstruction park can be developed.

Can NPS overcome a tendency towards timidity in the face of controversy, a characterization found in the recent excellent report on the state of history in NPS, *Imperiled Promise*? One remarkable example of great courage was the decision by Martin Luther King, Jr., National Historic Site in the early 2000s to provide a venue for the wrenchingly powerful exhibition, "Without Sanctuary: Lynching Photography in America." According to the historian Ed Linenthal of Indiana University, after curators failed to find a home among any of Atlanta's cultural sites, the superintendent of the King site agreed to host the exhibition, which attract-

ed more than 150,000 visitors. Linenthal has suggested at different times that NPS might explore the addition to the national park system of a site where a lynching took place. This would require extraordinary institutional courage and, even if NPS were willing, locating such a site with sufficient integrity to convey a meaningful story might be difficult. Another avenue NPS could explore involves the identification, preservation, and interpretation of the material legacy of Jim Crow segregation and even that of white groups that practiced violence. In his extensive essay, "The Architecture of Racial Segregation," historian Robert Weyeneth examines what has been done and the possibilities as well as evaluating problems such as the disappearance of much of this material culture or its invisibility, given that it can be difficult to recognize even when it is still extant.[2]

Of course, the hosting of "Without Sanctuary" is not the only example of a willingness in NPS to challenge timidity. There have been many excellent programs both inside NPS and outside during the marking of the sesquicentennial of the Civil War. Kevin Levin and Megan Kate Nelson write in their introduction to an online collection of essays, "The Civil War at 150—Memory and Meaning": "As Americans have marked the Civil War's sesquicentennial over the past few years, the cultural impact of the civil rights movement on the dominant narrative has been clear. The anniversary's events have emphasized the story of slavery, emancipation, the service of black Union soldiers to the war effort, and to the cause of freedom."[3] This stands in sharp contrast to the centennial commemoration of the Civil War fifty years ago, marked by battle reenactments and exhibits presenting a narrative of a gallant struggle

Figure 1. Danny Glover and Fedna Jacquet in the historical pageant "Roots of Liberty: The Haitian Revolution and the American Civil War," presented in Boston on May 4, 2013. Photo by A.R. Sinclair Photography. The pageant, which was co-organized by NPS, traced the influence of the Haitian Revolution on black and white abolitionists and black Union troops in the Civil War.

fought by two equally determined and legitimate armies. Robert Cook's recently published book, *Troubled Commemoration: The American Civil War Centennial, 1961–1965*, addresses this issue in depth.

However, the arc of public history, like that of history in general, does not move in a positive, progressive direction only. At any moment in time, public history can be contested and, without vigilance, the gains of one generation can be lost. At the start of NPS efforts to commemorate the Civil War sesquicentennial, there was a very contentious process to produce a vision statement. Initially, the NPS vision statement omitted any mention of slavery. If that had remained the case, once this would have become widely known it would have set NPS back decades. This is documented by Timothy Good in the pages of *The George Wright Forum*.[4] Good employs this case study convincingly to make a case for some of the recommendations included in the report *Imperiled Promise*. A thorough examination of this controversy by someone outside NPS would be a welcome addition to the literature of public history. There is much that Good did not examine in his brief account.

So, we need to be extremely careful when employing the slogan "From Civil War to Civil Rights." And we need to ensure that the crucial historical period of Reconstruction is foregrounded within NPS. We can only hope that this omission from the national park system can be addressed, perhaps in 2016 to help mark the centennial of the agency, but certainly long before another generation of public historians prepares for the bicentennial of the Civil War and Reconstruction.

Endnotes

1. Eric Foner, review of Douglas Egerton, *The Wars of Reconstruction—The Brief, Violent History of America's Most Progressive Era,* in *The New York Times Book Review*, February 2, 2014.
2. Ed Linenthal, "The National Park Service and Civic Engagement," *The George Wright Forum*, volume 25, number 1, 2008, pp. 5–11; Robert Weyeneth, "The Architecture of Racial Segregation: The Challenges of Preserving the Problematical Past," *The Public Historian*, volume 27, number 4, fall 2005, pp. 11–44.
3. Online at www.common-place.org, volume 14, number 2, winter 2014.
4. Timothy Good, "The Need for Intellectual Courage, the History Leadership Council, and the History Advisory Board," *The George Wright Forum*, volume 29, number 2, 2012, pp. 268–271.

Marty Blatt is chief of cultural resources/historian at Boston National Historical Park and Boston African American National Historic Site. He was the principal organizer for NPS of the 2013 historical pageant in Boston, "Roots of Liberty—The Haitian Revolution and the American Civil War," which commemorated the 150th anniversary of the Emancipation Proclamation. For the video, go to www.freedomrising2013.com/Videos.html. He is co-editor of *Hope & Glory—Essays on the Legacy of the 54th Massachusetts Regiment*.

Letter from Woodstock

Rolf Diamant

Lincoln, Olmsted, and Yosemite: Time for a Closer Look

This year is the 150th anniversary of the Yosemite Grant and the act of Congress that set aside Yosemite Valley and the Mariposa Big Tree Grove for "public use, resort, and recreation … inalienable for all time." This "grant" of federal lands transferred Yosemite Valley and the Mariposa Grove to the state of California, yet the 1864 Yosemite Act represents the first significant reservation of public land by the Congress of the United States—to be preserved in perpetuity for the benefit of the entire nation. As Joseph Sax affirms, "The national parks were born at that moment."[1] In 1890, Congress incorporated Yosemite State Park into a much larger Yosemite National Park.

The Yosemite Conservancy is marking the 150th anniversary of the Yosemite Grant by releasing a new publication, *Seed of the Future: Yosemite and the Evolution of the National Park Idea*, authored by the writer and filmmaker Dayton Duncan.[2] The handsomely designed and generously illustrated book revisits the Yosemite Grant and the "evolution of the national park idea" and should attract a wide readership. This message is important, as the national significance of the Yosemite story has been obscured by time, incomplete documentation, and often-contradictory interpretations. A clearer understanding of the people and events surrounding the Yosemite Grant, in such a popular format, is particularly timely, not only for the celebration of Yosemite's sesquicentennial, but also for the approaching 100th anniversary of the National Park Service (NPS) in 2016.

It should be pointed out that Duncan is not the first recognize the significance of the Yosemite Grant. He is preceded most notably by Sax ("America's National Parks: Their Principles, Purposes and Prospects," 1976), Alfred Runte (*National Parks and the American Experience,* 1979), Ethan Carr ("Park, Forest, and Wilderness," 2000), and Dwight Pitcaithley (*Philosophical Underpinnings of the National Park Idea,* 2001).[3]

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I am using this seventh Letter from Woodstock to consider a number of still-unsettled questions surrounding the Yosemite Grant and the roles of Abraham Lincoln and Frederick Law Olmsted, Sr. I don't as a rule footnote these essays, however, with this Letter I am making an exception.

In the midst of a terrible civil war, how did the 1864 Yosemite legislation get enacted? Early in 1864, Israel Ward Raymond, the Pacific Coast representative of the New York-based Central American Transit Company, wrote California's US Senator John Conness requesting his help with legislation to protect Yosemite Valley and the Mariposa Big Tree Grove from private exploitation. Unfortunately, very little information has been found as to who or what motivated Raymond to send this letter. Some people consider Raymond's intervention and Conness's subsequent introduction of legislation as largely the initiative of two those individuals, and the passage of the Yosemite Grant through a wartime Congress as a stroke of fortuitous chance.

I think it can be argued that the Civil War played an outsized role in events surrounding the Yosemite Grant, as did, in no small measure, the extraordinary accomplishments of Thomas Starr King. King, a Unitarian clergyman in San Francisco, championed Yosemite in a series of articles he wrote for the *Boston Evening Transcript* entitled "A Vacation among the Sierras: Yosemite in 1860." Enthralled by his many visits to the valley, King once described Beethoven's Ninth Symphony as the "Yosemite of music."[4] A gifted orator, King was an outspoken opponent of slavery and an unwavering supporter of the Union. He played a central role in the contested but ultimately successful 1861 effort to turn back the forces of succession and neutrality and secure California's loyalty to the Union.

King's efforts in California in support of Union causes won him friends and admirers on both sides of the continent. His work on behalf of the Pacific Branch of the US Sanitary Commission helped to raise over a million dollars for wounded soldiers (almost one-fifth of the total contributions from all the northern states.) Though King would die of diphtheria before President Lincoln signed the Yosemite Act in June 1864, I would suggest that the Lincoln administration was deeply beholden to King and other influential California friends of Yosemite for their steadfast allegiance to the Union, their support for emancipation, and their financial contributions to the war effort. This accumulated political capital was probably instrumental in establishing a favorable environment in Washington for the Yosemite legislation's swift passage.[5]

There were, of course, other factors that added to this favorable environment, including the impact of photography, painting, and the written word. Carlton Watkins first photographed Yosemite in 1861 and portfolios of his stunning mammoth plates and stereo views of Yosemite were sent back east to key people and institutions, including the Goupil Gallery in New York City, where they were exhibited in 1862.[6] Albert Bierstadt, who saw the exhibit, would soon paint Yosemite Valley on a trip west that was sponsored by the Union Pacific Railroad in 1863. On the way, he stopped in San Francisco to dine with the King family.[7]

In the preface to his 1865 report on Yosemite, written only a year after the Yosemite Act was signed, Olmsted specifically acknowledges the role that art and photography played in the park's establishment. "It was during one of the darkest hours," Olmsted writes, "before Sherman had begun the march upon Atlanta or Grant his terrible movement through the

Wilderness, when the paintings of Bierstadt and the photographs of Watkins, both productions of the war time, had given to the people on the Atlantic some idea of the sublimity of the Yosemite."[8]

What was President Lincoln's role?

There is no record of Lincoln's personal involvement in any deliberations over the Yosemite bill. However, it is worth noting that a year earlier he had filled a Supreme Court vacancy with a Californian, Stephen J. Field, a friend of King, perhaps reflecting the crucial status of California in Lincoln's larger political calculus. John Hay, Lincoln's personal secretary, was certainly informed about Yosemite. Hay, a friend of Bierstadt, corresponded with the artist during his 1863 trip west (which also had support from the War Department.) In a letter to Hay, Bierstadt described Yosemite as a "Garden of Eden."[9]

The Yosemite Grant has been described as an unexpected precedent that was out of step with previous policies of the federal government. "Senator John Conness planted his Yosemite Bill," writes Duncan in *Seed of the Future*, "which proposed that Congress do the exact opposite of what it had been doing for all of its existence…."[10] While the Yosemite Grant was indeed in many ways groundbreaking, I think it may be useful to look at Yosemite in the context of a far-reaching realignment of government policies brought about by the war.

When Vermont Congressman Justin Morrill first introduced his Land Grant College Act in 1857, Senator Clement Clay of Alabama assailed the act's proponents as "debauched and led astray."[11] Senator Jefferson Davis of Mississippi asserted that the national government had absolutely no authority to make such land grants and if it did the government would be "warped so far from the path it had previously followed."[12] There is every reason to believe that a grant of federal land for a park, like land grants to build colleges, would never have made it through the political system before Lincoln was elected president, the Congress reconstituted (with the departure of secessionist congressmen), and the social upheaval of the war.

By early 1862, after almost a year of escalating civil war, Lincoln and a wartime Congress confronted the sobering realization that there was not going to be a negotiated reunification that would somehow turn back the clock to a pre-war status quo. With this realization, they were now prepared to move forward with a republican legislative agenda, much of which had been on hold since Lincoln took office.[13] In his book *Republic of Nature*, Mark Fiege observes that "Lincoln did all he could to turn the conflict to a higher end. Improvement in its various forms became the means by which he prosecuted the war and preserved the Union…."[14] Intervention in public education, transportation, and agriculture, coupled with a commitment to freedom and emancipation, involved a fundamental redefinition and expansion of the government's responsibilities. In this context, the reservation of a small but spectacularly scenic piece of land, set aside out of a huge federal estate for "public use, resort and recreation," could be considered yet another interpretation of improvements that began with the Homestead Act, Pacific Railroad Act, and Morrill Land Grant College Act, and would eventually include the Emancipation Proclamation, the Thirteenth Amendment, and the Freedman's Bureau Act.

Similar to the 1862 Morrill Act, the Yosemite Grant to California should be viewed not as anomaly, but an action generally consistent with policies of the Lincoln Administration.

Building on emancipation, Lincoln sought to redefine and expand the rewards of American citizenship at a time when greater and greater sacrifices were being called for on the battlefield. As Olmsted wrote in his 1865 report, the Yosemite Grant did not stand apart from the Union war effort; rather, it reflected how the war was progressively changing the role and expectations of the national government.

When the bill reached Lincoln's desk there was every reason for him to sign it, which he did.

What was Frederick Law Olmsted's role?

When Olmsted, well known for his work with New York's Central Park and the US Sanitary Commission, arrived in California in 1863, he immediately sought out Thomas Starr King. Olmsted would come to share King's enthusiasm for Yosemite, and soon after the Yosemite Act was passed in 1864, California Governor Frederick Low appointed him chairman of the commission tasked with preparing a plan for the newly granted Yosemite lands. Even so, Victoria Rainey, an editor at the Frederick Law Olmsted Papers Project, asserts that, based on available documentation, Olmsted was not directly involved in the passage of the Yosemite legislation.[15] Even the relevancy of Olmsted's prescient final report on Yosemite has been questioned, as his recommendations were never adopted.

Other historians, however, have suggested otherwise. Raymond's letter to Conness placed Olmsted's name at the head of a list of several prominent Californians to serve as future Yosemite commissioners. Advocating his bill on the floor of the Senate, Conness declared that "the application comes to us from various gentlemen in California, gentlemen of fortune, of taste and of refinement."[16] This assertion may have encouraged Kevin Starr[17] and Hans Huth, in particular, to conclude that the spirit if not the hand of Olmsted was clearly behind the legislation. As Huth said, "The men who were recommended as the first commissioners of the Yosemite grant are most likely those who helped to prepare the act."[18]

I think it is also a mistake to devalue or dismiss Olmsted's 1865 Yosemite Report because it was never acted upon or widely publicized. The report remains an extraordinary commentary on emerging perspectives and ideas shared by Olmsted and a small but influential number of his contemporaries—ideas that were to shape the future of parks for many years to come. Ethan Carr looks at the Yosemite Grant in the larger context of America's parks movement, particularly the early development of large municipal parks. Carr points out that Yosemite and New York City's Central Park share a common inspiration: "For Olmsted, public enjoyment provided the ultimate purpose and rationale for landscape preservation, whether at Central Park or Yosemite Valley. Preservation of a place, and the public's use of the place, were part of the same landscape ideal."[19] The Yosemite Grant represented the application of this landscape ideal on a large scale and was the first step, in Olmsted's words, for "establishment by government of great public grounds for the free enjoyment of the people"—a prescription for our state and national park systems.

Perhaps Joseph Sax sums it up best, when he suggests that "[r]ather than merely picking over the sterile fragments of official history that have been left us, we should turn our attention to the aspirations of those who devoted their lives to persuading the American public of the efficacy and importance of parks. Within that small but influential group, one figure, Frederick Law Olmsted, stands out above all others."[20]

Why is this history important to us now?

It is beyond the scope of this Letter to assess all the reasons why early NPS historical accounts have downplayed the significance of the 1864 Yosemite Act and the role of the Civil War. When these narratives were written in the early 20th century, the civil rights gains of the Civil War were being systematically rolled back and Civil War memory selectively erased. As Roger Kennedy observes, even the Lincoln Memorial, when it was dedicated in 1922, "was presented as a shrine not to emancipation but to the reconciliation of North and South…."[21] Instead, beginning the story with Yellowstone in 1872 was perhaps viewed as safer and more politically palatable. "The belief that the national park idea," writes Richard West Sellars in his book *Preserving Nature in the National Parks*, "truly began around a wilderness campfire at the Madison Junction [during the 1870 Washburn/Doane expedition] evolved into a kind of creation myth…. Surely the national park concept deserved a "virgin birth"—under a night sky in the pristine American West, on a riverbank, and around a flaming campfire…."[22]

Early establishment narratives for public agencies can have a lasting impact on how their mission and organizational values are formed and communicated to employees and the public. Reflecting on the persistence of this type of "first narrative," the historian Ed Linenthal writes, "once a particular interpretation of an event takes root over many, many years, it is not readily identified anymore as an interpretation of an event, but THE TRUTH! Offering a different interpretation will often be met with resistance for all kinds of reasons."[23] Even as late as 1972, NPS Historian Ronald Lee's well-publicized, annotated chart of the NPS "family tree," marking the centennial of the national park system with the establishment of Yellowstone, omits the 1864 Yosemite Act from the tree's elaborate root system.[24]

While there was very little debate over the Yosemite Act in Congress, the real debate was playing out on the battlefield, where the contours of American democracy and the appropriate role and function of the federal government were being decided for decades to come. What was at stake was not only the ending of slavery in the United States and the freedom and political enfranchisement of 4 million African Americans, but also the fundamental responsibility of government for the advancement, well-being, and happiness of all its citizens. In this sense, the 150th anniversary of the Yosemite Act and the centennial of legislation establishing a National Park Service are opportunities to reaffirm the value of public institutions and public lands, from schools to parks. These commemorations can also be a reminder, that the "refinement of the republic" that Olmsted spoke of in his 1865 Report, is still bitterly contested and requires our constant attention and steadfast support.

NPS is planning to use the occasion of its centennial to "reintroduce" itself to a broader cross-section of the American public. The agency will present itself, with the help of the National Park Foundation, as a highly diversified, geographically dispersed system of national parks, programs, and partnerships connecting to people in communities throughout the country. This re-branding campaign is also a perfect opportunity to recognize and incorporate a more inclusive founding narrative that connects back to Lincoln and emancipation, to Olmsted and the larger American parks movement, and to the fundamental responsibility of government to advance, in Olmsted's words, the "pursuit of happiness against all the obstacles" for *all* its people.[25]

President Lincoln may never have said anything about the 1864 act bearing his signature that guaranteed "public use, resort, and recreation … inalienable for all time." However, he

did speak about his commitment to universal public education, an idea not unrelated to that of national parks:

> Let us hope, rather, that by the best cultivation of the physical world, beneath and around us; and the intellectual and moral world within us, we shall secure an individual, social, and political prosperity and happiness, whose course shall be onward and upward, and which, while the earth endures, shall not pass away.[26]

Endnotes

1. Joseph Sax, "America's National Parks: Their Principles, Purposes and Prospects," *Natural History* (October 1976); online at www.naturalhistorymag.com/htmlsite/editors_pick/1976_10_pick.html.
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The Heart of the Matter

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

To Conserve Unimpaired: The Evolution of the National Park Idea, by Robert B. Keiter. Washington, DC: Island Press, 2013.

Reviewed by Paul Schullery

For more than half a century, at least since the publication of John Ise's *Our National Park Policy: A Critical History* (1961) and in some respects longer, historical scholars have been attempting to bring some reasonable narrative order to the story of the national parks. It isn't an easy task. The defining characteristic of the national park system—deplored by some, praised by others—is the individuality of each unit. These places have been added to the system, we are often told, because they are unique. And they are unique, we discover, not only for their cultural, ecological, or geophysical character, but also for the means and machinations of their creation and the tricky details of their executive or legislative mandates.

More than that, they are now valuable to us for a host of reasons barely imagined by their founders and early champions. Everywhere in our perception of them, the neatness of some original idea of parks has been replaced by an ever-messier and hugely stimulating set of definitions and hopes. Even the two fundamental categories to which our predecessors so fondly clung in discussing the park system—natural and cultural—are compromised by discomfiting realities. No site is purely one or the other. The grand old "nature parks" are densely under- and overlain with human culture, while many of the most urban cultural sites have echoes of the natural settings that preceded and shaped them. The national park idea is a gloriously convoluted tangle of laws, theories, ideals, and dreams; what's a parkie to do? Though it is the very complexity and administrative intractability of the system that makes it so good to think with, where should we begin to do that thinking? Where can we find some narrative order that will help us make a preliminary sense of it all?

One good place to start is Robert B. Keiter's engaging and helpful new book, *To Conserve Unimpaired: The Evolution of the National Park Idea*. Keiter, a prominent legal scholar of conservation issues at the University of Utah, embraces the messiness. He has constructed a narrative that, though it starts more or less at the beginning and concludes with the near-future, displays none of the constricting obligations of traditional administrative histories that plow steadily along a subject's chronology until arriving at now.

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Instead, *To Conserve Unimpaired* offers a series of overlapping studies of what we today may regard as the central issues of our own participation in the park system's evolution. The first chapter introduces the national park idea by providing brief chronicles of a number of prominent parks, better to display the breadth of definitions the system currently employs and to make the point that the National Park Service (NPS) Organic Act of 1916 "presents the agency with a nearly impossible mission, obscuring an array of hard judgments that the Park Service confronts on an almost daily basis" (p. 9). Those judgments, right or wrong, drive the constant reconsideration of the park idea. Keiter concludes this chapter with a forceful presumption that we, like all preceding generations, are more or less obliged to keep redefining the parks.

Chapter 2 explores the idea of wilderness as it has arisen and evolved in the conservation movement, and the ongoing public and institutional restlessness over the lack of legal wilderness classification in many parks. Keiter sides with those who believe that land classified as wilderness under the Wilderness Act "has the highest level of protection available" and thus parks without it are less well protected. He is confident that parks contain large tracts of land whose wildness is equal to that of legally defined wilderness, but raises a point that is implicit throughout the book: the first parks were originally created for public enjoyment and recreation and thus now feature developed areas in the midst of large wildlands. Keiter repeatedly acknowledges that firm reality but, like many of us today, displays discomfort with it, coming very close on several occasions to finding fault there, as if our predecessors a century ago should have had more foresight about the whole thing and known that some of us would have preferred a few less hotels and roads.

