Parks for science

In March 1915, a historic conference of scientists, conservationists, and park leaders was held at the University of California, Berkeley. It helped create public support for national parks in the United States and the establishment in 1916 of the National Park Service (NPS). One hundred years later, a similar summit on the same Berkeley campus convened to examine the role of science in the next century of America’s national parks. Science remains crucial to the future health of America’s parks and protected areas worldwide. But national parks are also vital for science.

The National Park System (which currently includes 407 national parks, historic sites, and other designations) includes invaluable sites for scientific research. The thermophilic bacteria discovered in Yellowstone National Park were used to develop the polymerase chain reaction that is key to DNA research, from forensic science to human genomics. The High Flow Experiments in Grand Canyon National Park have increased our understanding of the response of aquatic ecosystems to transient sand deposits caused by flooding. Parks also serve as unique benchmarks for environmental monitoring: The NPS recently used 1.5 million hours of acoustic data to create a soundscape map of the United States that can help guide the conservation of natural sounds. National parks have contributed to advancing wildlife ecology, developing archaeological techniques and preservation treatments, documenting climate change, and more.

In 2016, the NPS will celebrate its centennial, and science is now even more relevant than 100 years ago. The scientific community should help celebrate this event by increasing its engagement with the National Park System. Parks represent extraordinary national scientific assets—as natural laboratories to study ecological processes; as benchmarks to study climate change; and as control locations for research, in fields from atmospheric chemistry to archaeology. We encourage scientists to use national parks as reference sites in appropriate scientific research, including long-term studies. Of particular importance is to increase research on understanding coupled human-natural systems, particularly (in an era of climate change) threshold effects and adaptive responses. International collaborations to expand and integrate research from protected areas around the world should be strengthened. Graduate students, postdocs, and early-career scientists should be urged to consider parks as sites for study. Scholarships for students doing research in parks should be established, helping to create the next generation of scientists working in parks.

The NPS can support this scientific engagement with parks. Data sharing and data accessibility for external scientists (including the NPS robust inventory and monitoring data sets) should be increased. The research permit process can be streamlined and made more consistent across the system. Long-term studies should be encouraged, with park staff (including NPS scientists) as collaborative partners. In addition, opportunities for citizen science—including the widely popular BioBlitz programs that bring young people out to the parks—should be expanded.

The use of parks for basic research can also contribute to “usable knowledge.” High-quality science is needed to inform complex decisions about issues such as the future of wolves on Isle Royale, the establishment of marine reserves in the Dry Tortugas, and the prevention of habitat fragmentation and species loss in the Greater Yellowstone Ecosystem. There is a strong and positive feedback loop between “parks for science” and “science for parks.”

The 2016 centennial of the NPS comes at a critical time for science and conservation, in the United States and worldwide. As both the gathering at Berkeley in 1915 and the conference earlier this year remind us, science and parks are indispensable to each other. Let’s make the centennial a celebration of science and the national parks.

– Gary Machlis and Marcia McNutt

Black Sand Basin. Yellowstone National Park

“There is a strong and positive feedback loop between ‘parks for science’ and ‘science for parks.’”

Gary Machlis is the science advisor to the director of the U.S. National Park Service and professor of environmental sustainability at Clemson University, Clemson, SC. E-mail: gary_machlis@nps.gov

Marcia McNutt is the Editor-in-Chief of Science Journals.
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