

The Bioblitz

Engaging citizens on a large scale in biodiversity discovery

By Sally Plumb

THE NATIONAL PARK SERVICE (NPS) is charged with protecting the biodiversity of its lands and waters, yet the majority of species remain undiscovered, including invertebrates, nonvascular plants, fungi, and microorganisms. This lack of knowledge hampers the protection of living resources from threats such as invasive species, disease, population pressure, and climate change. Indeed, changes induced by these environmental factors will likely appear in the lesser-known animal groups before they are reflected in large, iconic ones.

In an effort to identify life in parks, the National Park Service introduced “Biodiversity Discovery,” an initiative that fosters development of activities and events in which members of the public, including professional scientists, park visitors, students, seniors, and children, participate in the discovery of living natural resources.



National Geographic Society's John Francis receives the Ranger Hat Award from National Park Service Director Jon Jarvis at the NPS-NGS BioBlitz at Golden Gate National Recreation Area, March 2014. The award was given in appreciation of National Geographic's long-term and multifaceted collaboration with and support of the National Park Service.

The National Park Service has been engaging in biodiversity discovery since 1996, when a bioblitz was held at Kenilworth Park and Aquatic Gardens in Washington, D.C. The first large-scale biodiversity discovery program, an All-Taxa Biodiversity Inventory, began in Great Smoky Mountains National Park in 1997 through the coordinated efforts of the park and its nonprofit partner, Discover Life in America. Since then, many parks—large, small, urban, wild, naturally or culturally oriented—have initiated their own biodiversity discovery activities. As of 2014, approximately 118 parks have conducted work of varying levels and scopes.

As discussed in depth in the article beginning on page 106, preliminary evaluations of the visitor experience in the large-scale NPS–National Geographic Society BioBlitzes, conducted through a cooperative agreement with Texas A&M University, reveal numerous favorable results:

- Improvement in the quality of the visitor experience through development of direct connections to park resources
- An increase in public awareness and sense of stewardship in park visitors through their engagement in firsthand scientific research
- Increased relevancy and awareness of parks among the nation's youth
- Public education about lesser-known species through educational products,

services, and interaction with NPS staff

Host parks of biodiversity discovery events enumerate additional scientific and management benefits:

- More knowledge of species in national parks across the country, allowing for more informed management decisions
- Establishment of baseline knowledge of lesser-known flora and fauna against which changes can be measured
- Increased collaboration with scientists and universities that continues long after the biodiversity discovery effort has concluded
- Establishment of numerous fruitful collaborations with notable partners, such as the E. O. Wilson Biodiversity Foundation, National Park Foundation, Discover Life in America, Encyclopedia of Life, and National Geographic Society

The benefits of biodiversity discovery are so apparent that when the National Park Service announced a Call to Action in 2011, item 7, “Next Generation Stewards,” envisioned the creation of a new generation of citizen scientists by conducting biodiversity discovery activities of varying levels and scopes in at least 100 parks by 2016. These activities have a proven track record of contributing to the NPS mission of resource stewardship and the Secretary of the Interior's Youth and Diversity

Initiatives. Also, they mirror the vision of the America's Great Outdoors, Healthy People Healthy Parks, Let's Move, and STEM (science, technology, engineering, and math) initiatives. Moreover, they improve the quality of the visitor experience through development of a direct connection to the resources of the national parks, conserving and restoring our natural resources, working together for the good of our national parks, and encouraging involvement of the American public.

Collaboration with the National Geographic Society

The contributions of biodiversity discovery, in terms of scientific gain and public engagement, are essential to the caretaking mission of the National Park Service; hence the Park Service is taking steps to institutionalize these activities and concepts. Measures include partnering with multiple entities to initiate, plan, and execute start-up bioblitzes; mentoring park staff to host subsequent bioblitzes; engaging diverse audiences that include retired scientists, children, volunteers, subject-matter experts, and park visitors in species discovery and identification; and evaluating the experiences of participants in the NPS–National Geographic Society (NGS) BioBlitzes.

The work of the National Geographic Society and its commitment to stewardship of the natural world have served as an exemplary model for collaboration with the National Park Service. John Francis, NGS vice president for Research, Conservation, and Exploration, has been instrumental in initiating and implementing this long-term partnership between the two organizations.