Chapters 3 and 4 are a fine summary of the changing ideas and internal tensions of defining and managing public recreation in the parks. Keiter again makes helpful use of various parks' stories in the changing realm of industrial tourism, from their origins as playgrounds to their present emphasis on a variety of priceless but intangible values as the core of a park visit. I heartily agree with his well-expressed conviction that these intangible values—"silence, solitude, self-reliance, and personal reflection" among them—are now "fundamental values" for park managers to foster. But he and I also seem to share a tunnel vision about this conviction; even though people like us (e.g., readers of *The George Wright Forum*) recognize these, most Americans are at best dimly aware of them. For those people, the parks are still playgrounds.

In keeping with the book's well-constructed overlapping of topics and chronological sequences, Chapter 5 is about park concessioners and other service providers. It brings up another set of essential historic tensions, those between businesspeople seeking to make a living or a fortune from park visitors, against whom are arrayed park managers and advocates seeking to hold some hard-to-define line between service and exploitation of visitors or park resources. Keiter's case studies are again well chosen, a series of Glitter-Gulch-ish episodes that often demonstrate the disproportionate political power wielded by local communities over management decisions that are supposed to be made in the national interest.

By this point in the book, readers new to the saga of the parks may feel overwhelmed, but they must brace themselves for Chapter 6, which presents one of the most instructive challenges facing park managers: the place and role that has been, is, or should be occupied in management deliberations by Native Americans. The relatively recent re-enfranchisement of the ancestral possessors of North America in national park management has compelled park

enthusiasts to think hard yet again about just what parks are preserving, and for whom. Keiter's examples of the process, including Grand Canyon, Badlands, Devils Tower, and Death Valley, illustrate what the American community of cultures is up against in this process.

Chapter 7 introduces the related topics of science and education. While admitting up front that the parks "were not set aside as research or educational facilities, nor with much regard for the on-the-ground ecological realities," Keiter tends toward the prevailing view in NPS circles that a great (and apparently unforgivable) failure occurred among several generations of park managers, who chose not to place science in a central position in management deliberations. There has always been some peril of presentism in this viewpoint. It's not enough to acknowledge that they had no mandate to care about science if you then turn around and criticize them beyond their context for failing to make science part of their job. Besides, in Yellowstone's case at least (that being the park I know something about), managers often did believe that they were supported by science, and it's only with hindsight that we can see that it was just the wrong science. That historical complication aside, Keiter offers several important cases from around the park system that vividly demonstrate a few of the many kinds of trouble the agency's "indifference toward science" has gotten it into. He follows these with more recent stories in which the NPS response to issues involving fire, wolves, watershed management, and climate change do show the essential role science now plays in modern management. Likewise, though acknowledging that early NPS leadership did establish educational (interpretive) programs, he points out that these programs were always the least supported of NPS operations.

Chapter 8 is about wildlife, which here mostly means large mammals—the fugitive resources that have driven park managers to distraction and desperation for more than 140 years now. This chapter is for the most part a review of some of Yellowstone's long-running controversies over elk, vegetation, bison, grizzly bears, and lake trout, with brief bows toward burros in the Grand Canyon, mountain goats in Olympic, and a few others. It is necessarily an extension of the previous chapter's discussions of science's potential role in clarifying management dilemmas, with recognition that science is an imperfect management tool not only because of disagreements among scientists but also because in the modern political and social context science "cannot alone dictate the content" of policies. And throughout the chapter Keiter, at times implicitly and at times explicitly, reinforces the point that wildlife issues in the parks most often arise because the parks themselves are imperfect reserves, never large enough to encompass entire ecosystems—a point that leads handily into the next chapter.

Chapter 9, an introduction to the large nature parks as cores of larger wildlands, addresses "the problem with enclaves" from several perspectives, with substantial reviews of the cases of Glacier and Everglades national parks. The chapter will serve many audiences by exposing the melodramatic cast of interests and personalities that can be counted on to emerge any time national park managers step across their boundaries to play what former Alaska Regional Director Bob Barbee refers to as the "away game." Those of us who started working with parks long enough ago may remember the comforting sense of insularity we felt as we entered a park—a place indeed apart, where everything seemed a little tidier, loftier human values prevailed, and we could comfortably pretend that the rest of the world only existed on some remote and almost irrelevant plane. Embracing the broader view of ecosystem

management may have come grudgingly to us, but this chapter does a nice job of rationalizing the larger, ecosystem-scale view that is our best hope for tomorrow's parks.

Chapter 10 is about how the system can be "grown." Keiter takes us on a concise historical tour of the unruly and haphazard manner in which the park system grew from a few relatively out-of-the-way scenery parks to the sprawling collection of sites-of-many-designations we enjoy today. There is a helpful summary of some of the key legislation that came along, and then influenced, the process, and an equally helpful review of some illuminating cases of new kinds of parks and newly imagined older parks. He reminds us of the source of the venerable Park Service–Forest Service rivalry, often revealed in Congress's willingness to carve new parks out of existing forests. He emphasizes the increasing importance of ecosystem-level thinking, of absorbing damaged but promising and reparable lands, of reaching out to increasing segments of the population who don't have much interest in parks, and of being open to other alternative approaches to getting the job done. Much of this may be familiar to many park advocates, but having it put together like this is a good aid to perspective.

I found the conclusion, Chapter 11, "Nature Conservation in a Changing World," the least satisfying part of the book. Though it does synthesize the essential messages of the previous chapters, it seemed to me to reach a little too far in a series of statements that made me nervous, mostly because they tended to disregard (or trample) points made more guardedly earlier in the book. One example of several must serve here, the following statement about the reduction of wildness in the early parks:

> Wild nature was tamed, rendered accessible, and put on display. Paradoxically, just as the public was being invited into the wilderness to witness nature's splendor, the nature they encountered was being disassembled into a destination vacation site and a recreational paradise. Any idea of the park as a wilderness enclave soon lost any real currency.

There is much incautious about these sweeping generalizations. Huge portions of those early parks remained wild (he emphasizes this earlier in the book), and in several cases the creation of the park in question intentionally restored that wildness from former abuses. Grizzly bears survived in the lower 48 states because wilderness values in Glacier and Yellowstone parks were most decidedly not "disassembled." Those same wilderness values retained a vital "currency" from the very beginning of the park movement in the hearts and writings of Theodore Comstock, John Muir, Charles Adams, George Wright, and a host of others. As careless and even foolish as much early park development might have been, it was generally confined to narrow corridors and primary "attractions" rather than to the whole place.

The temptation is to quote more of this chapter's overstatements, but I don't want to imbalance the approval and admiration I feel for the book in general here. But, though I don't regard this chapter as quite the success the others are, it can still be read helpfully if the reader keeps in mind its somewhat hyperbolic tone. Besides, I can hardly blame Keiter for some of this overstatement, considering the self-flagellation NPS thinkers often engage in these days regarding the agency's putative historic failures, especially in resource management. Maybe we haven't always been the good guys we once liked to imagine we were, but in terms of what the parks accomplished we were still far better guys than most.

That said, I hope the book is a big success and sells so well that it needs reprinting almost immediately. And when it is time for it to be reprinted there are some fixable problems that I hope Keiter and his publisher will attend to.

First, there are factual errors surprising both for their content and their number. The number of Yellowstone-related errors suggests to me that it would be worth checking with appropriate area experts to see how the stories of other parks hold up in this respect. Some of the errors I noted include misspelled names, out-of-order chronology, and factual mistakes regarding wildlife, park history, resource management, and more.

Of at least equal concern is that several important stories are presented in unfortunately simplistic and thus incomplete form. On these occasions Keiter has chosen to "print the legend" rather than look past it. Keiter settles for the popularly held, fable-like versions of a number of important national park-related episodes, including: the Kaibab deer herd's famous but long-disputed irruption and collapse; the now-questioned 90% decline in wading bird populations in the Everglades; how and why the milestone Craighead grizzly bear study in Yellowstone actually ended; the origin of the "natural regulation" concept as it was applied in Yellowstone in the 1960s, and the resultant increase of the northern Yellowstone elk herd in the 1970s and 1980s; and Yellowstone's ecological "trophic cascade" reported by some investigators a few years following the reintroduction of wolves in 1995, but roundly challenged by subsequent research.

Keiter is a vital scholarly voice in modern conservation dialogues. For more than 20 years I have relied on his thoughtful papers on various important park-related issues for even-handed and well-researched perspectives. He has accomplished much in *To Conserve Unimpaired*, and has given us a fine template for organizing our thinking in the face of an extravagant array of urgent proposals we now are hearing for what we must to do to get the parks right. Books like this will be essential in that enterprise.

Facilities Management in the National Park Service:
A Model for Sustainability and Preservation
Tim Harvey, Ralph J. Coury, and Sarah E. Burke, guest editors

The Science Underlying Facility Management in the National Park Service—Much More than Meets the Eye

Tim Harvey

In 1905, Albert Einstein first proposed his Theory of Special Relativity. This theory states that our universe includes four dimensions: three that are referred to as space, and a fourth as time, which together constitute "spacetime." In this view, time and space are inextricably linked. According to Einstein, two people observing the same event in the same way could perceive that event occurring at two different times depending on their distance from the event in question. These perceived differences arise from the time it takes for light to travel through space. Because light travels at a finite and ever-constant speed, an observer from a more distant point will perceive an event as occurring later in time, even though it is actually occurring at the same instant. Thus, time is dependent on space. If Einstein's theory is valid—and for the sake of argument, let us assume that it is—then it is therefore impossible to fully evaluate or appreciate the diversity of an environment from within the confines of that environment—simply stated, it is not possible to see the entire forest through the trees.

Clearly, 1905 was a monumental year for profound scientific revelations, and, given the generalized curiosity of the era, presumably in countless other disciplines as well, including land management. For purposes of this discussion, however, let us consider the significance of another revolutionary and enduring event that took place little more than a decade later: the Organic Act of 1916. That pinnacle event signaled the creation of the National Park Service (NPS) as well as the coming of age of the previously existing (but unaffiliated) national parks. It, in many ways, epitomized our nation's commitment to an expanding preservation effort, a commitment built on other significant actions, such as the establishment of the White River Plateau Timber Reserve in the 1890s and the designation of Mesa Verde National Park in 1906. While it is not likely that Einstein's theory was foremost in President Woodrow Wil-

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son's mind when he signed the Organic Act on August 25, 1916, the aggregate outcome of creating a unified NPS certainly enabled the means by which missions and resources could now be viewed from beyond the plane in which they originally existed, and data derived from this examination could one day be evaluated in a much more scientific context. A concept that took root in 1872 with the creation of Yellowstone National Park had reached maturity.

The complex task of managing today's more than 400 national parks, located in vastly diverse environments, often separated by thousands of miles, must balance equal measures of flexibility and homogeneity to effectively address the needs of park units supporting an array of mission requirements. Until 1916, federally protected areas were largely managed in a rather individualized and independent fashion; and while much of this autonomy has been retained in the contemporary culture of the service, much has also been introduced to ensure consistency and uniformity across great distances and myriad park boundaries.

Since its inception, the NPS has remained a dynamic and responsive organization. Now nearing its first century as a US government agency, it retains, as a core mission at every level, an awareness of the needs and desires of the American public—and it has reacted to this requirement through continuous and significant change. Management decisions have responded to the needs and desires of its very public constituency, even when those decisions have resulted in limited reorganization, expanded or redefined mission requirements, or revised goals and objectives. Arguably, one of the most critical responsibilities—consistent, professional support to the demands of an agency with such far-reaching, decentralized, and often subjective needs—rests in the hands of those who ensure the sustainability of that agency's infrastructure.

Although it would be impractical and is beyond the scope of this discussion to fully examine, in a comprehensive or all-inclusive fashion, all the elements that form the NPS Facility Management Program, it is appropriate to acknowledge the complex, coordinative effort necessary to sustain the NPS infrastructure and enable an environment that is conducive to a positive visitor experience. An eclectic and geographically diverse team of facilities and preservation professionals are continuously engaged in collaborative initiatives in support of this mission. Their efforts support the continued viability of programs and activities, such as natural, cultural, and historic asset preservation; the development of business practices and processes to address the life-cycle asset management requirements of conventional (e.g., buildings, roads), as well as non-industry-standard assets (e.g., maintained landscapes, fortifications); and the refinement of planning and prioritization methodologies to safeguard the service's financial and environmental sustainability. The sum of these actions helps to ensure that all high-priority NPS-constructed assets are maintained at levels that will maximize their life expectancy, that historic and cultural assets are maintained into perpetuity, and that NPS staff are provided with the tools and information to encourage and support energy conservation and carbon footprint reduction.

Just over a decade ago, the NPS Park Facility Management Division (PFMD) embarked on a long-term initiative to introduce and use the Facility Management Software System (FMSS), an enterprise work management system. It was clear, at the time, that parks could no longer continue "going about their own routines" absent coordination or an awareness of similar actions that may have been taking place in other areas of the service. And they could no longer practice effective life-cycle asset management without access to accurate, current,

and reliable data about the asset portfolio. The FMSS is more than just a work management system: it is a comprehensive database that drives all life-cycle asset management activities—from planning and budgeting to condition assessment, operations and maintenance, repair/rehabilitation, and disposal.

Discussed in greater detail in the following articles, the FMSS has been instrumental in the NPS's ability to better navigate that "spacetime" continuum where critical asset data had previously been lost or misinterpreted: often the same event simultaneously observed in more than one geographic location resulted in different perceived outcomes. The FMSS has made it possible for facility management staffs to store, maintain, retrieve, and track data in real time, creating a more accurate picture of facilities needs from within a given environment. This picture uses information derived from a consolidation of collected data and takes into account the state of a park environment from an external viewpoint—in effect, enabling managers to make decisions based on information not customarily available through local analysis.

This system—and the more than 10 years of empirical data that it supports—has proven invaluable to the practice of life-cycle asset management across the service. In recent years, these data have also become increasingly applicable to other NPS programs not traditionally associated with facility management. The integration of data obtained from the routine and periodic maintenance of constructed and historic assets has, for example, proven quite useful to the NPS Cultural Resources Program and to the NPS staffs who support the interpretive and educational goals of the service. Although some of that data, such as an asset's current replacement value, may not weigh heavily on or even be calculable for some cultural or historic assets, other data, for example the parameters and costs associated with regular maintenance and the frequency of that maintenance, are exceptionally valuable to the upkeep of such assets. The value of these data to the practice of sound asset management has also led to an increased level of international and interagency cooperation, which you will read more about in this series.

While it admittedly requires a fairly active imagination to draw a straight line between Einstein's Theory of Special Relativity and contemporary facility management strategies, it is reasonably clear that the observations of this early-20th-century physicist may have also provided some of the philosophical underpinnings upon which a truly effective and professional facility management program has been founded. In environments where managers must engage in both the art and the science of facility management to make often-critical decisions about irreplaceable natural, cultural, and historic assets or resources, they must also have the information, tools, and processes to enable them to see the forest through the trees.

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Preserving the Past: Managing the National Park Service Historic Asset Portfolio

Mary Tidlow

What do President Abraham Lincoln's birthplace cabin, a high school in Little Rock, Arkansas, a Cold War missile silo, and a towpath at the Chesapeake & Ohio Canal (Figure 1) all have in common? They make up a few of the more than 14,000 historic assets that the National Park Service (NPS) manages.

Figure 1. Clockwise from top left: Newly restored log cabin at Abraham Lincoln Boyhood Home at Knob Creek; Outside façade of Central High School, Little Rock; Chesapeake & Ohio Canal towpath; Minuteman II training missile at Delta-09. NPS photos.

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As stewards of some of the most historically significant assets in the United States, NPS, by its mission, must maintain these assets into perpetuity "for the enjoyment of future generations." The Park Facility Management Division (PFMD) oversees the physical maintenance of the NPS capital asset portfolio—not an easy task when one considers the number of historic assets within the portfolio, the reduced budgets under which the service operates, a shifting workforce, a changing climate and requirements to make all assets more accessible and energy efficient.

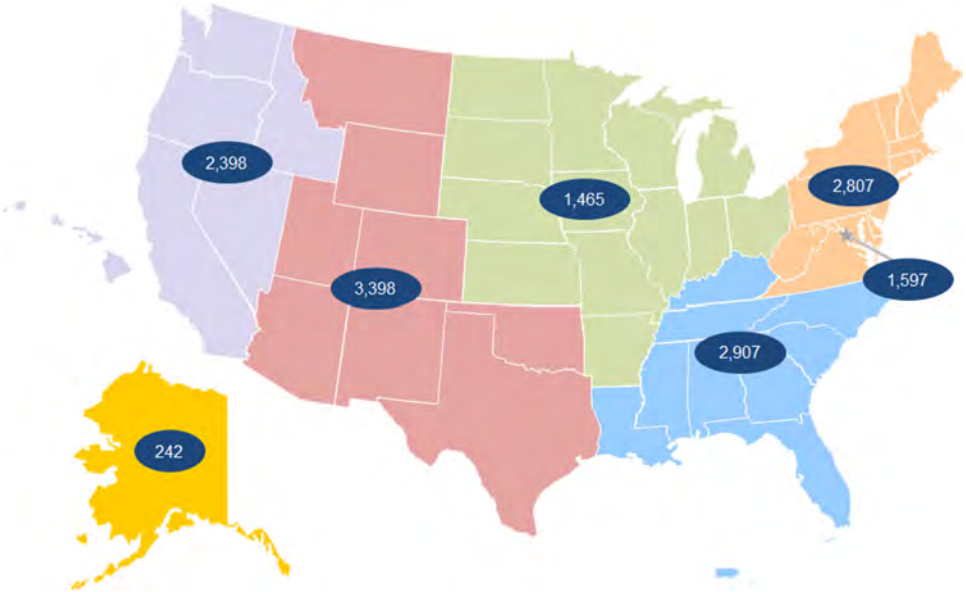
According to Randy Biallas, chief of park historic structures and the Cultural Landscapes Division and chief historical architect, park facility management staffs have a "tremendous burden." Facility managers serve as "the front line with historic preservation. Cultural resources staff offer advice and caution, but the facility staff make the decisions about priorities and do the work. They [facility management] have the staff, equipment, and fund sources." This article further explores the challenge of physically maintaining the NPS's historic asset portfolio and how the service is meeting that challenge.

Number of historic assets

More than 20% of the assets the NPS manages are historic. These assets range from the monuments along the National Mall in Washington, D.C., to the archaeological ruins in the Southwest, to mining cabins in remote areas of Alaska. NPS manages historic assets in all 50 states and in the District of Columbia, Guam, the Mariana Islands, Puerto Rico, and the Virgin Islands (see Figure 2).

Buildings compose the majority (45%) of the NPS historic asset portfolio, as shown in Table 1. Because buildings quickly deteriorate when not occupied and used, one of the challenges of historic preservation is to determine the best usage option for historic buildings.

Figure 2. Number of NPS historic assets, by NPS Region, NPS data as reported to the Federal Accounting Standards Advisory Board in FY2013.



Structure Type	Count	% of Total	Current Replacement Value
Building	6,678	45.08%	$11,429,763,993
Maintained Archeological Sites	1,397	9.43%	$1,687,378,515
Road	1,287	8.69%	$6,962,429,482
Trail	930	6.28%	$1,440,341,032
Maintained Landscape	881	5.95%	$5,536,766,499
Road Bridge	840	5.67%	$2,051,992,351
Parking Area	823	5.56%	$472,258,698
Monuments/Memorials	558	3.77%	$2,244,588,362
Constructed Waterway	477	3.22%	$1,640,465,547
Fortifications	350	2.36%	$64,694,132,046
Dan/Levee/Dike	104	0.70%	$1,168,712,770
Other*	489	3.30%	$3,491,731,303
Total	14,814		$102,820,560,599

*Other includes trail bridges, railroad bridges, water system, road tunnels, marina/waterfront systems, towers/missile silos, and ships

Table 1. Number and current replacement value of the NPS historic asset portfolio, by structure type, NPS data as reported to the Federal Accounting Standards Advisory Board in FY2013. NPS photo.

Many buildings continue to function with the same original purpose, such as visitor lodges or employee housing. Others have been adapted to serve as visitor centers or museums. Yet, as more and more buildings age and become eligible for listing on the National Register of Historic Places, the PFMD must work with the NPS Cultural Resources Program and others to determine the best use for a greater number of historic buildings. This work sometimes involves adaptive repurposing of these structures.

Some parks have had success in leasing historic structures to private or public organizations. At Golden Gate National Recreation Area, developers renovated 13 historic lodging buildings and 7 historic common buildings at Fort Baker as part of a luxury hotel and convention center. Not only did the developers improve the physical accessibility of these historic structures, they also obtained Leadership in Energy and Environmental Design (LEED) accreditation. Klondike Gold Rush National Historical Park worked with local businesses and organizations to restore and rehabilitate 25 historic buildings in its Skagway National Historic District. Currently, 7 of these 25 buildings are leased to local commercial retail businesses. In 2009, the American Planning Association recognized the main street in Skagway, Broadway Street, as one of "America's Best Places." Additionally, compliance is underway on a project to adaptively reuse a historic aircraft hangar building on Floyd Bennett Field, which Gateway National Recreation Area manages, as a natural gas transfer station. Under the pending lease agreement, the natural gas company would restore and maintain several abandoned aircraft hangars. The hangars would house a metering and regulating facility. Partnerships like these provide a means to restore and maintain historic structures.

Reduced budgets

Ask any facility manager working on US public lands today, and you will hear that one of the

top challenges facing historic preservation is shrinking budgets. Deferred maintenance on NPS assets reached $11.3 billion by the end of fiscal year 2013 while the president's budget requested $82 million for the NPS construction budget.

