

RECOMMENDATIONS

As the risks of a changed climate dwarf all previous threats to our national parks, new actions to face these new risks must also be on an unprecedented scale.

To protect our parks for the enjoyment of this and future generations, we need to act now to reduce emissions of climate-changing pollutants, which come mostly from the burning of fossil fuels like coal and gasoline. If we continue with a business-as-usual approach into a higher-emission future, our country could heat up another 7° to 11°F, which would have extraordinarily severe effects on national parks. The most important step we can take to protect parks is to reduce those impacts by beginning to cut heat-trapping emissions to a level that would stabilize further warming at about an additional 2°F. That would minimize impacts on national parks, other ecosystems, and other resources. (See pages 1-2.)

But even an additional 2°F of warming would increase the harm that is already being done to parks by the climate changes that are already underway. So we also need bold, visionary actions to protect our national parks in the face of whatever climate changes we end up causing.

Both these types of actions—cutting emissions and ensuring our parks are prepared for the impacts of a changing climate—need to be driven by the federal government, primarily the Congress and the National Park Service.

ACTIONS SPECIFIC TO NATIONAL PARKS

The mission of the National Park Service, defined by the 1916 Organic Act for the NPS, is “to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” This strong mandate of preservation, sustainability, and non-degradation is embodied in



YOSEMITE NATIONAL PARK

the NPS’s policies and its long, proud tradition of environmental stewardship. “The Service will use all available authorities to protect park resources and values from potentially harmful activities,” the NPS *Management Policies* boldly declares. Sadly, the NPS has not yet followed its creed and exercised its authorities to address human disruption of the climate and its effects. The U.S. Government Accountability Office concluded in 2007 that the Park Service and other federal natural resource management agencies:

have not made climate change a priority, and the agencies’ strategic plans do not specifically address climate change. Resource managers focus first on near-term, required activities, leaving less time for addressing longer-term issues such as climate change. In addition, resource managers have limited guidance about whether or how to address climate change and, therefore, are uncertain about what actions, if any, they should take. In general, resource managers lack specific guidance for incorporating climate change into their management actions and planning efforts. Without such guidance, their ability to address climate change and effectively manage resources is constrained.¹

Too often, the NPS has so far just looked the other way when it comes to climate-change impacts. Typical is this statement from the latest management plan (in 2000) for Dry Tortugas National Park, at risk of being totally submerged by rising seas, about harm to its resources from climate changes: “These external forces are beyond the scope of this plan.”²

Fortunately, change is underway at the Park Service. President Obama’s choice as NPS Director, Jon Jarvis, built the strongest record of leadership on

climate change of any top NPS manager when he served as regional director of the Service's Pacific West Region. In particular, he established a vision for NPS operations in all parks in that region to become carbon-neutral—to avoid any net emissions of heat-trapping gases from the Service's own operations. We hope and expect that as NPS Director, Jarvis will demonstrate similar leadership on a national, Service-wide scale. We also are confident that if he does, he will be met by enthusiastic support from other NPS managers and employees—many, perhaps most, of whom have long been frustrated by the Service's inaction on this front. A fully mobilized NPS, however, still will need strong support and additional resources, from elsewhere in the Executive Branch, from Congress, and from the American people.

Addressing a changing climate and its effects on national parks will require a full suite of actions by the National Park Service and others.

New and Expanded Parks

For several reasons, the current boundaries of many national parks are not adequate to allow for the preservation of the resources and values that are the purposes of the parks. One key reason is that most park boundaries were established in the 19th and 20th centuries, long before any consideration was given to how human-caused climate change could affect park resources and values. Also, the 391 parks now in the national park system do not adequately include a fully representative sample of America's best natural and cultural resources. This is, again, especially so in the face of the myriad threats that a changing climate poses to existing parks and their resources and values. Accordingly:

1. The Congress, the Administration, and the National Park Service should comprehensively assess the need for new national parks, and designate new parks as necessary to ensure the preservation for future generations of representative and sufficient examples of America's best natural and cultural resources.
2. Similar assessments should be undertaken of the adequacy of existing park boundaries to determine where a changed climate may so alter local conditions and ecosystems that current park boundaries will no longer be adequate to ensure the preservation of park resources. Parks should be expanded as necessary to ensure the preservation

of the resources and values whose preservation was the purpose of the parks' designations or whose preservation is provided for in the management of the parks.