The National Geographic Society has worked tirelessly with the National Park

Service to promote the relevance of the outdoors and to educate people about the national parks and their resources. In a couple of years the National Park Service will celebrate its 100th anniversary, with a focus on sustaining our natural treasures in an era that is much different from the one in which the Park Service began.

Much is at stake, with perhaps no issue as pressing as the increasing alienation of Americans from the natural world. The partnership with the National Geographic Society has helped to address this challenge by bringing the youth of America into the national parks through collaborative annual “biodiscovery” events.

Each year in the decade leading up to the NPS centennial in 2016, the National Park Service and the National Geographic Society conduct a large-scale “BioBlitz” in a different national park. Goals for these events include accomplishment of a safe and scientifically credible investigation through the combined efforts of scientists, students, and community members; relationship-building with the scientific community; connection of science to technology; enhancement of the relevancy of national parks for participants, especially youth; and increased knowledge of park species.

These two-day events take as much as a year to prepare and plan. Park planning teams are interdivisional and include natural resources, interpretation, public affairs, information technology, safety, law enforcement, and maintenance staff. A dedicated planning team from the National Geographic Society, along with assistance from NPS Natural Resource Science and Stewardship Directorate staff, is also required. The NPS-NGS BioBlitzes are high-profile, well publicized, and thoroughly planned, with attendance by internationally known scientists, entertainers, and speakers; dignitaries from international parks; representation from the highest level of the National Park Service;

and coverage by local and national media. Major components are:

- Hundreds of scientific inventories
- Curriculum-based resource education programs
- A biodiversity festival with booths, interactive demonstrations, hands-on activities, entertainment, and speakers
- Increased use of social media
- Involvement of multiple partners
- Selection of a Biodiversity Youth Ambassador (see article on page 17), who represents other youth attending the bioblitz and subsequently continues to foster biodiversity awareness in his or her home community and increase youth engagement in national parks.

Executing a biodiversity discovery effort on this scale is a challenge: logistics are complex, monetary investment is considerable, and safety to humans and to the host park's resources must be ensured. Benefits include obtaining a nearly instantaneous and widespread “snapshot” of species diversity across all taxonomic groups; broad awareness of the host park in surrounding communities; many lasting relationships with scientists, universities, and other partners; and connections with thousands of residents in gateway communities.

Species new to science and to the parks have been discovered during the course of these events and thousands of citizen scientists have participated.

- The 2014 bioblitz at Golden Gate National Recreation Area in California not only opened the door to 9,000 participants, including thousands of youth from diverse and underserved

communities, but also revealed 2,700 species.

- The 2013 bioblitz celebrated “bayou” diversity at Jean Lafitte National Historical Park and Preserve in Louisiana.
- The 2012 bioblitz reached new heights at Rocky Mountain National Park in Colorado.
- The 2011 bioblitz was held in Saguaro National Park, with more than 5,000 people combing the eastern and western sides of the park flanking Tucson, Arizona. (See the following article for further information.)
- In 2010, Biscayne National Park, near Miami, Florida, was the first-ever marine bioblitz.
- Volunteers at the 2009 Indiana Dunes National Lakeshore bioblitz turned up more than 1,200 species.
- Six thousand participants discovered more than 1,200 species in the 2008 Santa Monica Mountains National Recreation Area bioblitz in California.
- This series of exciting and innovative bioblitzes began in 2007 at Washington, D.C.’s Rock Creek Park. It engaged 1,000 participants and resulted in the discovery of more than 650 species.

Through this partnership with the National Geographic Society, the National Park Service is increasing the availability of science-based information for making NPS management decisions. Additionally, both organizations are showcasing these national collaborative efforts to discover and conserve natural resources by sharing findings through outreach publications and on interpretive Web pages, and through outreach via different media outlets. With imitation being the truest form of flattery, the NPS-NGS BioBlitzes have served as a model for similar efforts around the world, most notably in Italy, which accomplished its third bioblitz in July 2014. The National Geographic Society continues to be an outstanding partner, visionary, and steward of national park natural resources. Planning has commenced for the 2015 NPS-NGS BioBlitz, taking place 15–16 May at Hawaii Volcanoes National Park, and discussions are under way to determine the location of the 2016 event.

About the author

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