Notably, repair and rehabilitation of historic assets are typically more expensive than similar work performed on nonhistoric assets for the following reasons:

- **Availability of skilled craftsmen trained in historic preservation:** There is a lack of available, skilled tradesmen. Additionally, salaries and contract costs for these tradesmen are generally higher.
- **Historically accurate material:** Obtaining materials that match assets' historic fabric usually requires special orders or hand tooling. Oftentimes, maintaining historic fabric involves matching materials that may no longer be readily available. To obtain historically accurate material, historic preservationists often rely on businesses that salvage building materials, such as bricks, stones, windows, glass and timber, which carry a higher cost.
- **Time associated with historic preservation**: Proper preservation is time consuming, which alone leads to higher labor costs. For example, preservationists test samples to match original and existing mortar color to ensure consistency when repairing walls and masonry. Also, the care needed to perform such work without damaging the original resources requires additional time. Preservationists must devote a great deal of attention to detail—even replicating the tool marks made on the original structure by using the original tools versus the tools and technology of today.
- **Research and documentation:** All historic asset work must first be researched to ensure that the result will be historically accurate and compliant with regulations. Additionally, the work must be fully documented for compliance, record-keeping, and future reference.

To ensure that limited available funding is used most efficiently for all NPS assets, including those that are historic in nature, the PFMD has implemented the NPS capital investment strategy. This deliberate strategy of prioritization focuses operations and maintenance and associated project dollars on the most important facilities—facilities that the NPS can commit to maintaining at defined service levels.

This strategy is based on life-cycle asset management principles: that every asset has a life cycle and will deteriorate over time. The key to extending the useful life of an asset—especially historic assets—is to direct preventive maintenance funds to those assets to prevent deterioration and then to direct recapitalization funds to those assets before repairs become prohibitively expensive or ineffectual. By directing investment dollars to the highest priority, mission-critical assets before the onset of major deterioration, NPS is best able to preserve those assets and retain the historic fabric of its many heritage assets.

The capital investment strategy's focus on preventive maintenance aligns with historic preservation best practices. Chris Robinson, superintendent of the NPS Historic Preservation Training Center (HPTC), uses the example of a historic barn to show this alignment. The best preservation practice would be to replace the board on one side of the barn when the siding reaches the end of its life cycle. This practice ensures that the historic fabric of the structure remains intact. However, when funding is not available for such preventive main-

tenance, a facility manager is more likely to wait until all the siding on a barn needs to be replaced so that the bundled work might better compete for limited project funding. This reactive approach to maintenance allows the siding on the barn to deteriorate, which risks added water and structural damage. In such cases, instead of only replacing the siding on the barn, a park would have to fund additional repairs to correct the deterioration that occurred because of the deferred maintenance. In contrast, by focusing on preventive maintenance, the capital investment strategy better protects the service's important historic assets and more effectively applies its limited funding.

A shifting workforce

According to the federal personnel and payroll system, in 2009 the facility management career field encompassed 5,945 employees in 86 classification series, which translated to more than 27% of the total NPS workforce. Over 49% of these employees are eligible for retirement by 2015. Looking at the career field's leadership across the NPS, 60% of supervisory facility managers were scheduled to be eligible for retirement by 2015. These telling statistics reveal a growing need to facilitate and expand the transfer of the knowledge and organizational wisdom of retiring employees to the next generation. Much of the expertise within the maintenance trades is related to years of on-the-job training, firsthand experience, and never-ending experimentation and adaptation. However, because of budget constraints, many of these existing positions are not being replaced when an incumbent retires or leaves NPS.

In addition to a shrinking workforce, facility employees' roles are changing. According to Robinson at the HPTC, "the PFMD has shifted from facility workers to facility management specialists—those who can perform maintenance but also handle data issues and manage limited budgets." Sarah Polzin, human resource specialist with the HPTC, agrees: "Computers have become such a big part of our lives in the last 10 years. It is a skill [computer skills] that even trade workers need to be the best employee possible. It is something that a lot of them [maintenance workers] don't have any interest in learning, especially the older workers. But the ability to find the information that you need when you need it is an important skill these days." Maintenance and trade workers can no longer be solely craft-focused.

Along with PFMD staffs, NPS training programs are adjusting to the new roles that maintenance employees have assumed. The HPTC is currently planning to conduct a needs assessment to determine the best method for professionally developing facility and crafts workers. NPS recognizes the importance of training and sponsors several options for employees to learn new skills or improve existing ones (Figures 3 and 4).

In addition to offering training to existing employees, NPS also aims to advance historic preservation skills and techniques among today's youth. In 2013, the Stephen T. Mather Buildings Arts & Craftsmanship High School accepted its first class of students. A partnership between the New York City school system and NPS, this high school is training a new generation of craftspeople in carpentry, landscape management, decorative finishes, masonry, and plastering.

A changing climate

Before the US House of Representatives' Subcommittee on National Parks, Forests, and Public Lands, NPS Director Jonathan B. Jarvis described climate change as "potentially the most

- *Historic Preservation Training Center:* In-house training center that uses historic preservation projects as the main vehicle for teaching preservation philosophy, building crafts, building technology, and project management skills.
- *National Center for Preservation Technology and Training:* In-house center that advances the application of science and technology to historic preservation through training, education, research, technology transfer, and partnerships.
- *Western Center for Historic Preservation:* An NPS preservation and education center in the NPS Intermountain Region dedicated to the preservation and maintenance of cultural resources in the western United States.
- *Vanishing Treasures:* An NPS program that focuses on archaeological sites, spans two NPS regions (the Intermountain and Pacific West regions) and encompasses 45 park units. The program aims to document the rate of deterioration, identify repair structures in imminent danger and train a new generation of craftspersons.

Figure 3. A sampling of historic preservation training opportunities for NPS employees.

far-reaching and consequential challenge to our mission than any previously encountered in the entire history of the NPS" (Jarvis 2009). The potential impacts of climate change on historic structures are particularly staggering.

In a case study appearing in the forthcoming NPS handbook on climate change, *Climate Change and Cultural Resources: Impact Assessments and Case Studies,* the NPS National Center for Preservation Technology and Training's Caitlin Smith explores the potential impacts of climate change at Gettysburg National Military Park. Higher maximum temperatures, drier temperatures, and more extreme precipitation may compound the weathering effects on historic assets, including monuments, wooden fences, and iron cannon. The warmer climates may encourage invasive species, including additional species of termites, to expand their habitat northward, threatening structures that were not constructed to handle an increased number of the wood-eating insects. A warmer, drier climate is also expected to accelerate the process of vegetation change, which, according to the case study, may lead to an alteration in cultural landscapes such as battlefields (Tworek-Hofstetter 2013).

Climate change will lead to different impacts on historic assets depending on their geographic location. For example, the melting permafrost in Alaska is showing signs of threat to the foundations of some historic buildings (Larsen 2008). Moreover, the increase in the intensity and length of the wildfire season has already endangered many historic assets in the western United States, including some in the iconic Yosemite National Park in 2013. Climate change is said to be making the glaciers at Mount Rainier recede, which in turn is leading to effects in the waterways alongside the park's historic roads (NPS 2014b).

Some of the most immediate and obvious effects of climate change may be observed in higher storm surges and rising sea levels. Many believe that the astounding size and power of Hurricane Sandy can, in part, be attributed to these effects (Gillis 2012). In 2012, Hurricane Sandy roared up the eastern coast of the United States before making landfall on October 29 in southern New Jersey. Nearly 70 national parks sustained damage, with Gateway National Recreation Area, a vast park crossing two states and three New York City boroughs, being one of the parks hardest hit by the hurricane. At the Sandy Hook Unit, a record surge covered

Figure 4. NPS maintenance mechanic learning trowel skills and how to lay brick. NPS photo.

most of the site, flooding basements, eroding the beach, and rupturing the multiuse path.

Marilou Ehrler, a historical architect at Gateway National Recreation Area, admits that her job "became much bigger after Hurricane Sandy." According to Ehrler, the park has "about 600 historic structures, not including archeological sites and curatorial collections." The park's efforts during the first year of the recovery focused on cleaning up, stabilizing, and reopening. It was not until recently that they began searching for answers to the difficult questions of historic preservation that Hurricane Sandy raised:

- Should we continue to use and maintain historic structures that are now located in a flood zone?
- Should historic structures, such as the bath house at Riis Park, be restored to the exact details as before the storm or should modifications be made to minimize future damage (Figure 5)?
- And because higher storm surges are expected in the future, what can be done to protect the infrastructure while maintaining the natural setting?

Although no one was prepared for a storm like Hurricane Sandy, NPS is developing tools and resources to help Gateway and other parks answer these questions and mitigate the potential future risks of climate change. The NPS Climate Change Program uses a four-pronged approach: (1) using science to help manage the impacts, (2) remaining flexible in adaptation, (3) reducing the carbon footprint, and (4) educating others about climate change (NPS 2014c). This program has produced valuable tools, including a high-level risk-screening tool for historic structures in coastal parks to characterize vulnerability and identify parks with assets most at risk; targeted research in climatic tolerances of historic materials; and a cultural resources climate change impacts handbook illustrated with case studies and photos.

Improved accessibility and energy efficiency

Improving accessibility and energy efficiency in historic structures often comes in the form of a trade-off. Should a 200-year-old door that is only 29 inches wide be replaced to make a structure physically accessible if it also means that visitors will not be able to touch the same

Figure 5. Aerial view of the bath house at Riis Park, Gateway National Recreation Area. NPS photo.

door that Benjamin Franklin did? Should drafty original windows be replaced to achieve energy savings? The accessibility and energy efficiency of historic structures forces NPS to make decisions about what is more important: the story, the access, or the cost. Should we maintain the historic fabric of an asset *at all costs* or make alterations to reduce the carbon footprint? Facility managers, with support from cultural resources and management, often face these difficult decisions.

NPS "is committed to making all practicable efforts to make NPS facilities, programs, services, information, employment, and meaningful work opportunities accessible and usable by all people" (NPS 2014a). With careful planning, consultation, and universal design, independent physical accessibility at historic properties can be achieved without significant damage to the historic fabric of the asset.

For example, the first floor of Independence Hall, the building where the Continental Congress signed the Declaration of Independence and the US Constitution, is accessible for people with mobility, hearing, and visual disabilities. Ray Bloomer, director of education and technical assistance at the National Center on Accessibility, remembers a time when the building was not permanently accessible. According to Bloomer, who served as a park ranger at the time, park staff used to set up a wooden plywood ramp on the steps and physically help people up the landing. This ramp has since been replaced with a more permanent structure located in the back of the building. Because the ramp cannot be seen from the front of Independence Hall, its historic view has been protected. Additionally, the ramp was constructed in such a way that allows for easy removal, if necessary.

Although NPS always strives for full accessibility, at times it is not possible. Decisions about making a historic asset accessible must balance providing access with preserving histo-

ry. Such decisions should involve both preservation and accessibility specialists. According to Bloomer, it is important to "make as much of the historic structure accessible relative to the program that visitors experience." Although the first floor of Independence Hall is fully accessible, NPS has not been able to provide access to the second floor to people with mobility disabilities. However, having the ability to visit the first floor allows people with mobility disabilities to touch the interior walls, see the decorative and architectural details, such as crown molding, and gain a sense of what it would be like to gather in the Assembly Room during the time of the Continental Congress.

For structures that cannot be made accessible, NPS has had success using tactical models to share information and experiences. For Independence Hall, photographic and text albums that describe the second floor are available for those that cannot access it physically. Similarly, exhibits at the Statue of Liberty National Monument include a seven-foot cutaway to share the experience of what it is like to be inside the statue. Tactical models provide a tangible experience for people who would not otherwise be able to see or feel a historic asset.

Similar to its commitment to accessibility, NPS aims to improve the energy efficiency of constructed assets, including historic ones. For example, the Furnace Creek Visitor Center at Death Valley National Park reopened to the public in February 2012 after an 18-month rehabilitation. The rehabilitation, which included replacing the windows and the heating and cooling system and adding insulation and solar panels, saves the park an estimated $14,000 in energy costs each year. Special care was taken to preserve the interior and exterior character so that the historic nature of the building would not be affected. Such preservation proved challenging because the project insulated a building that had never previously been insulated. In addition to energy savings, the park is benefiting from reduced water and propane use and an improved view of the night sky.

To assist with projects like these, NPS's Technical Preservation Services Division released *The Secretary of the Interior's Standards for Rehabilitation & Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings* in 2011. These guidelines direct facility managers and others in making changes to improve energy efficiency and preserve the character of historic buildings. Additionally, the PFMD and the NPS Cultural Resource Program are working together to hold a charette (stakeholder meeting) during which staffs will analyze 20 representative NPS buildings that are have challenges in improving their sustainability while maintaining their historic integrity. The best practices gathered from this effort will be shared so that they can be incorporated into other projects and guiding principles and sustainable standards can be developed.

Conclusion

Returning to the question that opened this article, the answer is far greater than that the named assets are simply historic assets entrusted to NPS care. The broader answer, which is significantly more important, is that these assets tell the story of the United States. They are physical proof of the humble beginnings of a great president, of the courage shown by nine students in the desegregation of public schools in the United States at Little Rock Central High School, of the reminder of how close the world came to a nuclear war, and of the ingenuity of early transport that enabled westward expansion. These assets provide a tangible—yet irreplaceable—link to our past and remind us of whom we are.

With this deeper story in mind, effective maintenance of these historic assets remains complex. Limited resources and changing environments are challenging the methods and decisions of the NPS facility management community. Yet NPS, with the support of public and private partnerships, continues to develop policy and tools to overcome these challenges to historic preservation so that its 14,000 (and growing) historic assets may be truly preserved into perpetuity for future generations to enjoy and remember.

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National Park Service Facility Management: International and Interagency Cooperation

Steve Olig

During a March 20, 2012, site visit, National Park Service (NPS) employee Tim Harvey, chief of the Park Facility Management Division (PFMD), did something that seemed both familiar and very foreign. Although the weather was cool and misty as Harvey stepped through the site's recently constructed entry station, even a torrential downpour would not have derailed the business portion of the day's schedule. And while the business portion was familiar to him, it was the setting that made the experience unique.

Shortly after entering the site, Harvey was whisked through a brief tour of its support facilities. These facilities are rarely ornate or exciting to tour because, although they are critical to operations, the majority of the support infrastructure consists of maintenance shops, equipment storage areas and offices that are not part of the visiting public's normal experience at a destination. This tour provided a useful on-site perspective for Harvey to build from. After the tour wrapped up, Harvey proceeded to a conference room for a long discussion, and the "business" purpose of the trip.

As conversations go, it probably would not have intrigued many outside of Harvey's realm. Strategic plans, policies, capabilities and visions for maintaining an asset portfolio are topics that are generally of little concern to the casual observer. But for Harvey, asset management has been the driving force behind his more than 40 years of service to the NPS.

When the meetings were done and the "business" had concluded, the day's agenda moved to that which was least familiar to Harvey. Now, he would experience a rare opportunity to visit the treasure that the facilities he had toured and the staff he had spoken with were there to support. Back outside, Harvey found himself looking up at a mountain that momentarily raised memories of his eight years as a chief of maintenance for Mount Rushmore National Memorial. Yet this mountain was strikingly different from Mount Rushmore. Instead of granite, it is sandstone; instead of four faces, it is hundreds of faces; and instead of showcasing the realized vision of an American artist, it hosts the work of many Chinese pilgrims who began chiseling their marks on history nearly 1,500 years ago. The mountain was the Maijishan Grottoes, in the Gansu Province in the People's Republic of China, to which

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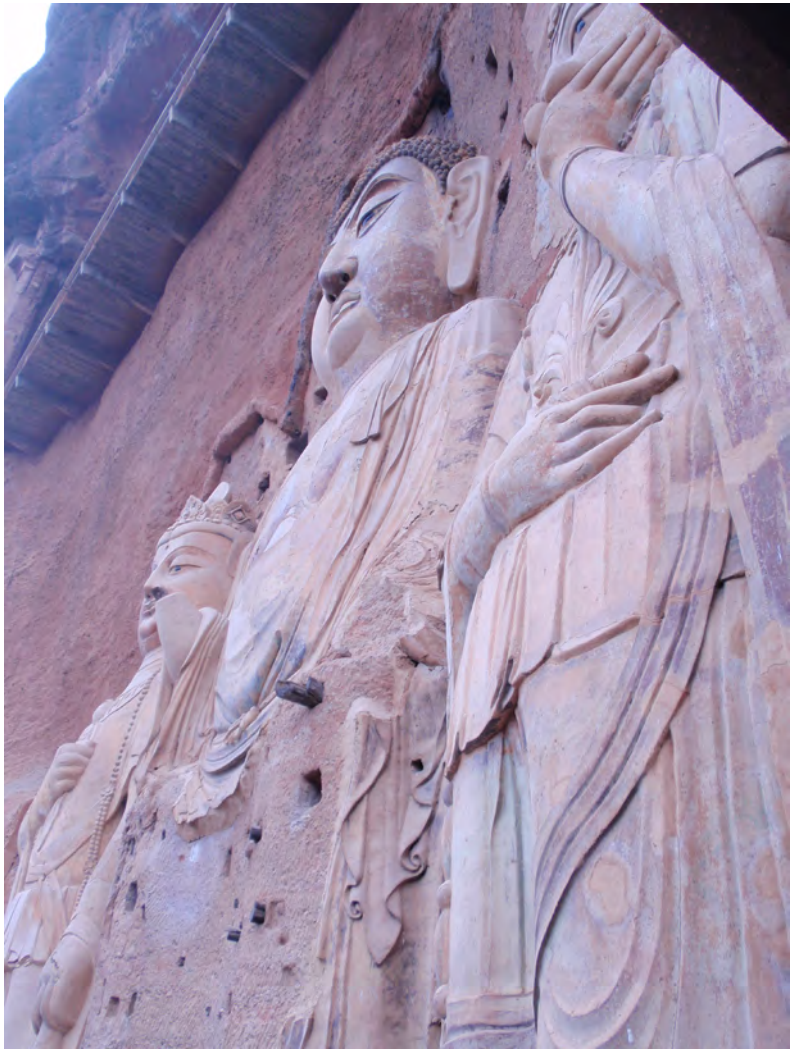
Harvey was dispatched by the World Bank to evaluate the site's asset management practices (Figure 1).

The path

Some 25 years ago, it is unlikely that anyone in Harvey's position would have been tapped with such a responsibility. In 1988, when the NPS was itself only 72 years old, facility managers were more commonly known as maintenance workers. Senior management sometimes considered them grunt labor, and the public—which always had access to interpretive and law enforcement rangers to enhance their visitor experience—would either not notice the

Figure 1. Carvings on the cliff side of Maijishan Grottoes. The underside of a visitor walkway, allowing guests to look into individual caves and get an up-close look at the artwork, runs diagonally in the top left of the image. Photo courtesy of NPS/Tim Harvey.



teams of maintenance workers scattered across park units or would only seek them out when pointing to visibly apparent maintenance problems.

As is often the case, this perception of facility managers and maintenance workers did not match reality. Many maintenance workers started their careers at a park, worked their way through the ranks and retired from similar (if more senior) positions. Frequently, over a 25-year career in even a single park unit, employees had learned a substantial amount of historic and practical information about everyday park operations. What few had considered was the value that individual experience represented to the service as a whole.

All that changed sometime around 1988. While the more senior members of the NPS maintenance community recognized the importance of the knowledge they had amassed, time was revealing the worth of that information to the whole NPS. A closer look at the history of the maintenance community revealed that documentation, tracking, and dissemination of that information was critical to ensuring that all facilities in parks were maintained on their own unique schedules and with methods tuned for intricate and specific needs.

Early attempts to address ineffective and anecdotal knowledge retention and transfer began with a basic, yet logical servicewide effort to professionalize NPS facility management. Managers' experience and knowledge were translated to clipboards and files; tips of the trade once dispatched through "this is how we do it" lessons to newcomers were crafted into training programs; and work, both routine and otherwise, was documented and tracked at increasing levels of detail.

Professionalization led to collaboration, and collaboration led to new and perhaps unexpected workloads. On one front, while the national park system grew and became more complex, the NPS facility management community began adapting industry's knowledge to suit its own specialized requirements. On another front, facilities employees more accustomed to working with lightly rusted tools from the back of a somehow constantly rattling work truck were now tapping keyboards—logging the work they accomplished—and indexing vast amounts of critical data. Maintaining these daily logs and merging them with data from previous years yielded informative reports that translated into plans for each day's, week's, month's, and ultimately year's work.

And through all this, a new goal began to emerge. Rather than working to keep things going day to day, methods and high-quality data could be combined, sifted, broken apart, and reformed into a science of facility management for NPS. Instead of rebuilding a roof when it failed, it was now possible to create a plan to prevent the roof from failing. And, because money was always in short supply, that roof maintenance could be balanced against the need to paint the building, which in turn could be balanced against foundation repair. Reacting to needs as they arose was systematically becoming an obsolete practice as maintenance chiefs learned that assets could be managed to ensure that all their needs were met before failure as well as—in an ideal environment—actually extending their life cycles.

By 2006, the Facility Management Software System (FMSS), a customized version of IBM's Maximo work-order tracking software, had amassed a wealth of asset information. Most of all, it helped park superintendents and chiefs of maintenance plan work for each upcoming year, and then bundle their work into projects to compete for funding on a servicewide level.

International interest

The NPS approach to asset management was so successful, in fact, that a delegation from Parks Canada traveled to the Washington, D.C., area to learn more about it. Over five days, the delegation met with Harvey and the PFMD staff to discuss procedures, processes, strategies, hardware, and software for tracking and reducing deferred maintenance. At the end of the visit, the Parks Canada delegation had observed the "nuts and bolts" of the NPS system and its capabilities at the park, regional, and national levels. Although Canadian park management is driven by a very different model from that employed in the United States, the delegation found immense value in the transferability of many elements of the NPS system. Throughout the following year, Parks Canada maintained contact with Harvey and his PFMD program managers as they navigated the complex task of implementing some similar and other hybrid systems and practices.