3. In these assessments and designations, priority attention should be given to the impacts and challenges of human-caused climate change. The new and expanded parks should include enough examples of America's most important natural and cultural resources to ensure the preservation of an adequate representation of those resources. The new and expanded parks should be of sufficient size to allow for the preservation of the integrity of the park's resources and values over time, as ecosystems and species are affected by and respond to a changing climate. In particular, the new and expanded parks should be of sufficient size to allow for adaptation and migration by species and their continued survival. The new and expanded parks also should sufficiently include and represent those resources and values that are not now appropriately represented in the national park system, such as prairies and marine resources.

Ecosystem Protection and Migration Corridors

Areas within park borders often will not be sufficient to provide the room and flexibility for wildlife and plants to adapt to changes in park ecosystems and habitat caused by a disrupted climate. Actions on a broad geographic scale will be needed to provide that room and flexibility.

4. Where new, expanded, or existing parks will not be adequate to ensure the preservation of park resources, the NPS should promote, assist, and cooperate in bringing about preservation efforts that reach beyond current boundaries. These efforts should include cooperative management with other land management agencies and landowners to preserve large enough ecosystems, crucial habitat, and migration corridors among them so that plants and animals have opportunities to move and continue to survive in transformed landscapes.
5. The Congress and Administration should give the NPS the resources and tools to enable it to provide assistance to other landowners so they can contribute to the preservation of ecosystems of the scale necessary to preserve park resources and values. Examples of that assistance could be payments for the costs of actions by other landown-

ers that benefit park resources, sharing of information, or the provision of technical assistance; all such assistance should be fully consistent with the rights of other landowners.

Non-Climate Threats

Often, park resources and values face compound threats, from both an altered climate and other sources. Removing or reducing the other threats often can ease the overall risks to park resources and values while the effects of a changing climate are also being addressed.

6. The Congress, the Executive Branch, and the NPS should consider the combined effects of climate change and of other stresses on park resources and values, and work to reduce all the stresses that pose critical risks to parks. Addressing activities outside of parks that can disrupt parks, reducing conventional air pollutants that harm parks, restoring degraded habitat, and removing invasive species, for example, can make parks and their resources more resilient.

Other Resource Preservation Efforts

According to the service's *Management Policies*, "NPS managers must always seek ways to avoid, or minimize to the greatest degree possible, adverse impacts on park resources and values." To preserve park resources from the threats of an altered climate will require NPS actions on an unprecedented scale. In addition to other actions called for in these recommendations:

7. The NPS should develop park-specific and resource-specific plans for protection of the resources most at risk in individual parks.

8. The NPS, consistent with applicable laws and policies, should plan for a changed future that may be markedly different from the past, including in unexpected ways. One tool is to consider different possible future scenarios—plausible conditions that could occur but may not—instead of relying on a single set of future conditions. To await certainty in what the future will bring may take away the ability to address it in a sufficient and timely manner.

9. The National Park Service should use all its authorities to protect parks from the adverse impacts of a changing climate. In particular, under the Clean Air Act the Service has "an affirmative responsibility to protect the air-quality related values" of national parks. Park resources and values that are adversely affected by human-caused climate change fall within

this mandate, and the NPS should fulfill its affirmative responsibility under the Clean Air Act to protect them.

"Current general management plan (GMP) guidance does not explicitly require paying attention to the effect that changing climate will have on future park natural and cultural resources, infrastructure, and visitors."

— Coalition of National Park Service Retirees (2008)³

Emission Reductions

National parks are among the most important places to concentrate efforts to reduce emissions of heat-trapping gases, because successful actions there can inspire the millions of Americans visiting the parks to make and support similar efforts elsewhere. Parks can demonstrate model management programs and provide a laboratory to teach technicians and educate the general public.

10. The NPS should adopt for all parks nationwide a goal of becoming climate-neutral in the Service's own operations within parks, as was adopted by the Pacific West Region by its Climate Change Leadership Initiative. The NPS should consider whether to adopt a schedule, either nationwide or park-by-park, for fulfilling this vision.