While talk of technology made up the bulk of the discussion with Parks Canada, most of the participants had worked as maintenance managers in the field. So, tours of the local NPS park units were a natural part of their visit. At the time, much of the system that Parks Canada managed was rural; yet most of the locations they toured in the metro area were urban. Seeing the infrastructure and human effort required to maintain locations that, to visitors, appear to be simple memorials, gave the visiting delegation some perspective into the demands that would be required of their own workforce should Parks Canada start accepting more urban locations into its family of sites.

Parks Canada's visit to the United States was part of a growing trend of foreign, state, and local agencies turning to NPS for tips in enhancing their own management strategies. More than anything else, this trend underscored the success evident even in the early results of NPS's applied facility management science.

Much of that success came from dialogue across park, regional, and industry boundaries. While the opportunity to advise a foreign delegation about facility management was an honor for all those involved in the experience, many others in the NPS facility management community questioned, "What can we learn from our colleagues in other countries?" If NPS could learn this much after a few decades' worth of internal conversations, the potential for astonishing innovation might be just a plane ride away.

It was in that spirit that Bill Thompson, at the time the chief of maintenance for Rocky Mountain National Park and currently the maintenance chief for the entire NPS Intermountain Region, traveled to New Zealand.

Rockies and islands exchange

Thompson's New Zealand experience involved an international exchange. Jim Herdman, a program manager for cultural/historic and visitor assets in the New Zealand Department of Conservation (DOC), had an idea to set up an employee exchange to share knowledge. With the American agency closest to his own being NPS, he started the search there. Fortunately, Herdman had a contact in the Intermountain Regional Office, Frosty Bennett, whom he had met at a conference; through Bennett, he was forwarded to Thompson, who made arrangements through the NPS Office of International Affairs in Washington, D.C. With agreements signed and filed, Herdman arrived in Colorado in summer 2011 to begin his three-month exchange at Rocky Mountain National Park.

To expose Herdman to a wide variety of facility management activities, he was embedded in projects spanning facilities, wilderness, resource management, historic structures, trails, and even the FMSS. During his time in the United States, Herdman learned new techniques and standards and shared some of the best practices from his own experience. Doing so face to face with his foreign counterparts while in the middle of a task meant that both he and his hosts could test ideas, share feedback, and learn together.

After Herdman returned to New Zealand, Thompson made plans for his own four-week trip across the Pacific. During that brief visit, he got a crash course in the DOC's methods, and he presented on NPS practices to several public audiences, including some of the DOC's senior leadership (Figure 2).

When asked to sum up his trip, Thompson was quick to respond: "At each area that I visited, I was impressed to see that every Department of Conservation employee comes to work with the same dedication and passion that is displayed by National Park Service employees.

"My impression was that DOC employees are excited to be in positions that allow them to care for and to tell the story of New Zealand's natural and cultural resources. They are also happy to show how they approach their work and their challenges, and [are] eager to hear about the way that we manage our work and challenges. There were a lot of rewards that came

Figure 2. Bill Thompson, at the time chief of facility management at Rocky Mountain National Park, looking at a swing bridge over the Wairau River along the Rainbow Road in New Zealand's South Marlborough Area during a four-week international job exchange. Photo courtesy of New Zealand Department of Conservation/Jim Herdman.

along with the exchange, but the highlight of the trip was to sit down with area managers, regional conservancy offices and the national office director."

Before returning to Colorado, Thompson spent time in South Marlborough, Golden Bay, and the Sounds area. He even delivered a presentation to DOC's Deputy Director-General Kevin O'Connor and DOC Director-General Al Morrison.

Ultimately, Thompson saw credible value in the exchange. Not only did he and Herdman experience new and startlingly beautiful places, but also they had an opportunity to learn from each other. New Zealand was particularly interested in NPS's use of volunteer support, especially for facilities. In New Zealand, volunteers are primarily associated with biodiversity groups. DOC also wanted to learn more about the broader NPS focus on youth engagement and about passing the torch of stewardship to future generations.

Thompson also saw and experienced things in New Zealand that could profoundly influence operations in the United States. New Zealand's wayside exhibits and trails were particularly impressive—and so were a series of low-cost but beneficial solar power stations that DOC has been setting up in its units. He returned to NPS eager to push for more power-saving light-emitting diode (LED) light fixtures and power-generating solar systems. He hopes to spread their implementation across the Intermountain Region and the service as a whole and to establish a standing exchange program with DOC so that other employees and trades have the opportunity to learn from international counterparts.

Seeing what most do not

The business portion of Harvey's trip to China was built on the foundation of the NPS facility management community's professionalized existence. He was invited there primarily to evaluate and to teach, to share his community's expertise with a group of individuals just beginning to professionalize their own service.

The Maijishan Grottoes Harvey visited were originally a stop on the Silk Road—one of the last stops before travelers set out across the Gobi Desert. Pilgrims began carving statues and representations of Buddha into the sandstone cliff and caves 1,500 years ago, and preservation efforts have been ongoing for many decades. The grottoes themselves have withstood fires, earthquakes, and political transitions—and pilgrims kept adding to them through 12 dynasties. When China submitted a description of the site to the United Nations Educational, Scientific, and Cultural Organization (UNESCO) for possible future consideration as a World Heritage site, it noted that 194 remaining caves contained over 7,200 pieces of sculpture.

From the ground, the walkway on the cliff face seems to defy gravity. Bolted directly into the cliff side, it appears to float, on the same haphazard orientation as the sandstone caves, like a veiny appendage on the front of the mountain. Walking along it, a visitor can look into many of the surviving caves and observe the subtle differences in art and style throughout the monument's history (Figure 3).

However, during his tour, Harvey, as a facility manager, observed other aspects. While he was marveling at the colors and shades in the paints and the detail in the carvings, he was also comparing the current state of the cultural resources with the maintenance levels dedicated to the support facilities. What he realized was startling.

Figure 3. The cliff face and visitor walkway on Maijishan Grottoes. Carvings pictured in the first image of this article are visible just to the left of center. Photo courtesy of NPS/Tim Harvey.

Many of the support facilities had been constructed fairly recently with World Bank funds. Therefore, part of the bank's incentive to sponsor this trip rested in its desire to confirm that its investment was well maintained. In contrast to the ancient paints still vibrant on the cave walls, paint along the roofline of far newer structures was already beginning to fleck and chip away, exposing the wood underneath to the elements and opening the door to rapid deterioration (Figure 4). Similar signs of deterioration were evident on the underside of the entry station roof. Stone staircases leading up to the mountain were missing mortar, opening gaps for water to seep in and cause uneven settling.

Figure 4. Maintenance contrast: Paints in the grotto caves (left) are still vibrant centuries after they were applied; meanwhile, paint near the roof of a much newer support building (right) is already giving way to the elements. Photo courtesy of NPS/Tim Harvey.

The contrast was peculiar. How can the ancient cultural assets be so well maintained while the new support structure was already showing signs of decay? The answer was two-fold: on one hand, the facility managers at Maijishan needed a comprehensive asset management plan and business practices—which is what Harvey encouraged them to develop. On the other hand, the management structure of the facility was partially responsible.

Unlike in the United States, where almost all assets within national park boundaries are under the jurisdiction and care of NPS, at Maijishan two agencies share oversight. One manages and maintains the support infrastructure; the other coordinates preservation efforts on the cultural asset. Such a split jurisdiction challenges comprehensive asset management. While one agency may compete for funding to complete its work on priceless cultural gems, the other agency may simultaneously compete for funds to repaint maintenance shop walls. Until the two sides unify under a single mission and strategic plan, the care of these assets may remain unbalanced.

National parks rely on partnerships and interagency agreements

Unifying missions across agencies has been an issue in the United States as well. While the NPS has a unique ability to oversee nearly all aspects of the facilities within its boundaries, there are frequently instances where cross-agency relationships are an absolute necessity. From combating wildfires to maintaining dams to managing public health issues, relationships with entities throughout the US government have been an ingredient in NPS's nearly 100 years of success.

Wildfires have presented significant challenges in federal land management throughout the history of these agencies. Jurisdictional issues, however, become immediate problems during a fire, as fires do not obey government-defined boundaries. To combat fires, NPS enters into partnerships and agreements with agencies such as the Bureau of Land Management

(BLM) and the US Department of Agriculture–Forest Service (USFS) to share access routes, resources and human assistance where it is most needed.

Frequently, these partnerships become stronger after major fires. The Greater Yellowstone Coordinating Committee (GYCC), founded in 1986, acted as a foundation for communication and cooperation during the fires of 1988. In response to them, the GYCC helped establish an interagency fire management group that included NPS, USFS, BLM, and the US Fish and Wildlife Service.

The GYCC also worked well as a team, despite the trial by fire, and continues to leverage its interagency status. It still produces valuable joint reports on sustainability and wildlife management—two initiatives shared by the missions of all agencies involved.

Dams and levees are among the more complex managed assets within NPS. Some parks own dams within their jurisdiction, and other parks simply host a dam that is owned by another entity. While a casual observer may think of dams as basic infrastructure without the need for constant attention, the NPS Dam Safety Program (DSP) understands that during a single rainstorm, a poorly managed and maintained dam can go from a landscape fixture to a source of significant flooding and damage.

To properly assess and manage the safety concerns of a dam or levee, the DSP has continually sought and provided expertise across industry and agency boundaries. This exchange is partially by design. Within the Department of the Interior, the Bureau of Reclamation (BOR) acts as the lead agency for dams, providing over $1 million in support of NPS dams alone. DSP also relies on BOR for technical expertise across engineering disciplines. Simply having a lead agency for such critical assets streamlines management and funding, and it allows NPS to focus on the unique properties of the dams within its boundaries, while knowing it has a designated contact to cover specialized needs.

Perhaps among the most enduring partnerships in the US government is the pairing of the NPS and the US Public Health Service (PHS). For over 90 years, PHS has helped test and manage water quality, provide safety assistance, and even lend its staff to NPS initiatives through service-level agreements. In just a single year, PHS can test as many as 800 drinking water systems and 1,000 wastewater systems—ensuring that what flows out of those treatment facilities meets or exceeds safety standards.

Cooperation as the foundation for a more effective future

Harvey's trip to Gansu Province was a wonderful example of international cooperation: he had the opportunity to learn how China manages its historic treasures, and the facility managers he met drew from his strategic experiences across NPS. China's own park service is just beginning to form, and it is certain to undergo significant changes and evolutions as it molds itself to its purpose. Harvey may have helped set it on a course that will make life-cycle asset management a cornerstone of its future endeavors, or he may have provided the perspective needed to create customized methodologies.

NPS, in turn, will likely benefit from Harvey's contacts, ultimately gaining insights to more diverse methods of managing and maintaining cultural relics and locations. Perhaps further examination of this relationship will also stimulate interest in more frequent or expanded cooperative initiatives that extend not only across agency boundaries, but beyond US borders.

Clearly, in the case of Harvey's involvement with the People's Republic of China, an internationally recognized authority in smart investments—the World Bank—acknowledged NPS as an authority in professional facility management. Furthermore, through its willingness to fund this initiative, the World Bank has expressed an appreciation for the value in capitalizing on NPS intellectual resources to aid emerging resource protection agencies on a global scale.

What started with collaboration within NPS and gradually branched out to the exchange of ideas between industry leaders and other agencies is now being elevated to international dialogue.

With a little luck and a lot of dedication, that dialogue will be the foundation on which cultural and natural resources in all corners of the world, along with their less iconic support infrastructure, are protected, preserved, and kept open for public engagement for generations to come.

[Ed. note: The author would like to acknowledge the contributions of Tim Harvey and Bill Thompson.]

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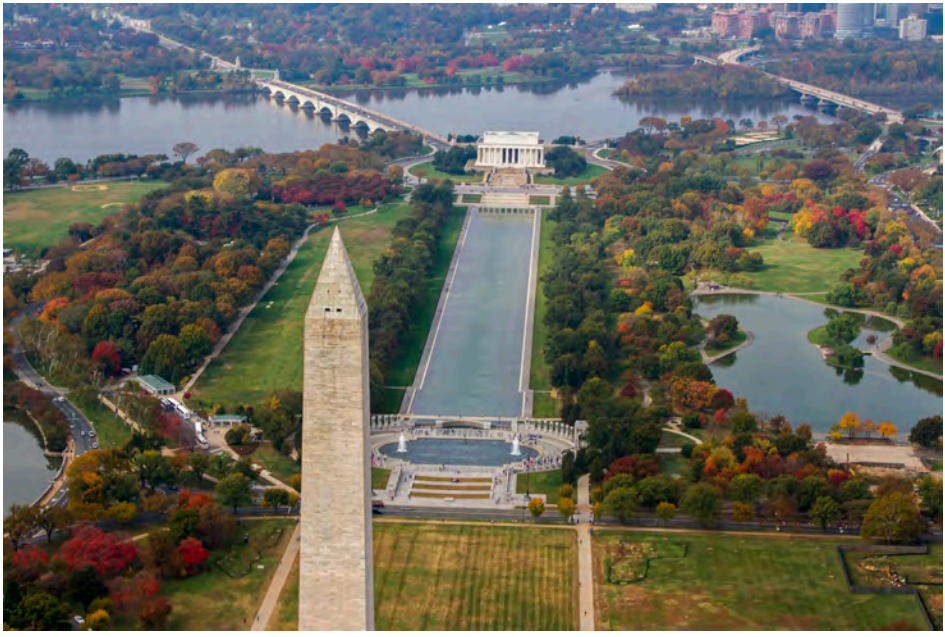
Maintained Landscapes in the National Park Service

Charlie Pepper and Susan Dolan

Spanning nearly seven million acres, maintained landscapes (MLs) are one of the largest and most complex asset categories under National Park Service (NPS) stewardship. MLs represent a diversity of constructed and actively managed park assets, including campgrounds, picnic areas, urban parks, ornamental gardens, historic orchards, and battlefields. They include recreational, cultural, and operational landscapes vital to fulfilling the mission of the service and are present across the national park system in places such as the National Mall and Memorial Parks in Washington, D.C. (Figure 1); Jefferson National Expansion Memorial in St. Louis, Missouri; and Yosemite National Park in Sierra Nevada, California.

Figure 1. Aerial view of the urban landscapes of the National Mall and Memorial Parks, Washington, D.C. NPS photo.



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MLs are distinguishable from natural areas in that they are often designed, planned, and constructed; they require regular recurring maintenance and an investment of labor and materials. They typically include engineered and built features, such as walls, fences, masonry walkways, irrigation systems, and maintained plantings.

NPS established MLs as an asset category in the Facility Management Software System (FMSS), its enterprise work management system for real property, to support landscape preservation and operational needs for one of the most prevalent asset categories in national parks.

Managing MLs presents many complex challenges. As compared with other constructed assets, landscapes are inextricably connected to the environment; their condition is dynamic and highly susceptible to frequent impacts and change. Threats from invasive species and pests, climate change, human use and development, and other forms of encroachment directly influence ML condition and management needs. Without regular recurring and cyclic maintenance, deficiencies in condition can quickly develop and lead to serious deterioration or loss of important landscapes, such as deferring mowing of a historic agricultural field that soon reverts to woodland. When these deficiencies occur, they require significant funding and staffing to correct. In addition, many NPS MLs are historically significant cultural resources and must be carefully protected and preserved as part of the US national legacy and the NPS mission. Such preservation requires effective collaboration between facility management and cultural landscape specialists to ensure that these important resources are managed thoughtfully and appropriately.

To improve the effectiveness of its ML maintenance and management, NPS has introduced measures to more accurately record data in the FMSS, and the NPS Park Facility Management Division (PFMD) has implemented several employee development initiatives to strengthen field staff expertise. Parks now have greater access to resources and information that support sustainable practices, build employee competencies, and promote more effective and efficient landscape management.

Data management

Significant improvement to servicewide ML management requires a unified and consistent effort to accurately record quality and comprehensive asset inventory data in the FMSS. To ensure that this effort is inclusive and informed, the PFMD is engaged in a collaborative effort with the Park Cultural Landscapes Program (PCLP) to record data for 390 nationally significant cultural landscapes. For the MLs located within these cultural landscapes, participating parks have been asked to complete a cultural landscape inventory (CLI), as shown in Table 1. This inventory identifies a landscape's level of cultural significance. Landscapes may be deemed culturally significant if they are associated with important people or events or traditional cultures or if they contain designed (e.g., historic landscape) or vernacular (e.g., a village or farm) elements. The CLI facilitates documentation of the elements of a landscape that are important to preserve and includes a list of stabilization measures necessary to prevent further deterioration.

In addition to the CLI, parks also have the option of completing a cultural landscape report (CLR), depending on the management need. The CLR is the principal document used to manage cultural landscapes in the short term and also outlines the vision for a landscape's

long-term management. For example, the CLR may articulate whether a landscape should be restored to resemble a historic period or rehabilitated according to contemporary standards. Table 2 provides some additional information on what standards are used to develop a CLR.

In addition to the use of CLIs and CLRs, the recent release of servicewide guidance on the management of ML assets is helping park staff understand how to manage this complex asset category appropriately. For example, the business practices developed for ML management specify the criteria for defining ML boundaries relative to those of other asset categories. This delineation is necessary because cultural landscapes may also overlap with roads, parking areas, and trails, all of which are categorized as other asset categories in the FMSS. It is important to distinguish between different asset categories in the FMSS to determine each asset category's diverse management and reporting needs. Examples of criteria used to define ML boundaries include operational need and the density of landscape features, as well as the presence of existing landscape demarcations, such as roads.

The publication of ML management business practices offers facility managers a tool for understanding the ML assets managed in the FMSS. MLs may have important cultural, natural, and recreational components and for this reason must be inventoried and inspected to ensure that their overall character and function is retained over time. Recording these details enables park managers to identify specific work processes and more accurately determine the current replacement value of the landscape. Business practices also assist parks in organizing and classifying MLs at a variety of scales depending on the intensity of asset management activities, maintenance operations, historical/cultural boundaries, and funding required. With this guidance in place, parks are able to more accurately describe and document the main-

Table 1. Sample cultural landscape inventory checklist.

Sample cultural landscape inventory checklist	• Remove deadwood from historic trees and brace leaning trees
	• Revegetate exposed, eroded soils
	• Replace in-kind deteriorated fence panels
	• Level frost-heaved flagstones
	• Aerate a compacted lawn

Table 2. Standards for the use of a cultural landscape report. Source: Cultural Resource Management Guideline, Release no. 5.

Standards for the use of a cultural landscape report (CLR)	• A CLR is prepared to minimize the loss of significant landscape characteristics and associated features and materials when existing information about the physical history and condition of a cultural landscape is inadequate to address anticipated management objectives, when impending development alternatives could have adverse effects, or when recording actual treatment.
	• A CLR is prepared by qualified professionals based on appropriate methodologies and techniques for cultural landscape research, documentation, and evaluation.
	• Landscape, architectural, and archaeological investigations supporting a CLR employ nondestructive methods to the maximum extent possible; they are prescribed and justified in a project agreement that includes a research design and impact analysis.
	• All field notes, primary documents, original maps, drawings, photographs, and plant materials gathered or associated with the research for CLRs or special landscape projects are organized and preserved as archival material or museum objects in consultation with the park or curator.

tenance needs of MLs in the FMSS, and they can compete more effectively for limited NPS facility project funding. By providing parks with appropriate guidance on ML management, NPS is helping to ensure that MLs are managed according to a standard methodology, which in turn will strengthen ML data consistency and aid reporting. Improving the completeness of the ML inventory in the FMSS will also enable the PFMD to better understand the scope of its portfolio and to more accurately allocate management resources to preserve critical assets.

Employee skills development

To build employee knowledge and skill in ML principles and practices and to enhance employees' ability to effectively maintain MLs, NPS is focused on developing and delivering education and training. An emphasis on including park grounds staff in ML data inventory and condition assessment is helping them to develop and improve their professional landscape management skills. This on-the-job experience, in combination with formal education and training programs in landscape management, tree care, and cultural landscape preservation, is increasing proficiency in successful landscape management, planning, and operations.

The Olmsted Center for Landscape Preservation, a program of the NPS Northeast Region, in collaboration with the Historic Preservation Training Center and NPS Learning and Development, offers professional landscape maintenance training programs for park staff. These programs provide participants with fundamental knowledge and practical skills in the concepts and techniques needed to care for landscapes (Figure 2).

Landscape maintenance skills development

The Landscape Maintenance Skills Development Program provides employees with learn-

Figure 2. Landscape Maintenance Skills Development Program participants learning about tree inventory and inspection. NPS photo.

ing opportunities in park grounds maintenance operations. The program includes the following components:

- **Classroom sessions** that introduce landscape maintenance concepts and principles. Sessions include sustainable practices, soil management, diagnostic procedures, integrated pest management, plant nutrition, and fertilization.
- **Field training projects** reinforce classroom sessions by engaging participants in hands-on grounds maintenance activities, including turfgrass management, irrigation maintenance and repair, pruning, weed and pest control, trails construction and maintenance, masonry repair, comprehensive inspections and condition assessments, equipment operation and safety, plant and garden bed maintenance, plant health care, and hardscape management.
- **Independent study assignments** supplement knowledge and skills gained in the classroom by having students work with mentors and NPS landscape management professionals to apply information to their own park's landscapes. Students learn to conduct condition assessments, develop cost plans and cost estimates to correct deficiencies, and prepare routine/cyclic grounds maintenance recommendations.

The Landscape Maintenance Skills Development Program has been instrumental in building NPS employees' fundamental landscape management knowledge and technical skills. For example, a 2012 workshop on sustainable turfgrass management held at San Antonio Missions National Historical Park in collaboration with the NPS Natural Resources Stewardship and Science Directorate (NRSS) highlighted advances in sustainable practices developed by San Antonio Missions facilities staff. The workshop introduced participants from four NPS regions to lawn care practices that substantially reduce park carbon footprints by limiting the use of petroleum-based products while still achieving desired turf quality. Currently, limited resources can only support a minimal number of participants each year; however, as the use of distance learning increases, training opportunities will become available to a broader audience of NPS employees.