11. The NPS should give an even greater priority to reducing emissions from visitor activities than from its own operations, as emissions from visitor activities dwarf those from NPS operations. In Glacier Bay National Park and Preserve, for example, 97 percent of all emissions of heat-trapping gases come from marine vessels, essentially all of which are vessels other than the Service's. In the case of all actions to bring about reductions in emissions from visitor activities, the NPS (or concessionaires, as appropriate) should explain the actions taken and the reasons for them, as part of NPS's public education efforts.

Communication

With 275 million visits to national parks in 2008, the NPS has an enormous, unique opportunity to communicate what climate change may do to us and what we can do about it.

12. NPS officials, beginning with the Director, should speak out publicly about the threats that climate change and its impacts pose to national parks and the broader ecosystems on which they depend. The

NPS *Management Policies* state that when park resources and values are at risk from external threats, “It is appropriate for superintendents to engage constructively with the broader community in the same way that any good neighbor would... When engaged in these activities, superintendents should promote better understanding and communication by documenting the park’s concerns and by sharing them with all who are interested.” This guidance especially makes sense with respect to climate change impacts—and makes sense for other NPS officials, too, not just park superintendents.

13. The NPS should require concessionaires in a position to provide environmental education to park visitors (and many are required to do so) to provide information on climate change and its effects in national parks and what the NPS and the concessionaires are doing to address them. For example, visitor lodging within parks can have unobtrusive displays pointing out how energy and water are being conserved and why that is important.

Climate Change as a NPS Priority

The Service should accord a changing climate the attention it deserves given the threats it poses to parks. In particular:

14. The NPS Director should issue a Director’s Order making it clear that addressing climate change and its impacts is among the highest priorities throughout the Service, consistent with applicable laws and policies. The order should launch action on particular recommendations outlined below.

15. The NPS should amend its management policies to incorporate specific references to management responsibilities with respect to climate change and its impacts in parks, consistent with applicable laws and policies, including the Wilderness Act.

16. The NPS should hold its managers accountable, through personnel evaluations, for their actions in complying with Service policies and requirements for addressing climate change and its impacts.

“[P]erhaps most importantly, the onset and continuance of climate change over the next century requires NPS managers to think differently about park ecosystems than they have in the past. Preparing for and adapting to climate change is as much a cultural and intellectual challenge as it is an ecological one.”

— U.S. Climate Change Science Program (2008)⁴

17. The Service should continue to seek, and Congress should support, the creation of a separate NPS climate change office within the Service’s natural resources stewardship and science program, to ensure cross-cutting support for Service actions to address climate change and its impacts in parks. Addressing climate change should be identified as a core mission of the natural resources and science program.

Funding

The National Park Service will need new funds to be able to address the new threats of climate change, and the Congress and the Administration should provide that funding.

18. Pending congressional climate bills would provide a portion of the revenue raised from the sale of emission permits under a national cap-and-trade emission-reduction program to the National Park Service and other federal land management agencies for natural resources adaptation activities. Those proposals would provide an important source of funds to the NPS and others to enable them to address climate change impacts.

19. As another source of funding, the Administration and NPS should seek, and the Congress should approve, an amendment to the Federal Lands Recreation Enhancement Act to be able to use funds from national park entrance and recreation fees to address climate change and its impacts in national parks, including actions to reduce emissions from NPS operations or visitor activities and actions to adapt to climate change threats and impacts, so long as information on those expenditures and their accomplishments is communicated to park visitors. The authorization for the NPS to use entrance and recreation fees within the parks, without awaiting separate congressional appropriation actions, was an important breakthrough in 1997 to enable the Service to address what was then widely regarded as a primary need of the national parks—reducing the backlog of unmet maintenance and construction needs. With climate change now looming as a greater threat to national parks, the use of these funds should be broadened to include addressing climate-change needs as well as maintenance and construction needs. This amendment to the law would provide funding for emission-reduction measures and visitor-education measures as well as adaptation measures, and so it would be a broader

and more flexible source of funds than the natural resources adaptation fund described above.

20. The Administration should request and the Congress should approve adequate funding of the Land and Water Conservation Fund to enable the acquisition of important lands within or near existing parks for addition to those parks, and of lands for the creation of new parks.

NPS Science and Research

Identifying and monitoring climate change effects on key resources of national parks are not only essential for protection of those resources, but also important for a broader understanding of climate change effects in the world at large. National parks are areas with spectacular resources, usually much less affected by human activities and other stresses than other lands; the parks provide some of our very best opportunities to learn how climate change is affecting and will affect natural and cultural resources. The abilities of the National Park Service to acquire scientific knowledge about park resources, however, was set back when much of its scientific research capacity was transferred to the U.S. Geological Survey in 1993.