Arborist training

The NPS Arborist Training Program develops employee skills in sustainable tree care and builds NPS capacity to effectively manage important park resources. The program covers introductory topics, such as tree growth and development, chainsaw use, and tree climbing, through advanced arboriculture concepts and practices, including rigging, evaluating structural stability, conducting thorough condition assessments, managing historic trees, and mitigating hazards.

As a competency-based program, participants are assessed to demonstrate that they have acquired the necessary knowledge, skills, and abilities prior to completing the curriculum. Over the past decade, the program has trained nearly 100 NPS employees in professional tree care and management. Most participants have also obtained industry certification through the International Society of Arboriculture or individual state certification boards. Many of these participants now serve as instructors and mentors in the program, use their skills in managing park resources, and serve as active members of the NPS Arborist Incident Response Team, which assists parks in addressing emergency resource stabilization issues.

Branching Out: Youth exploring landscape management

Branching Out is a program that engages young people between the ages of 15 and 25 in learning about NPS landscape management and stewardship practices. Through educational workshops and hands-on field experiences, participants are exposed to park management opportunities that lead to higher education and career placement. Youth participants work alongside agency staff and professional experts, protecting park resources and acquiring knowledge and skills in landscape management. The goals of this program include the following:

- Offer youth experience in park facilities management and stewardship;
- Provide pathways for NPS employment and higher education;
- Introduce participants to NPS and its mission;
- Provide asset management support to parks and associated sites; and
- Forge connections between young people, landscapes and the NPS.

Branching Out has provided many youth with career pathways by connecting them with opportunities to become the next generation of NPS landscape stewards. For example, former program participants are now working as full-time park employees at Boston National Historical Park and Minute Man National Historical Park; others are pursuing college degrees in park management disciplines with postgraduate plans for NPS careers or with partner organizations.

Sustainable landscape management

Sustainable landscape management practices are an emerging area of ML stewardship. Traditional grounds maintenance operations generate enormous quantities of equipment emissions and use large amounts of petrochemical pesticides and fertilizers. These materials pose concerns for park visitors and potentially contaminate the environment, including soils and water sources. It is estimated that using a walk-behind mower for one hour generates as much pollution as driving an automobile for 45 miles (US Environmental Protection Agency 2014: 1), and the United States uses 1.2 billion gallons of gas each year to mow turf (US Department of Energy 2011: 4). Given that NPS maintains over 400 million square feet of turfgrass, or an area half the size of Manhattan, relatively minor operational adjustments have the potential to yield significant achievements in meeting sustainability goals.

Recognizing the potential for improvement and the need to develop a coherent strategy to address these issues, the PCLP formed a sustainability work group. This group meets monthly to share lessons learned and to discuss other developments in sustainable preservation practices. The program uses the United Nations definition of sustainability: that which "meets the needs of the present without compromising the ability of future generations to meet their own needs" (UN General Assembly 1987: 1).

In addition to advancing environmental, social, and economic dimensions of sustainability, stewards of cultural landscapes must also maintain their historic integrity and historical character. The PCLP is currently developing a framework to more fully define what sustainability means in the context of cultural landscapes management. This framework will guide park staff in sustainably managing ML assets and will also include examples of successful ML projects. This guidance is being developed as a companion document to *The Secretary*

of the Interior's Standards for Rehabilitation & Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings. Sample ML projects will focus on the management of soil, water, and plants, as the soil of a ML should be a healthy ecosystem in its own right. These sample projects will also identify ways to build resilience for adaptation to a changing climate.

In addition to this forthcoming guidance from the PCLP sustainability work group, the Olmsted Center for Landscape Preservation is incorporating sustainable landscape maintenance practices into its training programs. For example, in August 2013 a workshop offered NPS employees field demonstrations and discussions on the following:

- Adapting new technologies for increasing operational efficiency and reducing emissions;
- Managing organic debris, bulk processing, and recycling to reduce landfill disposal; and
- Reducing turf maintenance requirements by adjusting mowing regimens, practices, and quality standards.

These programs will aid participating parks in meeting many of the goals identified in the NPS *Call to Action* under goal number 23, "Go Green," and the *Green Parks Plan* while also advancing park sustainable practices. "Go Green" seeks to foster sustainability in parks by reducing greenhouse gas emissions by 20%. The *Green Parks Plan* defines a collective vision and a long-term strategic plan for sustainable management of NPS operations.

Meeting maintenance goals despite a decreasing maintenance workforce is a primary challenge for the PFMD. Because the same standard cannot be achieved with fewer resources, maintenance objectives and practices must become more efficient. For MLs, this challenge may involve revising the frequency of routine and cyclic maintenance activities, such as mowing. Mowing less frequently can help meet agency sustainability goals by reducing emissions, and, although results may differ from the current appearance of the landscape, it provides an opportunity to more closely align facility operations with cultural landscape treatment objectives. For example, a historic battlefield would likely appear more authentic when managed as a meadow rather than as a closely clipped lawn.

In addition to collaborating with the PCLP and the Olmsted Center for Landscape Preservation, the PFMD is working more closely with the NRSS to identify strategies for sustainable management of MLs. A turf stewardship project piloted in the NPS Midwest Region will initiate development of standards for sustainable turfgrass management. To help communicate these standards to parks servicewide, two workshops have been held to date on sustainable turfgrass management.

Valley Forge National Historical Park (Figure 3) has made great strides in achieving sustainable turfgrass management. Over the past several years, the park has transitioned acres of turf that was regularly cut low to grassland meadow. The operational shift is improving the sustainability of facility operations and is helping the park meet its natural resource management objective of enhancing diverse wildlife habitats and native plant communities. Additionally, this innovative strategy requires less frequent mowing, furthers broader park resource management and interpretive programs, and reduces the input of resources and the park's carbon footprint.

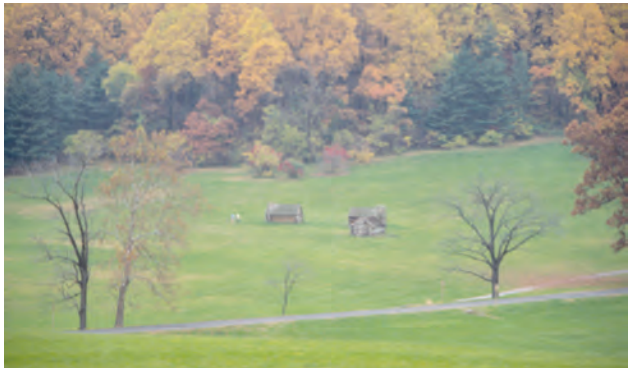

Figure 3. Woodford Brigade Encampment Site with the Mount Joy Forest in the background and grassy meadows in the foreground, Valley Forge National Historical Park. NPS photo.

Future outlook

NPS efforts to develop effective landscape management strategies and deploy creative approaches to ML management are starting to have a noticeable effect, with facility managers carrying out strategies and serving as stewards on the ground. As a result, NPS is gaining a more complete understanding of its diverse ML portfolio. Park condition assessments are documenting landscape condition, CLIs and CLRs are providing blueprints for stabilizing and treating cultural landscapes, and innovative data management and training programs are improving park operations.

The relevancy of landscapes to park programs and use by the visiting public are the primary drivers for improvement. Landscapes support many park functions. Some are functional or aesthetic, such as areas around visitor centers. Many are important cultural landscapes that serve interpretive and education programs. Others, such as campgrounds and sports fields, are used for visitor recreation, and still others support scientific and horticultural research. The collaborative initiatives underway—improving sustainable practices, recording comprehensive FMSS data, and fostering connections between facilities operations, cultural landscape preservation, and natural resources management—underscore the relevancy of landscape stewardship to meeting the NPS mission.

But with nearly 7 million acres and counting, more must be done to effectively care for landscapes. NPS will need to continue to invest in the tools, approaches, and dedicated staff to ensure that its treasured landscapes do not deteriorate and are maintained in good condition.

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A Mission for Sustainability amidst a Changing Climate

Ryan Michelle Scavo

In 1916, President Woodrow Wilson signed an act to create the United States National Park Service (NPS) for an inherently *sustainable* reason: "to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (National Park Service Act, 1916). It was through this Organic Act that 35 of our nation's parks and monuments would henceforth be protected and managed by this new agency of the US Department of the Interior (DOI). However, the NPS Organic Act merely set the foundation for the agency. In fact, nearly 100 years later, the national park system has grown into a network of over 400 federally managed sites across the country that protect natural and cultural resources for the enjoyment of the American people and other visitors.

Today, however, NPS faces unprecedented challenges as managers begin to better understand the implications of a changing climate on park resources. After nearly a century of both active and hands-off management, NPS has released several directives, guidance documents, and initiatives to ensure that resources are protected in perpetuity—even in the presence of climate change. These documents include the *Climate Change Response Strategy*, *Climate Action Plan, A Call to Action*, and *Green Parks Plan*. Through these strategic plans and vision documents, NPS strives to meet the challenges of climate change through innovation; forward-thinking, "boots-on-the-ground" action; and, most importantly, a sustainable approach to resource management and agency operations.

Taking Action: Sustaining our sustainability mission

Climate Change Response Strategy. In 2010, NPS Director Jon Jarvis acknowledged the realities of climate science and the importance of taking action. "I believe climate change is fundamentally the greatest threat to the integrity of our national parks that we have ever experienced.… This is a high-priority issue for the current Administration, including the De-

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partment of the Interior and its individual bureaus," Jarvis stated, and so the *Climate Change Response Strategy* was born (NPS 2010: 1).

As the first agencywide climate change guidance document, the response strategy spearheaded the issue for the NPS. It outlines a framework for addressing climate change within the context of four distinct yet integrated activities: science, adaptation, mitigation, and communication. It was through the release of this strategy that NPS began to discuss and address the issues related to climate change in a systematic and comprehensive way—and with the support of a proactive and forward-thinking director. This strategy also supports several executive and secretarial orders, including Executive Order 13514, "Federal Leadership in Environmental, Energy, and Economic Performance"; Executive Order 13423, "Strengthening Federal Environmental, Energy, and Transportation Management"; and Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources."

The response strategy was deployed as a collaborative response, and it engaged partners and stakeholders at all levels to implement the strategy following a collective approach. As success stories and lessons learned began to emerge from the actions this strategy initiated, NPS also acknowledged the importance of ensuring that climate change response be a part of its next-century stewardship mission, as articulated in the director's *A Call to Action*.

Climate Change Action Plan. Released in 2012, the *Climate Change Action Plan* builds on the response strategy to include current and future high-priority climate change response actions for NPS. Divided into three sections, the plan calls for several federal and NPS-specific initiatives to support climate change response at all levels—from national offices to individual park units. Most importantly, the plan acknowledges the continually changing social and environmental conditions of today's world and, as such, emphasizes the importance of "new thinking and new approaches" as the agency continues its response. This plan represents yet another milestone in the stewardship of America's finest treasures and ensures that NPS managers move forward in a flexible and coordinated manner when managing for a changing climate.

A Call to Action. On August 25, 2011—the 95th anniversary of the NPS—Director Jarvis took another step in a sustainable direction when he released *A Call to Action*. This visionary document describes specific goals and measurable actions that chart a new direction for NPS as it enters its second century. It also draws on three major national reports and initiatives: *The Future of America's National Parks* (2007), a report to the president from the secretary of the interior; *Advancing the National Park Idea* (2009), a report of the National Parks Second Century Commission; and "America's Great Outdoors: A Promise to Future Generations" (2011), an Obama administration effort to develop new national conservation and recreation agenda.

A Call to Action is aimed at charting "a path toward that second century vision by asking our [NPS] employees and partners to commit to concrete actions that advance the mission of the Service" (National Park Service 2011: 6). Within this charge, the NPS director identifies 39 actions; action number 23 is "Go Green" to "reduce the NPS carbon footprint … and widely showcase the value of renewable energy." To meet this goal, NPS will, according to this action, "foster sustainability in our parks and with our partners by reducing greenhouse

gas emissions by 20 percent" (National Park Service 2011: 18). It is in response to and support of this plan that NPS developed *the Green Parks Plan.*

Green Parks Plan. At the end of fiscal year 2013, NPS operated and managed over 75,000 structures–which included 46 million square feet of building space, 5 million acres of maintained landscapes and 3,600 utility systems. From lighting walkways to heating and cooling buildings, NPS consumes energy every day. In fact, the production of energy to operate buildings (including those that NPS manages) is one of the largest contributors to greenhouse gas (GHG) emissions in this country: it consumes nearly 70% of all energy produced in the United States. The *Green Parks Plan* was created to address this reality.

On Earth Day 2012, NPS released the plan, which defines a collective vision and long-term strategic plan for sustainable management of agency operations (National Park Service 2012: 3). The goals outlined in this plan, such as "Be Energy Smart," foster a management approach focused on sustaining resources and improving energy performance. Similar to *A Call to Action,* this plan is flexible yet recognizes that the agency's success hinges on adopting sustainability as "a guiding value" and embedding it in servicewide operations on a daily basis" (National Park Service 2012: 15).

The plan not only supports the charge to "go green" in *A Call to Action,* but it also moves NPS to the next level of climate change mitigation originally initiated by the *Climate Change Response Strategy.* While the mitigation component of the response strategy shares broad goals, such as "[s]ubstantially reduce the National Park System's carbon footprint from 2008 levels by 2016 through aggressive commitment to environmentally preferable options," the *Green Parks Plan* pushes on to define reduction goals for scope 1, 2, and 3 GHG emissions, as well as reduction goals for such sectors as energy intensity, petroleum use, and water consumption (National Park Service 2010: 19).

The *Green Parks Plan* is framed around nine strategic goals that "focus on the impact of facilities on the environment and human welfare" and are supported by several performance objectives (see Figure 1) (National Park Service 2012: 5).

Within these goals, objectives are identified to help move NPS toward greater sustainability. Specifically, the plan identifies an NPS sustainability target, which includes reducing:

Figure 1. Strategic goals of the *Green Parks Plan.*

- Scope 1 and 2 GHG emissions 35% from the 2008 baseline by 2020;
- Scope 3 GHG emissions 10% from the 2008 baseline by 2020;
- Servicewide building energy intensity 35% from the 2003 baseline by 2016;
- Potable water use intensity 30% from the 2007 baseline by 2020; and
- Fossil fuel consumption 20% from the 2005 baseline by 2015.

Through the sustainability vision this plan outlines, parks and programs gain the vision, support, and tools to not only meet the charge of *A Call to Action* and the *Climate Change Response Strategy,* but to also address the mitigation and sustainability components of the *2012–2014 Climate Action Plan,* released as a follow-up to the *Climate Change Response Strategy*.

Taking action: Climate Friendly Parks

Through partnerships, stakeholder engagement, and servicewide sustainability and climate change response programs, the service is actively working toward reducing its carbon footprint at the national, regional and park levels.

The Climate Friendly Parks program was established in 2002. Today, over 100 national park system units participate to reach park-based sustainability goals. The program responds to climate change and mitigates GHG emissions by encouraging sustainable management of park resources and operations. The program supports parks by sharing climate change science, helping staff assess climate change implications and prepare action plans on climate change issues, and encouraging and advancing a culture of sustainability within and beyond park boundaries.

Originally established as a partnership with the US Environmental Protection Agency (EPA), this program, now fully operated by NPS, retains its interdisciplinary roots. Staff from the Sustainable Operations & Climate Change (SOCC) branch of the Park Facility Management Division (PFMD) and from the Air Resources Division collaborate with park and regional representatives to address key sustainability and climate change challenges through educational workshops and facilitated discussions. The goals of the Climate Friendly Parks program are to (1) measure park-based greenhouse gas emissions and understand their sources; (2) educate park staff and the public about climate change and demonstrate ways individuals and groups can take action to lessen their carbon footprint; and (3) aid parks in developing strategies and actions to address sustainability challenges, reduce GHG emissions, and respond to a changing climate.

Climate Friendly Kids: A case study in climate change education

National parks across the country share a multitude of stories about our nation's diverse history, cultural heritage. and natural resources. Through Climate Friendly Parks, park rangers and educators also share the story of a changing climate with visitors. At the three national monuments in the area around Flagstaff, Arizona—Sunset Crater, Walnut Canyon, and Wupatki—park staff engage in climate change and sustainability education through a partnership with nearby Willow Bend Environmental Education Center.

As recipients of a 2013 National Park Foundation "America's Best Idea" grant, staff from the three monument parks and the environmental education center collaborated to develop

Climate Friendly Kids, a sustainability-focused educational program for underserved youth in the Flagstaff area (Feldt 2014: 12). Through in-class lessons, field trips to each of the three parks, and participation in service learning projects, the program aims to teach participants about sustainable practices and how to incorporate sustainable actions into their daily lives (Figure 2). The inaugural class of Climate Friendly Kids, which graduated in December 2013, included students from three third- and fourth-grade classes from Flagstaff area schools.

By sharing their sustainability mission, the Flagstaff-area national monuments hope to inspire students to incorporate sustainable practices into their lives so that they might better protect the parks and local resources as future stewards.

Engaging NPS staff in the sustainability conversation through My Green Parks

Begun in 2012, the My Green Parks website (internal to NPS) provides an interactive, online tool for NPS staff to learn more about sustainability and GHG emissions. In developing the site, the goal was, and continues to be, to provide a "one-stop shop" for servicewide sustainability needs regardless of position, region, program, or park unit (Figure 3). To accomplish this, site features were created on a servicewide level. The site is arranged by several categories:

- **Take Action.** "Take Action" scenes feature GHG reduction actions related to energy savings, transportation, green purchasing, waste reduction, and water conservation, which NPS staff can "pledge" to take in several duty areas (e.g., offices, maintenance

Figure 2. In 2013, 4th-grade students from schools in Flagstaff, Arizona, participated in the Climate Friendly Kids program. Participants used reusable bags during their field trip to Walnut Canyon National Monument. Sara Feldt/NPS photo.

Figure 3. By taking action on My Green Parks, NPS staff pledge to reduce federal costs, conserve valuable natural resources, and reduce servicewide greenhouse gas emissions. Source: NPS.

facilities, fleet/travel management), as well as when traveling to and from their duty location. When users select specific actions, the site provides key information on how to complete the action and why the action is important.

- **View Savings**. Once an action is taken, environmental and monetary benefits are calculated for the selected behaviors (e.g., commute by bicycle, use natural lighting). The "View Savings" page provides staff with key information on individual and aggregated projected carbon emissions, electricity, waste, and dollar savings.
- **Challenges**. "Challenges" range from submitting best practices to participating in sustainability-related quizzes. This feature promotes the importance of recognizing and sharing sustainability achievements throughout the agency and provides opportunities for staff to participate in friendly competitions while assessing their sustainability "know-how."
- **Resources**. The site also hosts and updates educational "Resources" on topics ranging from climate change to energy management. The site's "Bulletin Board" feature also shares servicewide greening efforts, success stories, and best management practices, and showcases green leaders.

My Green Parks takes a three-pronged approach to promoting a sustainable work ethic: providing educational material on sustainability issues; suggesting actions staff can take to reduce GHG emissions while illustrating the associated tangible benefits of those actions; and tracking and monitoring the potential cumulative environmental benefits and cost savings for each park unit and office.

Partnerships to promote sustainability

In 2010, NPS began the Clean Cities National Parks Initiative, a partnership with the Department of Energy, National Renewable Energy Laboratories, and local Clean Cities Coalitions to support the development and use of renewable and alternative fuels throughout the agency. This partnership supports the *Green Parks Plan* goals to "Green Our Ride," "Be Climate Friendly," and "Foster Sustainability beyond our Boundaries." It is helping NPS use more environmentally friendly transportation methods at parks, ultimately aiding in reducing agency dependence on petroleum-based fuels for transportation while increasing energy savings and the use of sustainable transportation methods across the country.

This interagency agreement has proven quite successful with 13 participating parks, such as San Antonio Missions National Historical Park (Figure 4), Grand Teton National Park and Yellowstone National Park, receiving over $2.8 million in funding for fleet-focused projects. Through this partnership, parks showcase NPS sustainability initiatives by replac-

Figure 4. San Antonio Missions National Historical Park participates in the Clean Cities National Park Initiative. The park's fleet now features propane mowers and electric vehicles such as this Mitsubishi MiEV. David Vekasy/NPS photo.

ing outdated, gasoline-powered vehicles with alternatively fueled vehicles, installing charging stations for electric vehicles, and providing educational opportunities for the public to learn about cutting carbon emissions. A full list of participating parks and projects is available on the Clean Cities National Parks Initiative website.

Since its kickoff, this partnership has provided funding to increase sustainability efforts. It has helped parks reduce fleet size and transition to more sustainable transportation methods. As 2014 continues, new members will join the cadre of parks participating in this initiative, continuing the servicewide efforts to reduce fossil fuel consumption while increasing use of alternative transportation.

Showcasing our achievements: Sustainable buildings

The *Green Parks Plan* challenges NPS to adopt best practices through the "integration of sustainability in planning [and] compliance" with the federal government's "Guiding Principles for High Performance and Sustainable Buildings" (National Institute of Building Sciences 2006). Whenever federal building design and construction work occurs, whether for new construction or major renovation, buildings must fully comply with all federal laws for accessibility and safety. For sustainability and efficiency measures, NPS must comply with the guiding principles, which focus on the government's commitment to "designing, locat-

ing, constructing, maintaining and operating facilities in an energy efficient and sustainable manner" (National Institute of Building Sciences 2006).

Across NPS, 65 buildings meet the standards outlined in the guiding principles, and among those, 55 have achieved recognition under the Leadership in Energy and Environmental Design (LEED) certification program. Although meeting LEED standards is not a requirement for NPS buildings, it is a valuable program that can aid planners in addressing entire building life cycles. As of June 2013, of the 55 LEED-certified buildings servicewide, 24 are recognized at the LEED Platinum level, 24 at the LEED Gold level, 4 at the LEED Silver level, and 3 at the LEED basic level.

In 2011, Grand Canyon National Park completed construction of the LEED Platinum-certified Paiute Apartments—a complex of 64 apartment units (Figure 5). Developed to address the park's housing shortage, the project also met both servicewide and park-specific goals for sustainability.

Project manager Greg MacGregor emphasized that the park went above and beyond minimum requirements to ensure that the project met (and exceeded) accessibility, safety, and sustainability measures. He explains that plan analysis for the complex was based on the international building code, the Americans with Disabilities Act, the Architectural Barriers Act, and uniform federal accessibility standards.

To reach the LEED Platinum level, the Paiute Apartments achieved 84 points in LEED for Homes certification in several categories, including innovation and design process, loca-

Figure 5. Grand Canyon National Park's Paiute Apartments received a LEED Platinum rating for their sustainability features. NPS photo.

tion and linkages, sustainable sites, water efficiency, energy and atmosphere, materials and resources ,and indoor environmental quality. The buildings' sustainable and energy efficiency features include the following:

- **Building site.** To avoid new impacts to cultural and historic sites and to use space efficiently, the apartments stand on a previously disturbed 5.5-acre lot.
- **Landscaping.** As the primary means for surface water management, native, drought-tolerant species were planted to help keep soil intact. If irrigation is needed, reclaimed water from its municipal water system is used.
- **Building materials**. Walls, floors, and the roof are constructed of Forest Stewardship Council-certified wood.
- **Energy-efficiency features**. The building features high-efficiency water fixtures and fittings for bathroom faucets, toilets, and showers.
- **Renewable energy and other sustainability features**. Photovoltaic systems were installed for each apartment building, dark sky-compliant light fixtures were installed in parking areas, and bike racks were strategically placed to encourage zero-emissions commuting.

Grand Canyon National Park's new facilities—along with the other innovative and sustainable buildings across national park system—are a testament to forward thinking and a dedication to sustainability. NPS continues to meet sustainability goals outlined in the *Green Park Plan,* as well as the soon-to-be released *Sustainable Buildings Implementation Plan* through buildings such as the Paiute Apartments as well as new visitor centers and rehabilitated historic structures.

Next steps

Since the release of the *Green Parks Plan* on Earth Day 2012 (Figure 6), NPS has carried out

Figure 6. In 2012 NPS Director Jon Jarvis announced the release of the Green Parks Plan at an Earth Day press conference at the Lincoln Memorial. Anthony DeYoung/NPS photo.

a systematic approach to sustainability. The nine goal categories of the *Green Parks Plan* have given NPS a new lens for viewing sustainability across the service.

Sustainability is at the core of the NPS mission and, in the face of a changing climate, sustainable management of the very resources the agency was founded to protect is its only option. The sustainability vision supports climate change response and sustainability initiatives at all levels and it will continue to move NPS forward into its second century.

Through national and park-based efforts, NPS will continue to move in a sustainable direction. In fact, several offices, including the Climate Change Response Program and the SOCC branch of the PFMD, are spearheading this collaborative effort—working with other NPS offices and federal agencies, as well as partners, stakeholders, and the public. From park managers and field staff to national and regional offices, this agency embraces innovation in the technologies we use and the management practices we employ. By doing so, we will continue to protect, *sustainably,* some of America's most valued places and resources, and the stories they share, for generations to come.

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Reconciling Competing Visions in New Deal Parks: Natural Conservation, Historic Preservation, and Recreational Development

Angela Sirna

My central question is, Why do parks look the way they do? It is a deceptively simple question that is really quite complicated. Take a park like Great Smoky Mountains National Park as an example. This park conjures images of mountains and wilderness. If you look beyond the surface, however, you find places like Elkmont Historic District, which challenge these assumptions and remind us that parks are cultural constructions. We make them and project our own cultural values onto the landscape.[1]

I find that there are three ingredients, so to speak, that are constantly in play in park development: natural conservation, historic preservation, and recreational development. I believe that the balance of these assets—sometimes contentious, sometimes parallel—shape how parks look, feel, and function. The thought park planners, managers, and boosters give to these decisions reflect their own values and reveal how they believe parks should function in American society. The New Deal period is especially revealing as the National Park Service (NPS) solidified its role as a national agency and institutionalized the park "master plan." I have explored this issue on the park level through several case studies, which contribute to my thesis that New Deal park planners struggled to reconcile these assets and this conflict greatly transformed state and national park landscapes.

The New Deal period is essential to understanding park development. The NPS became a true national agency during this time by expanding east of the Mississippi River to reach the majority of the US population. A 1933 executive order transferred all the battlefields and a number of monuments from the War Department and US Forest Service to NPS. New Deal relief programs, such as the Civilian Conservation Corps (CCC) and Works Progress Administration (WPA), funded the creation of hundreds of new parks and entire state park systems such as that of Texas. The rapidity of this expansion solidified the importance of park planning in which a multi-disciplinary team of specialists gathered baseline data prior to any development. NPS developed new kinds of professionals that shaped visions for parks, including historians, historical architects, and archaeologists who worked with traditional

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NPS employees such as landscape architects, engineers, and naturalists. Additionally, NPS planners created new types of parks to diversify the system, including national recreational demonstration areas and parkways. These new types of parks took the agency further away from its traditional affiliation with great western scenic parks.[2]

The public has associated NPS with being a safeguard for America's natural areas, particularly western scenic parks, since the agency's inception. However, NPS has dramatically changed its management of natural resources since the passage of the Organic Act in 1916. Initially, NPS managers believed in preservation through development or sustaining use of a space through careful use. They were concerned with maintaining the visual aesthetics of nature, not ecological integrity, in order to attract visitors. They wanted to keep the landscape looking "natural" and conservationists did not have a problem manipulating the environment to achieve that goal. During this time, wilderness areas were simply considered roadless, natural areas. In general, roads were okay in parks as long as they harmonized with their natural surroundings. Additionally, NPS allowed the eradication of predatory animals, while preserving more popular species and stocking water sources for fishing.[3]

During the 1930s, NPS entered fully into the business of historic preservation and remains a leader today. Verne Chatelain became the first chief of the new History Division in 1931. Two years later, NPS received all the battlefields from the War Department. That same year, Congress created the Historic American Building Survey (HABS) as a New Deal program to fund unemployed architects and photographers. The Historic Sites Act of 1935 ordered NPS to undertake a national survey of historic sites and develop thematic studies. Archaeologists undertook excavations on an unprecedented scale in national parks, and these projects became the basis for the new field of historical archaeology. Chatelain instructed that historical research must precede any type of development work. Therefore, historians, historical architects, and archaeologists became integral parts of planning efforts.[4]

During this time, park planners reconciled nature and history by blending them together. They usually singled out historic sites to develop into day-use areas. They loved the idea of freezing sites in time by taking them back to a period of significance. This technique holds a powerful appeal but is fraught with problems and ignores change over time. They were also very interested in preserving sites that conveyed ideas of primitiveness and humans conquering nature. In fact, park planners loved the concept of the "frontier village," and had the tendency to "naturalize" these sites even further. Cades Cove in the Great Smoky Mountains is a great example. HABS architects recorded structures but focused mainly on log structures and largely ignored frame buildings that appeared more modern. Workers restored a select number of log and frame structures and removed others. They also restored a mill and built a tour road that are both still used by visitors today. However, park planners paid little attention to the historic agricultural landscape and created an illogical landscape.[5]

I have reconsidered the term "recreational development" in favor of a broader concept, "human conservation," that allows us to look at parks as reform landscapes. The New Deal made apparent more than any other time the potential of park recreation as a measure of social reform. Park planners addressed this in three different ways. First, they intended park recreation to rejuvenate the urban masses, build individual character, promote nationalism and consumerism, and show proper conservation techniques through "demonstration areas." Park planners established Catoctin Mountain Park during the New Deal as a recre-

ational demonstration area with several organized campgrounds. The first organized camp was specifically designed for the Maryland League of Crippled Children. Last summer, the league celebrated its seventy-fifth anniversary at Camp Greentop. Park planners envisioned another camp that was never constructed because the park expended its New Deal funds. It was a segregated camp specifically for African Americans.[6]

Second, New Deal relief programs put thousands of people to work in state and national parks physically transforming the landscape. These projects also transformed the workers themselves by instilling life skills and giving them job training. The CCC is the clearest example. The government created a program specifically for young men to perform manual labor in mostly remote, rural areas away from the sins and vice of cities. They lived in camps managed by the War Department where they received room, board, and education and vocational instruction. This program not only offered young men temporary relief in the Great Depression, but trained them to be better citizen-consumers.[7]

Finally, human conservation programs in parks transformed the lives of those whose land was acquired to create these places. Some reformers linked land degradation to poverty. Oftentimes, reformers believed people who lived on "submarginal" land were really getting a golden ticket out of rural poverty when the federal government offered to purchase their land. Historian Sara Gregg shows that park planners at Shenandoah National Park removed some residents directly to resettlement communities outside the park. New Deal reformers intended these resettlement communities to improve the quality of life of those who subsisted on submarginal land.[8]

These ideas play out differently at every park, and this paper provides two case study examples to show this interplay between natural conservation, historic preservation, and human conservation.

Case Study 1: Chesapeake and Ohio Canal National Historical Park

The federal government purchased the C&O Canal in 1938 for the bargain price of $2 million primarily for its proximity to urban populations in Washington, D.C., and Baltimore, Maryland. The canal is 184.5 miles long and follows the Potomac River from Georgetown to Cumberland, Maryland. The canal offers terrific scenic views and has a very rich history and tremendous recreational potential.[9]

Park planners did not know initially what to do with the canal but needed to put unemployed people to work immediately. This park does not have a 1930s master plan, which reflects the haste and urgency of New Deal relief programs. NPS committed two African American CCC companies and Public Works Administration (PWA) workers to re-water the first 22 miles of the canal. The workers preserved the historic lock houses in this area and developed historic Great Falls Tavern into a day-use area. NPS planners and New Deal workers restored the tavern back to its period of significance. NPS used historians and HABS architects to research the resources prior to development. This section of the canal is an excellent example of how park planners managed to blend nature and history together, but still put recreation and human conservation at the forefront.[10]

However, NPS made another important precedent when in fact they did not do anything with the remaining 164 miles of the canal and allowed nature to reclaim this portion. NPS considered making this a parkway but a grassroots movement demanded in the 1950s that it

be preserved. Today, the C&O Canal is two very different parks. The first 22 miles remains re-watered. The rest remains in ruins. The park remains a value judgment for the four million visitors that recreate on the canal every year of which section they prefer. However, neither section resembles anything like the canal's historical appearance, which reminds us that C&O Canal "the park" is a cultural construction. It owes much of its identity to that initial New Deal period.[11]

Case Study 2: Cumberland Gap National Historical Park

I believe that park planners and managers continue to deal with the legacies of the New Deal, which they recast to meet changing needs. I decided to expand my study up through the Great Society to continue charting how park planners, managers, and boosters deal with natural conservation, historic preservation, and human conservation. The Great Society is generally defined as the set of domestic policies developed by President Lyndon B. Johnson's administration from 1964 to 1969, which included significant antipoverty and environmental legislation that had a tremendous impact on parks. This has led me to my current case study on Cumberland Gap National Historical Park.

NPS conceived Cumberland Gap late in the New Deal, but the park came of age in the late 1950s. It is a bridge between the conservation and environmental eras. It is also a historical park that commemorates westward expansion through a natural feature—the gap. The park encompasses land in Tennessee, Kentucky, and Virginia. The Department of Interior dedicated the park in 1959 and constructed basic park infrastructure with Mission 66 funding.[12] Shortly after, Congress passed the Economic Opportunity and Wilderness acts in 1964 and the National Historical Preservation Act in 1966. The War on Poverty came to Appalachia and so did wilderness and preservation advocates. A new discourse emerged at Cumberland Gap.

First, the Office of Economic Opportunity placed a Job Corps Conservation Center at Cumberland Gap, which is the Great Society version of the CCC. Unlike the CCC, the Job Corps conservation program was a political failure and is not as well known or commemorated. However, during its short existence, enrollees, much like their CCC predecessors continued to transform the park landscape, and also transform themselves in this age of liberal idealism.[13]

Park managers held wilderness hearings after the passage of the Wilderness Act, which asked NPS units to evaluate roadless areas over 5,000 acres. These hearings are an interesting view into the environmental movement and the pressure for ecological integrity in national parks because they opened park planning to public scrutiny. The hearings show that the public was interested in expanding the wilderness areas in Cumberland Gap beyond what NPS had envisioned. Wilderness advocates also strongly opposed the proposed Allegheny Parkway, which they feared would degrade the park's wilderness areas. Ironically, the public also advocated the preservation of Hensley settlement as a primitive frontier village, even though it was a 20th-century community. These discussions of wilderness and roads also prompted NPS planners to tunnel US Highway 25 underneath the gap to return the feature back to its late-18th-century appearance.[14]

Understanding the interplay between natural conservation, historic preservation, and recreational development helps us decode the landscape and understand the cultural values

it embodies. It helps us chart important debates in state and national parks that are still discussed today, including the issue of roads in parks, the concept of wilderness, and managing cultural resources in wilderness areas. Further, it forces us to be self-reflective about what kind of visions park planners, managers, and boosters are driving forward today.

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"Green and Shady Camps": E.P. Meinecke and the Restoration of America's Public Campgrounds

Terence Young

For more than 50 years, motor-camping on America's public lands has often disappointed. In 1955, writers Mary V. Hood and A. William Hood warned readers of *Nature and the Camper* that the conditions in "our national parks and other popular areas … are so crowded that confusion and noise make relaxation almost impossible" (119). Twenty years later, John Jobson reiterated the Hoods' admonition when he noted in *The Complete Book of Practical Camping* that "most people head for the most popular and most accessible spots. Thus the easily available camping meccas are a shambles from overcrowding" (232). More recently, one camper, Gregory Ward, pithily repeated the caveat on his blog, but with a focus on the vegetation. Along with a revealing photograph (Figure 1), he noted that "the campsites in Yosemite aren't really all that nice. They're a bit overused and not much grows there" (Ward 2003). Of course, regular campground maintenance is pursued in national parks and on other public lands where possible, but it tends to be directed toward the acute demands that arise from current use and that can have an immediate impact on campers. It is not unusual for a national park, for instance, to organize volunteers to clear fire rings, repair toilets, paint structures and attend to other, related campground needs (Yosemite Group Volunteer Catalog 2013). At the same time, the renovation and repair of the sort of chronic conditions that emerge through slow degradation and which do not threaten health—for example, the loss of vegetation—are repeatedly deferred and can come to undermine the larger camping experience. Today, many motor campgrounds in parks and forests appear to be "sacrifice zones" where visitor-induced damage can be contained. Sadly, it is easy to come to the conclusion that campground authorities accept this environmental and experiential decay as in-

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Figure 1. "The campsites in Yosemite aren't really all that nice. They're a bit overused, and not much grows there." Photo courtesy of Gregory Ward.

evitable and one-way. History, however, demonstrates that campground deterioration can be directly addressed and reversed.

Camping has been an enormously popular American pastime for nearly a century. According to the Outdoor Foundation, approximately 15% of the population (42.5 million) camped during 2011 and this figure has held relatively steady for years (Outdoor Foundation 2012: 14, 23). By contrast, the early 20th century was a period of booming growth, with the number of American campers jumping from only 300,000 in 1915, to more than 3,000,000 by 1930 (*Statistical History of the United States* 1965: 222). The primary cause for this skyrocketing influx was the advent of the inexpensive automobile, which transformed the camping experience. Cars made it possible to carry a family plus large amounts of equipment and supplies over great distances at an affordable cost. Once autos came within reach of working-class families, the number of campers ballooned. Unfortunately the quality of popular camping destinations deteriorated under this wave of enthusiasts because camping largely had been unregulated in the nation's protected areas since its beginnings in the 19th century. In this unorganized state, unlimited numbers of campers were free to haphazardly set up their equipment at any attractive, public location they could access, for example in Stoneman Meadow at Yosemite (Figure 2) (Demars 1991).

Crowding, noise, surface water pollution, and soil pollution became common as people and their machines pervaded camping areas, but the greatest casualty of unregulated camping was vegetation. Grasses and forbs, as well as shrubs and trees, disappeared from popular

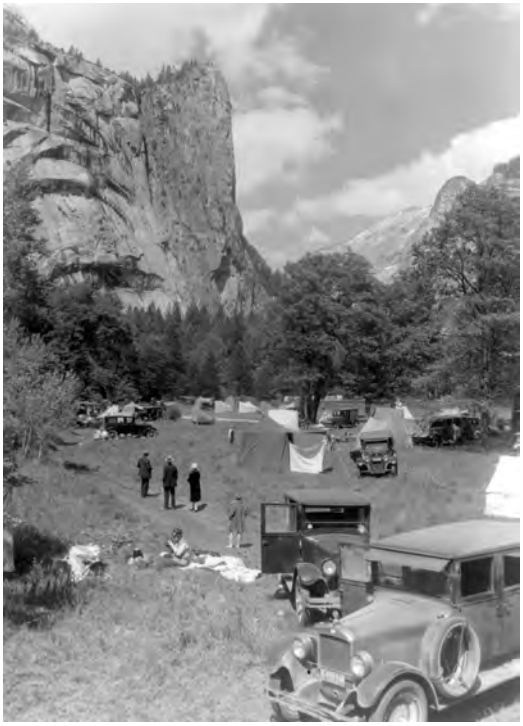

Figure 2. Unregulated campers in Stoneman Meadow, Yosemite National Park in 1927. Photograph courtesy of NPS.

destinations as the number of campers climbed. By the late 1920s, public campgrounds nationwide were being abandoned as degraded and unappealing (McClelland 1998). Concerned about the skyrocketing loss of vegetation in campgrounds and other high-traffic areas, national park and forest authorities turned to E.P. Meinecke for assistance. His evolving prescriptions would consistently address vegetational damage, but over time, they would also come to focus on the camping experience.

Emilio Pepe Meinecke, widely known as "Doc," was born in Alameda, California, in 1869 but he traveled to Germany, his parents' homeland, to earn his doctorate in Botany from the prestigious University of Heidelberg in 1893 (Figure 3). Cosmopolitan and peripatetic, he worked and taught in Germany and Argentina for about a decade before returning to San Francisco, California, in 1909 to accept a post at the US Department of Agriculture's Bureau of Plant Industry (BPI) as consulting pathologist for the US Forest Service's California District. In 1928, Meinecke also became consulting pathologist for the National Park Service (Wagener et al. 1957).

During his first 16 years with the BPI, Meinecke focused professionally on trees damaged by insects, diseases, and other natural pests, but then in 1925, the Park Service approached him with a question about human-caused injuries to *Sequoia gigantea*, or "Big Trees," at Sequoia National Park. How, they asked, can we mitigate the negative impacts of intensive camping in the most picturesque tree groves and of people's heavy and unrestricted use of the same? Intrigued, Meinecke visited the park in May 1926 where he discovered a grossly imbalanced and dire situation. The public, Meinecke warned, was loving the trees to death. Big Trees were clearly very attractive to visitors and "the bigger the tree the greater is the desire of the tourist to make its acquaintance" (Meinecke 1926: 12). Unfortunately, the Sequoias could not withstand their suitors' too constant attentions. In a zone adjacent to the biggest trees, "the ground for many feet in radius is compacted to a cement-like consistency" and the most important and active roots had been compressed to the point of destruction by the simple act of walking (Meinecke 1926: 10). Without remediation, the oldest Big Trees would soon die so Meinecke recommended that the degraded zones be reforested with Sequoias, Douglas firs, and all the other species that had been lost to trampling. In light of this prescription, Superintendent John White ordered his staff to begin the removal of camp-

Figure 3. E.P. "Doc" Meinecke around 1928. Photo courtesy of National Park Service Historic Photograph Collection.

sites adjacent to any Big Trees and the replanting of the forest. Meinecke had begun his scientific inquiry into the relationship between vegetation and camping.

Word of Meinecke's analysis spread quickly among protected-area administrators and the following year, 1927, he accepted an invitation to assess the forest and camping situation in California's state redwood parks (Meinecke 1928). Visiting several of the most popular locations, Meinecke found conditions similar to those at Sequoia National Park—severe environmental degradation from an "excessive concentration of traffic." This time he offered four recommendations. First, conflicting park functions should be spatially segregated from each other. The redwood groves, which visitors found most appealing and which tended to be near the centers of parks, needed to be managed in a manner distinct from the less valuable areas near park edges. Deeply symbolic, redwoods were each parks' primary feature and principal amenity so their groves should not include any commercial concessions or other artificial features. An increased level of vegetation protection would result, but the principal product of this change, Meinecke argued for the first time, would be an improved visitor experience through an enhanced *sense of place*. "The main groups of Redwoods," he offered, will "resume the rank they held before a heavy and uncontrollable invasion tended to cheapen their prodigious beauty in the eyes of the public." Second, Meinecke relatedly noted that camping areas tended to suffer the heaviest trampling and consequently the worst soil compaction so he recommended that camping be "absolutely banned from the main [redwood settings] and concentrated in the marginal areas … [where] it can do little harm." Third, Meinecke took aim at the damage caused by the unregulated movement of pedestrians when he advised that trails be established through redwood groves and the public trained to stay on them. Such training, however, would impact the camping experience and had to be handled thoughtfully. In a city park, signs and fences could be constructed to constrain and direct movement, but, Meinecke warned, "both are distinctively objectionable in the atmosphere of the Redwood parks and should be used only as an ultimate resort." Instead, authorities were encouraged to take a naturalistic approach where controlling structures would be subordinated to the environment. A carefully placed log, fallen limb, or rock, or a judiciously planted shrub "serves as well as a solid fence…. The best trail is the one which leads through green undergrowth taking the place of a fence." Finally, Meinecke recommended that trampled areas be restored. Soil aeration and time would most facilitate recovery, but planting indigenous species could

help too. Again, however, he was concerned that this restoration appear natural, so he cautioned that "unless [replanting] is done with great skill the effect will be one of artificiality and consequently undesirable" (Meinecke 1928: 13–15).