21. The Congress, the Administration, and the NPS should reestablish within the Service the full range of scientific and research capacity, and the authority to direct that science and research, that it had prior to 1993, by returning to the NPS the research programs and staff that were transferred that year to the U.S. Geological Survey.

22. The NPS scientific capacity should not just be restored to earlier levels, but strengthened to enable the Service to assess (and then address) the full range of climate-change-related threats to parks, now and in the future. This will require expanded NPS scientific and research capacity at national, regional, and park levels.

23. The NPS should identify in every unit of the national park system the resources and processes at risk from climate change. This need not await full park management planning efforts; it can be accomplished through summaries of the literature, guided research, gatherings of experts, and simple brainstorming. Climate Friendly Parks workshops (see below) are a beginning.

24. The NPS should review its Inventory and Monitoring Program, in which every national park has

established a number of vital signs for monitoring change over time; these should be reviewed to ensure they adequately include the impacts of climate change. If not, the vital signs and the monitoring plans should be updated.

“There is no comprehensive coordinated research on climate change ongoing in parks.”

— Coalition for National Park Service Retirees (2008)⁵

Partnerships

The NPS does not have, and never will have, the resources or the ability to address climate change by itself. Given the scope of the challenges that it now faces, it is more important than ever that the Service strengthen existing partnerships with others and create new partnerships to deal with climate change. This includes:

25. The NPS will need to cooperate more with federal, state, and local natural-resource agencies and land managers to achieve coordinated management responses in national parks and on surrounding lands to climate-change impacts, which obviously transcend political and land borders.

26. The NPS also should actively engage others outside the Service, including scientists, non-governmental organizations, and members of the general public, to develop a shared understanding of the problems posed by climate change, identify ways to preserve park resources and to pursue effective efforts in response. For example, in 2007, the managers of Saguaro National Park, recognizing that the threats to the park from an invasive grass—buffelgrass (see page 22)—could not be dealt with just by actions within park boundaries, joined with 14 other public and non-profit entities in a Buffelgrass Working Group. In short order, that collaborative effort has led to a public summit, the development of an area-wide strategic plan for addressing the threat, and the creation of a new nonprofit organization, the Southern Arizona Buffelgrass Coordination Center, to lead regional action.⁶ If the park’s resources, including its namesake saguaros, are to be saved, these kind of creative institutional arrangements and partnerships will be essential.

27. On scientific research, much of the best work done in national parks to acquire information about climate change and its effects is done by others besides the NPS, including the U.S. Geological Survey, universities, and others. (Much important

research work would remain within USGS even if the National Park Service's scientific research capacity is restored according to the pre-1993 organizational structure within the Department of the Interior, as recommended above.) The NPS should expand its arrangements with others to encourage and allow additional research on climate change in the parks.

Climate Friendly Parks

Over 80 national parks (out of 391) have participated in some way in the Climate Friendly Parks program, NPS's most visible climate-change initiative to date. That program is a partnership between NPS and the U.S. Environmental Protection Agency to help those parks protect their natural and cultural resources from climate change. Twenty-three have conducted an inventory of their emissions of heat-trapping gases, and 19 have action plans to reduce their emissions. So far, decisions about participation in the programs are up to the discretion of individual park superintendents.

28. The NPS should make a national commitment and develop a schedule to expand the Climate Friendly Parks program to all parks (with exceptions only for those few parks with small enough operations and visitation where doing so would not make sense.)

29. The NPS should post online summaries of all Climate Friendly Parks workshops in particular parks. (Not all now are posted.)

30. The NPS should post online all emission inventories and climate action plans for all parks for which they are completed. (Not all now are posted.)

31. The NPS should make Climate Friendly Parks program activities a priority for interpretation efforts for environmental education of park visitors.

International Leadership

The National Park Service is the best known and most respected natural resource management agency in the world, and has a worldwide role to play in addressing human-caused climate change.

32. The NPS should exercise leadership among natural resources management agencies around the world in exploring and promoting new institutional arrangements and creative approaches needed to address the broad-scale problems precipitated by climate change.



ROCKY MOUNTAIN NATIONAL PARK / PHOTO: JOHN FIELDER