The Sequoia National Park and California state park reports demonstrate Meinecke's preference for spatial strategies combined with behavior-shaping, naturalistic features to reduce and mitigate the damage that unrestrained visitors had on the physical environment. At the same time, the reports reveal the first glimmerings of an awareness of connections between vegetation and the camping experience. Subsequent consultations at Yosemite, Glacier, Mesa Verde, and other national parks reinforced Meinecke's awareness and soon he would produce the comprehensive plan that transformed the campground into a device that can both protect the environment and enhance the camping experience. Apparently Meinecke began the development of his plan in spring 1931 when L.A. Barrett, the Forest Service's assistant forester for California's lands and recreation, asked the pathologist to join him on a summer inspection of Forest Service campgrounds in the eastern Sierra Nevada and to produce a formal assessment of the increasingly stark damage at these sites. After a winter of analysis and contemplation, Meinecke delivered his groundbreaking report entitled "A Camp Ground Policy" in April 1932.[1]

As he had in his previous assessments, Meinecke began with the focus on vegetation loss, but he singled out the automobile as the cause rather than people on foot. Unlike pedestrians, cars more thoroughly crushed continuous tracks of ground, broke branches, barked trees, and poisoned the earth with motor oil. "A single invasion of a new camp site by an automobile would soon be repaired," he admitted, but that was not the situation. "It is the constant repetition of the injurious action, day after day, year after year, that ends in disaster, and the final result is the destruction of the elements that make a certain locality suitable for camping" (Meinecke 1932: 2) According to Meinecke, a camper using an unregulated or "self-made" campsite (Figure 4) pulled off the road, drove around a central clump of trees, and selected a tent site. Once the tent was pitched, the places for a campfire/stove and for the table were selected. When leaving, the camper did not reverse his travel but continued forward in order to loop back out to the road. Three points—A, B, and C in the figure—became "keys" and progressively lost vegetation as they were struck by cars. As a consequence, each key retreated "until an artificial desert mars the entrance to the camp. Similar processes go on within the camp site until the formerly green and attractive camp is rendered unsightly, shadeless and finally useless" (Meinecke 1932: 7).

To remedy the situation, urged Meinecke, the Forest Service needed to intercede with his novel campground plan. In particular, Meinecke employed a four-point spatial strategy to reduce the randomness of camper movement (Figure 5). First, authorities should designate individual campsites of roughly equal size, each with its own "address." Second, each campsite should also have a fixed stove, table, and tent pad. The unchanging spatial relations between these elements would reduce damage across most of a campsite by concentrating camper movements into the central area between them. Third, since cars were the principal culprit, they had to be confined to designated roads, which in the Meinecke proposal were one-way. The roads, in their turn, made possible the fourth and "essential feature of the plan" possible: a "garage spur" where campers could park their autos and have comfortable and focused access to the table, stove and tent pad at each camp site. Central to his proposal, Meinecke

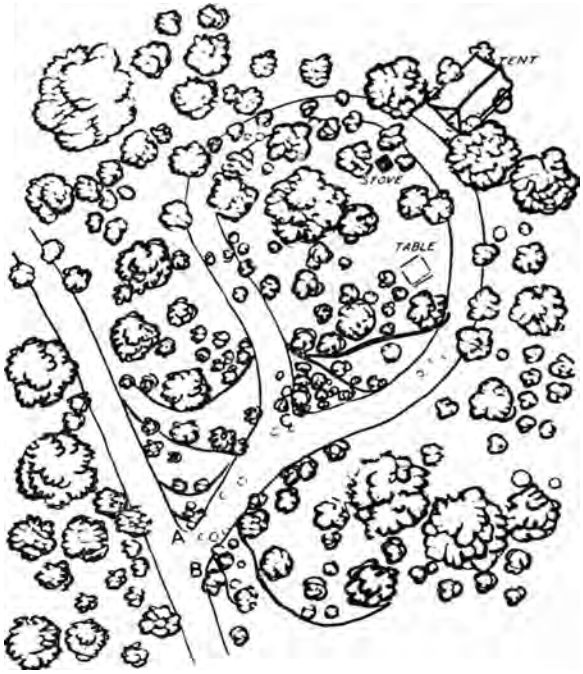

Figure 4. An unregulated or "self-made" campsite. Source: Meinecke 1932.

emphasized that each garage spur had to be "plainly marked" and "immediately recognized as such" (Meinecke 1932: 11). How were authorities to keep campers from ignoring a garage spur and simply moving their cars elsewhere in the campsite? By using "the tourist's desire to protect his property, particularly his car, from injury." At strategic points around the spur, obstacles "sufficiently heavy so as not to invite moving by the average camper, are placed in such a way that, in self-preservation, the camper will not drive over them." Of course, Meinecke reminded his readers, "the average tourist is willing to conform, according to his understanding, to what he is supposed to do in the forest…. Still, it must be kept in mind that the tourist when he visits the forest seeks release from the restrictions of town and city life. He wants a certain amount of freedom, and in this mood he resents too obvious directions such as signboards with prohibitions and demands" (Meinecke 1932: 9). As an alternative, Meinecke emphasized a naturalistic approach by promoting the use of boulders or other large objects to constrain automobile movement, which would simultaneously reduce vegetation loss and allow two campsites to be designated in the same space that a single unregulated one had used.

Finally, Meinecke linked his comprehensive plan to the camping experience. The average camper, Meinecke offered, wanted "green and shady camps" so he recommended the temporary withdrawal of older, damaged campsites (or even larger subunits) and their re-planting with"native trees at strategic points" (Meinecke 1932: 14, 16). However, he cautioned, campers would not be easy to satisfy because they held two conflicting views about campgrounds and the camping experience. On the one hand, "the city man does not feel at home in what to him is wild country…. [As a consequence,] he prefers the semi-domestication of nearby camps, easily reached and easily left." On the other hand, the same individual has come camping to be released from "the restrictions of town and city." Therefore, Meinecke cautioned, the planting and maintenance of vegetation, like the constraining objects around a garage spur, had to be pursued "in close imitation of the natural type…. Landscaping in the usual sense," that is, something similar to what one would find in a city park, "has no place … where the visitor seeks at least the illusion of wildness" (Meinecke 1932: 9, 14). The average camper, Meinecke explained, resented anything, even vegetation, that too strongly resembled life at home.

Figure 5. Two Meinecke campsites. Source: Meinecke 1932.

The Forest and Park services quickly embraced Meinecke's proposals. By fall 1932, thousands of copies of his plan had been distributed throughout both services and, in the words of National Park Service historian Linda McClelland, "major changes began to appear in the[ir] campgrounds." Soon, public campgrounds nationwide incorporated defined roads, designated campsites, garage spurs, and controlling obstacles to protect vegetation. So rapid and universal was the adoption of Meinecke's approach that the term "meineckizing campgrounds" became a commonplace among CCC (Civilian Conservation Corps) landscape architects and supervisors in the 1930s, and could still be heard among camping authorities into the 1950s (McClelland 1998: 281). Today the majority of America's public campgrounds are organized as Meinecke prescribed.

Did Meinecke's proposals reduce campground degradation and improve the motor-camping experience? Yes. Camper satisfaction rose following the implementation of his design, but not permanently. The quality of today's motor-camping experience is once again unsatisfying because many campgrounds are poorly vegetated. Decades of use with inadequate maintenance has left many barren and bleak. But, as the history of the Meinecke campground illustrates, the situation can be rectified. The time has come to recall E.P. Meinecke's prescription and to re-plant America's campgrounds so that they can again be "green and shady."

Endnote

1. Meinecke's first version of "A Camp Ground Policy" was a mimeograph, but the Forest Service soon produced a printed version. All page references are to the printed version of the report.

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A Bird in Our Hand: Weighing Uncertainty about the Past against Uncertainty about the Future in Channel Islands National Park

Scott A. Morrison

Introduction

Climate change threatens many species and ecosystems. It also challenges managers of protected areas to adapt traditional approaches for setting conservation goals, and the philosophical and policy framework they use to guide management decisions (Cole and Yung 2010). A growing literature discusses methods for structuring management decisions in the face of climate-related uncertainty and risk (e.g., Polasky et al. 2011). It is often unclear, however, *when* managers should undertake such explicit decision-making processes. Given that not making a decision is actually a decision with potentially important implications, what should trigger management decision-making when threats are foreseeable but not yet manifest?

Conservation planning for the island scrub-jay (*Aphelocoma insularis*) may warrant a near-term decision about non-traditional management interventions, and so presents a rare, specific case study in how managers assess uncertainty, risk, and urgency in the context of climate change. The jay is restricted to Santa Cruz Island, one of the five islands within Channel Islands National Park (CINP) off the coast of southern California, USA. The species also once occurred on neighboring islands, though it is not known when or why those populations went extinct. The population currently appears to be stable, but concerns about long-term viability of jays on Santa Cruz Island have raised the question of whether a population of jays should be re-established on one of those neighboring islands, Santa Rosa. To address that question, managers need to understand when and why the jay population went extinct on Santa Rosa Island: did it go extinct "naturally" in prehistoric time, or did it go extinct more recently due to anthropogenic factors? Depending on which it is, a reintroduction either would be consistent with a general interpretation of National Park Service (NPS) policy—i.e., restoring parks to their historic, natural condition—or it would be a more interventionist manipulation of the landscape, possibly even an "impairment" of the park. Case studies like this highlight potential conflicts between existing policy and broader conservation goals, and

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can be especially helpful because they might illuminate how conservation philosophy, policy, and practice can be adapted to meet the realities of conservation in a changing world (Cole and Yung 2010).

The aim of this paper is not to evaluate whether to translocate jays to Santa Rosa Island *per se* (e.g., how to rank translocation as a priority for management, how to estimate or increase the likelihood of a successful introduction.) There are many resources that can help with that (e.g., Ewen et al. 2012; IUCN 2012b). Rather, the aim of this paper is to explore more prerequisite questions raised by the prospect of translocating jays: if threats are foreseen that could potentially necessitate an action, how and when should managers respond to that information? Addressing these questions in the case of the jays requires an examination of historical ecology, and how managers should weigh uncertainties about both the past and the future in their management planning. Survival of a CINP-endemic species may hang in the balance.

Uncertainty about the jay's past

Channel Islands National Park encompasses five of the eight California Channel Islands, of which Santa Cruz Island is the largest. The Nature Conservancy (TNC) owns the westernmost 76% of the island; NPS owns the remainder. Prior to their conservation management, islands in CINP were used for livestock production, and overgrazing caused widespread loss and degradation of the islands' native vegetation. All ungulates have since been removed from the park islands, which are generally at an early stage of vegetation recovery (Morrison 2011).

The island scrub-jay, the only insular passerine species in the continental United States, occupies one of the smallest ranges of any bird, the 250 km^2 of Santa Cruz Island. Multiple lines of evidence indicate the species occurred on neighboring Santa Rosa Island at least into the early Holocene. Genetic studies suggest that island scrub-jays diverged from a common ancestor of the mainland western scrub-jay (*A. californica*) approximately 1 million years ago (McCormack et al. 2011), which means that island scrub-jays were present on the island when sea levels were lower during the last glacial, approximately 10,000 years ago, and the areas that now comprise the northern Channel Islands were connected as a single land mass, Santarosae Island (Delaney and Wayne 2005; Figure 1).

Until recently, it was assumed that the island scrub-jay "died out on Santa Rosa during peak postglacial warm interval (hypsothermal), approximately 8,000 years ago, when drier conditions reduced woodland habitat" (Curry and Delaney 2002). Fossil remains dating from greater than 10,000 years BP have been found on Santa Rosa Island (Collins 2009); interestingly, no scrub-jay fossils have been found on Santa Cruz Island, which highlights the incompleteness of the archeological record on the islands (Collins 2009). More recent remains, however, perhaps dating to less than 1,000 years ago, have been found on neighboring San Miguel Island (P.W. Collins, Natural History Museum of Santa Barbara, pers. comm.), which narrows the uncertainty about when jays disappeared on the islands closer to the historic period. That more recent baseline of likely presence on neighboring islands helps interpret other evidence—and the absence of evidence—from the historical period.

No systematic biological surveys occurred on the northern islands prior to the introduction of livestock in the mid-1800s (Collins 2009). Sheep (*Ovis aries*) grazing in particular had a profound effect on the park islands, which were largely devegetated. Collins (2009)

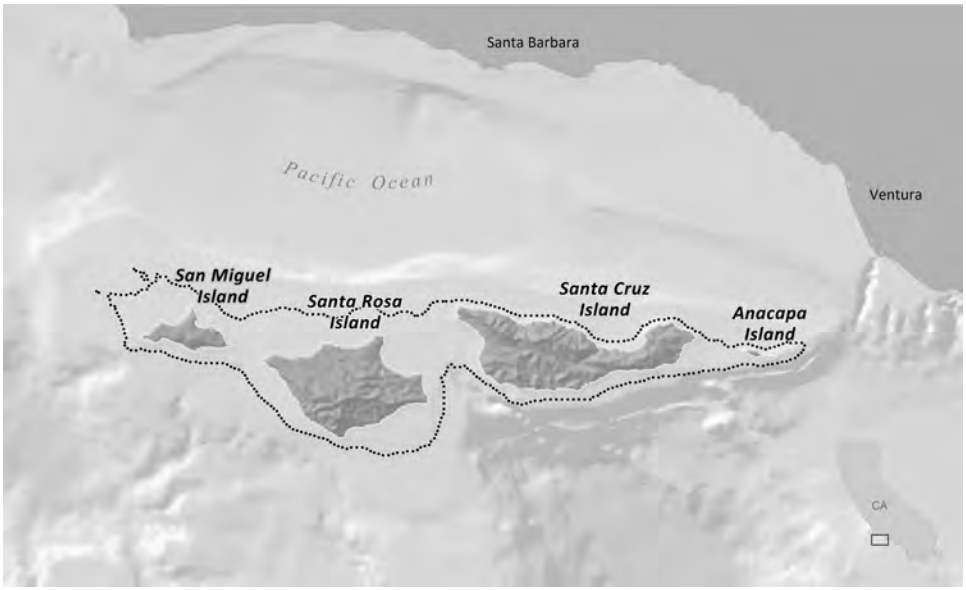

Figure 1. The northern Channel Islands of California. Channel Islands National Park includes these islands plus Santa Barbara Island to the south. Dotted line depicts the coastline of Santarosae Island, 16,000 BP (adapted from Johnson 1978).

reviewed specimen collections and written records by visitors, collectors, and scientists to the northern islands in the 1800s and early 1900s to assess not just whether there were any observations of jays by early visitors, but also whether there were even observers on Santa Rosa Island in the mid-1800s who could have collected or recorded observations of jays if they were there. (Collins also reviewed ethnographic records pertaining to the Native American history on the islands and found few clues as to how the Chumash may have interacted with the jays, e.g., for feathers or food). Few biological surveyors visited Santa Rosa Island in the 1800s, and no surveyor records have been found prior to the introduction of sheep, which took place around 1844 (Collins 2009). In fact, there were few biological surveys on Santa Rosa Island even up through the mid-20th century; Miller (1951), in a comparison of avifauna of Santa Cruz and Santa Rosa islands, noted that "the scanty attention given Santa Rosa [results in] the necessary dependence on single reports of occurrence derived from hasty visits."

One of the few ornithologists to visit Santa Rosa Island in the 1800s was Smithsonian biologist Clark P. Streator, who visited the island for three days in 1892. Collins (2009) discovered field notes in which Streator recorded the species he observed, as well as species he did not directly observe but that were reported to him as occurring on the island by on-island staff (Streator 1892). One of those staff was the manager of the sheep operation, John F. More, who at the time had been on the island for about 20 years. Streator wrote, under the heading of "*Aphelocoma,*" that "Mr John Moore [sic] informs me that there are Jays on the island." Although Streator himself did not see or collect a jay on the island, the other species he reported as being present based on interviews with the island staff are all known to be present on the island. For example, the authority of his note regarding "*Mimus polyglottos*" is

not doubted: "Mr. Moore and others inform me that there are mockingbirds on the island." Similarly, "all of the old employees of the Island as well as Mr John Moore manager of the Island informed me that they had seen small skunks on the Island." Despite not seeing the "*Spilogale*" skunk, he accurately ascribed the genus as a spotted—not a striped (*Mephitis* spp.)—skunk.

If island scrub-jays existed on Santa Rosa Island as recently as the late 1800s, what could have precipitated their extirpation? Extinction can result from a vortex of interacting effects (Gilpin and Soulé 1986). Sheep grazing would have had a profound direct and indirect effect on jay population viability. By the 1880s, as many as 125,000 sheep occurred on the 215-km^2 Santa Rosa Island (Collins 2009). Sheep would have reduced the coverage of vegetation types that on Santa Cruz Island are associated with jay habitat (Figure 2) (Sillett et al. 2012). Woody vegetation could have been lost due to direct and indirect effects of grazing (e.g., herbivory, soil erosion), pasture clearing, and gathering of fuel wood to support ranching and rendering operations. The reduction in quantity and quality of habitat would have reduced carrying capacity and so increased risk of extinction due to stochastic effects of small population size.

Additional factors could have compounded the reduction in habitat and heightened the extinction risk of jays on Santa Rosa Island. Food abundance may have been reduced, in part due to loss of oak (*Quercus* spp.) and pine (*Pinus* spp.) habitat, but also because of likely competition by the non-native feral pigs (*Sus scrofa*) on the island that would have rooted up and consumed seeds cached by the scatter-hoarding jays (Sweitzer and Van Vuren 2002; Pesendorfer 2014). Drought conditions, which are not uncommon in this region, could have further limited acorn supply (e.g., Pérez-Ramos et al. 2010). Perhaps there was direct persecution of the jays. In that era, bounty hunting and persecution of corvids was not uncommon in the western United States (e.g., Erickson 1937; Hooper 1938). As Bent (1946) observed, "organized [western scrub-jay] shoots are popular in some parts of California, under the pretext of reducing numbers of a destructive bird, but largely, too, as a pleasant recreation and an interesting competition for the shooters." Matthiessen (1959) wrote that the "destruction of birds of all shapes and sizes had reached the proportion of a national pastime in the last quarter of the nineteenth century." Some passerines were also harvested for food (e.g., Hornaday 1913; Bolen and Robinson 1995). A large blue passerine may have been especially

Figure 2. Santa Rosa Island vegetation. (Left) Modeled potential extent of *Quercus tomentella* (adapted from Kindsvater 2006), which may approximate distribution prior to the introduction of sheep. (Right) Extent of oak (gray) and pine (black) communities today.

conspicuous on an island with a depauperate fauna that—except for marine species—offered little other wild 'game.'

The few written accounts of life on Santa Rosa Island in the 1800s offer few clues. An early visitor to the island, identified as "K," wrote:

> There is a storeroom in the barn, where all the things the men need are kept, and here also is a perfect arsenal of fire arms—one might think there was danger of a foreign invasion, but they are only used to shoot *birds*, foxes, and wild hogs. *The latter are very numerous*, and sometimes attack and kill the lambs ("K" 1893, emphases added).

Whether jays were among the "birds" targeted by the sheep shearing men she described as "swart Spanish–Californians" was not specified. Her account does illustrate that the ranching era brought about changes in the community composition on the island, e.g., feral pigs. How ranching affected abundance and behavior of island fox (*Urocyon insularis*) is unknown; foxes are nest predators of island scrub-jays on Santa Cruz Island (Caldwell et al. 2013).

An especially intriguing insight into possible community-level changes on Santa Rosa Island might be embedded in an account by Gustav Eisen, former curator of biology at the California Academy of Sciences, who visited the island for perhaps "several weeks" in roughly June of 1897. He wrote:

> Birds of several kinds visit the island, but for some reason none ever breeds there. Doves come by the thousands, but do not stay long. This is hard to explain, as the island would appear to be a safe and comfortable nesting place; but not a nest can be found. Thousands of very vicious ravens visit the island at intervals. They are of the common species, but for some reason are very wicked and do considerable damage if they are not watched. Their worst habit is to fly at the eyes of sheep until the animal is blinded. The eyes are then eaten out and another sheep attacked. Where these ravens come from or where they go after their periodical visits is a mystery (Eisen 1897).

Although the account contains inaccuracies (many species of land bird surely nested on the island), that Eisen did not observe evidence of nesting (such as active nests, food provisioning, fledglings) may indicate low reproductive success of passerines generally, which—again—could have been due to low habitat quantity or quality. What may well have contributed to low habitat quality would be "thousands" of ravens (*Corvus corax*). Numerous visitors to Santa Rosa Island during the sheep era noted the abundance of ravens (P.W. Collins, Santa Barbara Museum of Natural History, pers. comm.). Ravens are predators of eggs and nestlings of open cup nesting birds, including island scrub-jays (Caldwell et al. 2013). The current abundance of ravens on Santa Cruz Island (with no introduced prey subsidy, such as tens of thousands of sheep) is generally low. Perhaps the large flocks of ravens seen on Santa Rosa Island, likely attracted by the food subsidy provided by sheep, also increased nest predation of jays (and other birds), which may have been concentrated in the remaining patches of habitat. Interestingly, that potential mechanism of hyperpredation by a predator population elevated by a food subsidy provided by introduced ungulates was observed a century later: golden eagles (*Aquila chrysaetos*), subsidized by feral pigs, established a resident

population on the northern Channel Islands and through incidental predation drove island fox populations to near extinction (Roemer et al. 2002) (Figure 3).

Confounding the uncertainty about why the Santa Rosa Island jay population went extinct is the fact the Santa Cruz population did not, even though the islands experienced generally similar ecology and land use histories (Collins 2009). Why would sheep overgrazing lead to extinction on one island and not another? Perhaps Santa Cruz Island, which is larger and more physiographically complex, provided jays with sufficient refugia from predation and habitat loss. Perhaps local variation in land use practice or climate affected the jay populations differently. In the end, we can only speculate about what may have happened on the islands (e.g., Figure 3) and model various scenarios of population viability. Without the discovery of unequivocal evidence (e.g., through archaeological excavation or finding of a misplaced museum specimen), the uncertainty about the date and cause of extirpation might not ever be resolved. Regardless of the uncertainty surrounding when and why the populations disappeared, however, the fact the species no longer occurs on three islands in its former range does highlight its vulnerability to extinction on Santa Cruz Island (Delaney and Wayne 2005).

Why "when" matters

Although it is not known and may not be knowable when jays went extinct on Santa Rosa Island, the date and cause are relevant to NPS policy. The Organic Act (1916) directed the new agency to conserve resources in a "natural" and "unimpaired" condition: "the condition of resources that would occur in the absence of human domination of the landscape" (NPS 2006). Thus, if jays went extinct on Santa Rosa Island before the "human domination" of the ranching era, then the jay could be said to "not belong" on the island and translocating it to Santa Rosa Island could be seen as an "impairment" of park resources. If, on the other hand, the population went extinct because of human-induced habitat degradation, then translocating it to Santa Rosa would almost assuredly be a management goal. For example, a population of song sparrows (*Melospiza melodia gram-*

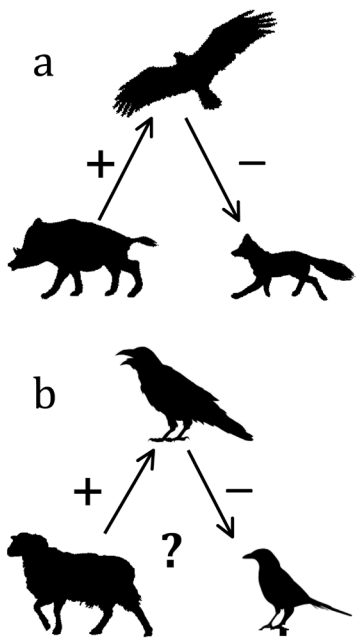

Figure 3. Observed and hypothesized hyperpredation trophic relationships on the Channel Islands. (a) In the late 1900s, golden eagles established a resident population on the northern Channel Islands that was supported in part by a food subsidy provided by feral pigs on Santa Cruz Island; golden eagle predation drove island fox to near extinction on Santa Cruz, Santa Rosa, and San Miguel islands (Roemer et al. 2002). (b) Perhaps a similar hyperpredation scenario occurred on Santa Rosa Island in the late 1800s, in which introduced sheep may have subsidized a population of ravens that in turn may have increased nest failure and extinction risk of that island's population of island scrub-jays.

inea) is known to have been driven extinct on CINP's Santa Barbara Island due to 20th-century habitat degradation (Collins 2008), and managers are currently developing strategies for its reintroduction. In contrast, uncertainty about whether or not Santa Rosa Island's jay population went extinct "naturally" has effectively deferred a decision regarding jay translocation. Were it not for climate change, such limbo might not have significant stakes. However, a consideration of some of the uncertainties associated with climate change reveal risks of status quo—not only to the viability of the jay but also to the ecological resiliency of the park.

Uncertainty about the jay's future

The island scrub-jay faces a number of threats to its viability that acting alone or in concert could increase extinction risk. Small, restricted populations are vulnerable to population problems, ranging from inbreeding to catastrophic events (Gilpin and Soulé 1986). Island populations are particularly vulnerable, as evidenced by high extinction of island birds, often caused by invasive alien species (King 1985). In recent years, purported sightings of rats (*Rattus* spp.) have occurred on Santa Cruz Island with sufficient credibility to trigger a management response (Boser et al. in revision). Introduced Argentine ants (*Linepithema humile*), which are known to depredate contents of passerine nests, occur in multiple, expanding infestations on the island (Randall et al. 2011).What effects these would have on jays is unknown.

Climate change will likely exacerbate many threats to jays. How climate change will affect the Channel Islands is not well understood, in part because the climate of the islands is so dependent on local marine conditions and fog (Snyder et al. 2003). Generally, however, we might assume that conditions expected for coastal southern California apply to the islands. Warmer and drier conditions in southern California (Cayan et al. 2008; LaDochy and Witiw 2012) may render areas of a species' current distribution unsuitable; species that are restricted to islands and have limited dispersal abilities may be stressed if the climate to which they are adapted shifts (Walther et al. 2002). Changes in precipitation would affect wildfire risk (Westerling and Bryant 2008). Drought may reduce production of acorns (Pérez-Ramos et al. 2010), which are an important food resource for jays. Global warming may increase the prevalence of mosquito-vectored diseases, such as West Nile virus (WNV), which causes high mortality among the Corvidae and has been prevalent on coastal mainland California since 2003, but has yet to establish on Santa Cruz Island (Boyce et al. 2011). At least five species of mosquito are present on the island that can vector the disease. Another WNV vector, the daytime-feeding Asian tiger mosquito (*Aedes albopictus*), has recently invaded nearby Los Angeles County (GLACVCD 2013). Jays are dependent on oak habitats, so arrival of oak pests or pathogens to the island, such as the goldspotted oak borer (*Agrilus auroguttatus*) that is currently expanding its range and causing high mortality of some oak species in San Diego County (CISR 2013), could have significant impact on jay populations.

Managers are implementing a number of strategies to reduce threats to the island scrub-jay and other native species on Santa Cruz Island. Managers are attempting to eradicate Argentine ants (Randall et al. 2011) and implement biosecurity measures to reduce importation and establishment of new pests (Boser et al. in revision). Protocols are in place to reduce risk of accidental wildfire ignition. Managers also vaccinate some island scrub-jays to help reduce the population-level impact of WNV (Boyce et al. 2011). In recent decades managers also

have removed nonnative mainland vertebrates, including sheep, which caused widespread habitat loss and degradation, and pigs and wild turkeys (*Meleagris gallopavo*), which were likely competitors of jays for acorns and other small prey items (Morrison 2011).

In consideration of the challenges of managing risks to the island scrub-jay on one island, and in light of the jays having at one time been present on Santa Rosa Island, Morrison et al. (2011) discuss potential benefits of establishing a second population of jays on that island. It would increase range and add population structure, effectively creating two populations that could be managed as a metapopulation to reduce risk of global extinction and improve prospects for persistence on Santa Cruz Island. Marine conditions are a strong driver of climate on the California islands, and because Santa Cruz and Santa Rosa islands occur along a marine ecoregional divide (Spalding et al. 2007), the islands differ in climate and may experience the effects of climate change differently. Those differences, even if slight, may have important climate adaptation benefits for jays. For example, mosquito-borne disease risk can be highly influenced by temperature, and even slightly cooler temperatures on Santa Rosa Island could reduce impact of West Nile virus (Boyce et al. 2011).

How climate change will affect species and ecosystems is an emerging science laden with uncertainty. Consequently, managers face uncertainty about risks to jays, and the need or urgency to manage them. Currently, the jay population on Santa Cruz Island appears not to have a population problem (Sillett et al. 2012). However, managers of the Channel Islands know from recent experience with the island fox how quickly populations of endemic taxa can crash, and how expensive and demanding the subsequent recovery efforts can be (Coonan et al. 2010). Indeed, based on recent estimates of population size (Sillett et al. 2012) and considerations of disease risk (Boyce et al. 2011), the IUCN uplisted jays to "vulnerable" on its Red List of threatened and endangered species (IUCN 2012a). As managers consider management options for the jay, the expected costs and benefits of proactive versus reactive management should factor into the decision about whether or when to act. Implementing management proactively could lessen the biological, financial, administrative, and ethical stakes relative to managing a population in decline or peril. Management options also must be evaluated in context of the other objectives and management responsibilities the managers have across the archipelago.

Uncertainty about an island's future

The prospect of translocating jays to Santa Rosa Island raises a number of questions regarding the condition of habitat on that island and the potential impact of jays in that ecosystem. The legacy of the ranching era has created a substantial restoration challenge for CINP in its own right. The last of the introduced ungulate populations that had long suppressed native woody vegetation recruitment were removed from Santa Rosa Island in 2011. Although some native vegetation communities have responded positively to the release from grazing pressure (Wagner et al. 2004), others remain highly degraded. Indeed, given the reduction of native vegetation communities, loss of soil, the prevalence of weedy species (like annual grasses), and the effects of climate change, Santa Rosa Island might be considered a "novel ecosystem" (*sensu* Hobbs et al. 2009).

Consideration of introducing populations requires extreme diligence to minimize risks both to the species and the ecosystem to which it is being introduced, even if it is a reintro-

duction to its former range. For example, jays are predators of open cup nests, and so could have an adverse impact on other passerines of conservation concern, such as loggerhead shrike (*Lanius ludovicianus anthonyi*) (Stanley et al. 2012). However, some island birds have demonstrated plasticity in nesting behavior to reduce risk of nest predation by jays (Peluc et al. 2008; Sofaer et al. 2013).

Reintroduction of jays may have positive ecosystem effects. For example, restoration of predators can enhance resiliency of ecosystems (Ritchie et al. 2012). Aphelocoma jays also are renowned as ecosystem engineers, as their scatter hoarding of oak and pine seeds helps facilitate long-distance dispersal and recruitment of those keystone plants (Grinnell 1936; Pesendorfer et al. in submission).The pine and oak communities on Santa Rosa Island are currently very restricted, and the island has no animals that function as long-distance dispersers of heavy-seeded species. Restoration of these communities could benefit a variety of other native species, including two trees listed by IUCN as "vulnerable," *Q. tomentella* and *P. torreyana* (IUCN 2012), and the island fox, listed as "endangered" (increased high-stature vegetation could reduce its exposure to predation by golden eagles; Coonan et al. 2010). The caching behavior of jays can be leveraged to accelerate cost-effective restoration, including by providing seeds of desired tree species as a food subsidy—a restoration technique used in other systems (Pesendorfer et al. in submission). Indeed, the presence of island scrub-jays may have contributed to the rapidity of the native vegetation recovery on Santa Cruz Island following the removal of sheep (Pesendorfer 2014).

Concerns about climate change underscore the importance of restoring native vegetation on Santa Rosa Island. Although it is not well understood how climate change will affect the islands, it seems precautionary to prioritize accelerating the return to robust native vegetation communities, as that may in turn enhance the resiliency of the system to climate-related stress. More high-stature vegetation on the island will increase moisture harvest from fog (an important water input in this semi-arid ecosystem) and so drive important restorative feedback processes (Fischer et al. 2009). Native vegetation recovery also would enhance sequestration of carbon, and so help offset greenhouse gas emissions, a goal in western national parks (Jarvis 2009). Establishing jays on Santa Rosa Island may be an example of a translocation that has climate change adaptation benefits for both the focal species and the destination ecosystem (e.g., Lunt et al. 2013).

Weighing the uncertainties

Managers need to decide the extent to which uncertainty about the past should factor into decisions regarding island scrub-jay management into the future, vis-à-vis whether to formally consider translocation to Santa Rosa Island. Because the uncertainties about the past may not be resolved, it may be helpful to evaluate the risks of making a decision based on an incorrect assumption:

- **Scenario I:** Managers assume that jays went extinct on Santa Rosa Island due to "natural" causes before the ranching era, and so opt not to reintroduce jays to the island, but that assumption is actually incorrect; jays went extinct relatively recently due to human impacts.
- **Scenario II:** Managers assume that jays went extinct on Santa Rosa Island due to re-

cent human impacts (e.g., direct and indirect effects of sheep overgrazing) and so reintroduce jays to the island, but that assumption is incorrect; the jays went extinct due to "natural" causes long ago.

Possible harms of Scenario I include a heightened risk of global extinction of jays, deprivation of an important ecosystem process (seed dispersal) and ecological role (apex predator) on Santa Rosa Island, and slowed pace and or increased costs of ecosystem restoration (because of the presumed reliance on human labor). Possible harms of Scenario II include potential adverse effects on native taxa that otherwise may have had "natural" refuge from the direct and indirect effects of jays on Santa Rosa Island. How managers rank their possible regrets may help them differentiate between more or less desired futures (Polasky et al. 2011).

When weighing management options, tipping the balance may be a desire to reduce the likelihood of unwanted futures (Stephenson and Millar 2012). Managers of the Channel Islands know well how disruptive and expensive a sudden extinction crisis can be: three island fox subspecies within CINP were near extinction in the past decade, requiring intensive management interventions (Coonan et al. 2010). Proactive management of threats may provide considerable return if it can reduce risks, direct costs, and opportunity costs of high-stakes reactive management. Strategies that increase ecological resiliency and reduce extinction risk may help provide managers more flexibility in a future that will likely see increased strain on ever-limited conservation resources. Indeed, managers of the future may well look at today's managers as having an enviable opportunity to efficiently and appreciably enhance resiliency.

Deciding when to decide

Managers of protected areas today are likely well aware of the threat of disruption and extinction posed by climate change. Many likely also have general hypotheses about how it will impact resources in their charge. Some even may be observing ecological changes consistent with predictions. Less common, however, are examples of managers altering their conservation goals and management prescriptions in the face of climate change, and fewer still are undertaking actions that may be considered non-traditional, such as managed relocation (Bierbaum et al. 2013). Managers of Santa Cruz Island are already implementing non-traditional approaches to manage climate-exacerbated risk (e.g., Figure 4). However, a comprehensive assessment of management objectives and action alternatives regarding island scrub-jay conservation has not yet been undertaken. The value of doing so may be great, not only to clarify the management strategy for the jay but also to document a process for making decisions that managers elsewhere can examine as a possible model.

The management challenge facing CINP and TNC may be a helpful early case study in making decisions that likely will become more prevalent and complicated in protected areas in the future (Johnson and Mow 2011). Issues pertaining to jay conservation brings into sharp focus issues of climate change adaptation that are typically abstract or theoretical. Managers already can estimate a variety of impacts of climate change on a clear management priority (an endemic species that plays keystone ecological roles). Managers also have unusual decision-making prerogative: because they manage the full extent of its current and former range, they can implement a wide array of management alternatives. This is often not the case

Figure 4. An island scrub-jay being vaccinated against West Nile virus on Santa Cruz Island. Since 2008, approximately 100 individuals per year have been vaccinated to reduce extinction risk posed by that disease. The efficacy of the vaccine has not yet been tested on island scrub-jays. Photo: Al Seib © 2010 *Los Angeles Times*. Reprinted with permission.

on mainland systems where multiple landowners, land uses, and jurisdictions can constrain or complicate decision-making or implementation.

When, then, should managers decide what to do? Critical for addressing that question is assessing the urgency. The difficulty of characterizing urgency, however, is that unlike the *impact* of certain threats (such as population effects of epidemic disease, or catastrophic fire) the probability of those threats happening is difficult to estimate. West Nile virus, for example, could become established on Santa Cruz Island next year—or never. Nevertheless, climate change impacts are underway (Walther et al. 2002). Perhaps the greatest time sensitivity is the need to improve the resilience of the Santa Rosa Island ecosystem ahead of the climate stress that will worsen in the decades ahead. Practical constraints and opportunities also should be factored into the timing of decisions. If ultimately managers decided to proceed with jay translocation, implementation would not be immediate because of planning, permitting, monitoring, and other requirements, and even if the initial introduction is successful there would be additional lags before the desired outcome (e.g., population viability, restoration of ecological role) would be achieved (McDonald-Madden et al. 2011). In the meantime, CINP may make other decisions that affect its management flexibility in the future. For example, CINP is considering wilderness designation for most of Santa Rosa Island (CINP 2013); that designation could be an important safeguard of many conservation values of the islands, but could also complicate management in the face of climate change (e.g., Vucetich et al. 2012).

Finally, one condition that managers can work with today, but which may not exist in the future, is that the island scrub-jay population is currently robust. This lessens the biological, ethical, and policy stakes of harvesting birds for a translocation.

Managers need to define a path forward that takes into account the possibility that the uncertainty about the historic condition on Santa Rosa Island may never be resolved. In doing so, managers may need to assess the relevance of that baseline in the context of global change (Cole and Yung 2010). One path forward may be a facilitated structured decision analysis, in which conservation objectives and then management alternatives to best meet those objectives are articulated. Through such a process, managers can determine whether they have sufficient information to evaluate and undertake a translocation; if they do not, at least key information gaps would be identified. Some uncertainties, such as whether Santa Rosa Island has sufficient habitat to support a population of jays, are not likely fully resolvable ahead of action. But managers can mitigate risks associated with some uncertainties by proceeding in a manner that is science-based and adaptive.

Conclusion

Humans have had profound effects on the California islands for millennia (Rick et al. in review). Indeed, humans were present on Santa Rosa Island when jays went extinct on that island, although it is not known what role (if any) they played in the extinction. Similarly, through action or inaction, our influence on the ecology and evolution of the islands will be pronounced into the future. If jays experience an extinction crisis in this era of unprecedented global change, it will likely be due to our direct or indirect effects. Especially in that light, uncertainty about the date and cause of extirpation on Santa Rosa Island cannot be cause for inaction. As the NPS *Climate Change Response Strategy* (2010) cautions, "inaction may be the riskiest decision of all because climate change is a long term problem that carries a huge procrastination penalty."

The NPS *Climate Change Action Plan* (2012) states that "as a national and world leader in protecting our collective natural and cultural heritage, the NPS can and should deliver perspectives and approaches to climate change adaptation, mitigation, and communication that no other organization can" (USNPS 2012). Because island scrub-jay conservation may be an issue where "management creativity and innovation are most needed" (Johnson and Mow 2011), the legislation that established CINP seems especially prescient: it calls for the protection of "nationally significant natural, scenic, wildlife, marine, ecological, archaeological, cultural, and *scientific values* of the Channel Islands" (*emphasis added*). The distinctive focus on science may have presaged an important role for CINP. Given the relative clarity of the climate change threat to jays, the limited set of management options, and the full prerogative managers have to implement most of them, managers can be at the forefront of efforts to develop science-based approaches to address uncertainty, make decisions, and enhance resiliency of protected areas. That imperative of science can well serve managers as they navigate the ecological and policy issues of island scrub-jay conservation—and create a case study of adaptation in decision-making, management, and policy that likely would have resonance well beyond the islands.

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Rejoinder to "Discernment and Precaution: A Response to Cochrane and Mech"

Tim Cochrane

The 2012 article by Vucetich et al. in *The George Wright Forum,* which launched the discussion in this journal about the future of wolves in Isle Royale National Park, declares that an "appropriate approach is to acknowledge and understand all the values at stake and then develop a perspective or position that would least infringe upon that set of values." Earlier they warn of a common mistake of "having a dismissive attitude about others' [ethics]…" (Vucetich et al. 2012: 127). And yet, in their response to my contribution to the discussion (Cochrane 2013), they are dismissive, asserting that I would "celebrate the extinction of wolves and moose from Isle Royale," or that I am "perverse" to (supposedly) opt for extinction, or that my attitude is "misanthropic" (Vucetich et al. 2013: 333, 334). Vucetich et al. routinely mischaracterize my perspective, often extrapolating questions into a position I did not state, nor have. Clearly this is not an exercise in "understanding all values."

To paraphrase Shakespeare, perhaps they doth protest too much. In the public debate about what should be done at Isle Royale much has been said and contemplated. The single most important point that has not yet been included is a consideration of the substantial vested interests of the principal authors and institutions involved. This is a surprising lacuna, especially since two of the authors are environmental ethicists.

Vested interest in science is not necessarily bad. However, when scientists choose also to adopt an advocacy role, as Vucetich et al. have, then the question becomes how such interests are handled and whether they rise to the level of bias within that advocacy role. Two of the authors have profound professional vested interests (career advancement, reputation, meeting large research funding expectations) that align with their professed stance of genetic rescue of wolves and the continuation of the long-term wolf–moose study. Genetic rescue would generate further public interest, expanded research opportunities, and even the personal reward of living part of the year in the national park. Two of the authors are employed by Michigan Technological University, which "celebrates" this study in press releases and websites, making the wolf–moose study perhaps the most important public research symbol for the university. The park and the National Park Service have been extolling this study and the animals involved for decades, generating another vested interest. While I am not sug-

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gesting that any of this has biased the science behind the wolf–moose study, it does raise the question of whether it may have affected how the authors have advocated for their position.

So is there evidence that these vested interests might create a bias in this policy debate? There are word choices that tend to the dramatic ("extinction" versus "extirpation"), claims of global lessons to be learned, and an alarmist tradition detailed by Mech (2013: 327). There are forays of the authors into disciplines for which they are untrained. For example, one of the authors, a wildlife biologist, made a social science instrument that was given to park visitors who visited the study's research station in the park. None of the authors are historians, yet they are comfortable suggesting that latter-day accounts of moose swimming near the main island is a more historically compelling explanation than an eyewitness oral history account. Ironically, the discipline in which I am most active, ethnohistory, routinely addresses observer bias. To draw a comparison with another field, scientists doing research in medicine are very sophisticated in how bias and a conflict of interest might affect research results.

The debate about what should be done at Isle Royale National Park is both a policy and scientific debate. Or, as Vucetich et al. rightly say, the decision will "involve values that compete in complex ways" (Vucetich et al. 2012: 137). That is why vested interests, and the possibility of a conflict of interest, needs to be effectively addressed. So far, the authors have forced the discussion to focus on others' supposed ethical issues and not their own. The position they advocate would be more persuasive and believable if they would thoroughly address these vested interests that directly align with their policy choice. Further, the authors cannot convincingly wear the mantle of scientific objectivity while at the same time adopting advocacy roles in which they would be the beneficiaries. Even the more esoteric questions of whether one scientific discipline should be privileged (population genetics versus island biogeography) is an exercise, in part, about values. In policy and values discussions, the authors are advocating a perspective that is more likely to be deeply predisposed than those who have "no canid in the fight."

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