

National parks and biodiversity discovery

By the editor

THE MAP ON PAGES 12–13 locates national parks that have undertaken biological diversity discovery research and monitoring work since around 1996. Many of these activities were funded, organized, and carried out by the parks and their partners, and many involved public participation. The activities commonly focused on understudied taxa such as insects, fungi, and other groups of invertebrates and nonvascular plants. The information produced by this work augments the systematic and program-funded vertebrate and vascular plant inventories led by the NPS Inventory and Monitoring Program that began in the 1990s.

The map also denotes the types of biodiversity discovery activities conducted. This includes onetime and independent taxonomic investigations. More and more, however, biological survey work is being combined with an opportunity to engage the public in meaningful and satisfying park stewardship experiences. These biologically focused public activities are flexible in scope and design and require special planning. They encompass relatively small and easily managed park inventories focused on particular taxa or habitats, larger-scale collection and festival-style events such as the NPS–National Geographic Society BioBlitzes, the more comprehensive and longer-term All-Taxa Biodiversity Inventories, and coordinated, multipark surveys and related research.

The driving distance between parks and the nearest U.S. city

with a population of 250,000 or more is illustrated too. Five of the 119 parks on the map are located in a city of this size and another 49 are within a 100-mile (161 km) drive—a reasonable day trip—of such a city. Thus nearly half of the parks on the map are relatively close to population centers, which underscores the ability of parks to appeal to urban and suburban residents to participate in these types of events.

Developing the map was not without challenges. Criteria for what constitutes biodiversity discovery have not been defined precisely and reporting of these activities varies, complicating the synthesis. Additionally, most of the work has not been fully documented or analyzed from a national perspective. We have chosen to be inclusive¹ because biodiversity discovery is a scalable, cumulative process. Small, onetime, and less formal activities have the potential to inform our knowledge of biodiversity, as do large, coordinated, and repeated events. Plus, participation in citizen science–oriented activities is not limited to taxonomists or other scientists; anyone can take part, make a discovery, and help bring meaning to an observation. Nevertheless, we may have overlooked some activities for lack of knowledge, for example breeding bird surveys,

¹ Fifteen parks have plans for a “bat blitz,” “paleoblitz,” or camera-based activity later this year. Likewise, four additional parks plan to carry out dragonfly larvae sampling in October 2014. They are not shown on the map.

Christmas bird counts, and less publicized inventories.

We summarize the biodiversity discovery activities for each of the parks shown on the map at <http://www.nature.nps.gov/ParkScience/index.cfm?ArticleID=653>. The parks on the list are cross-referenced with the map grid for ease of location. We invite you to review this online list and improve it by sharing news of your park’s biodiversity discovery activities that we missed, adding detail to those that are sparse, and clarifying misinterpretations. To log your input please write to editor Jeff Selleck at jeff_selleck@nps.gov.

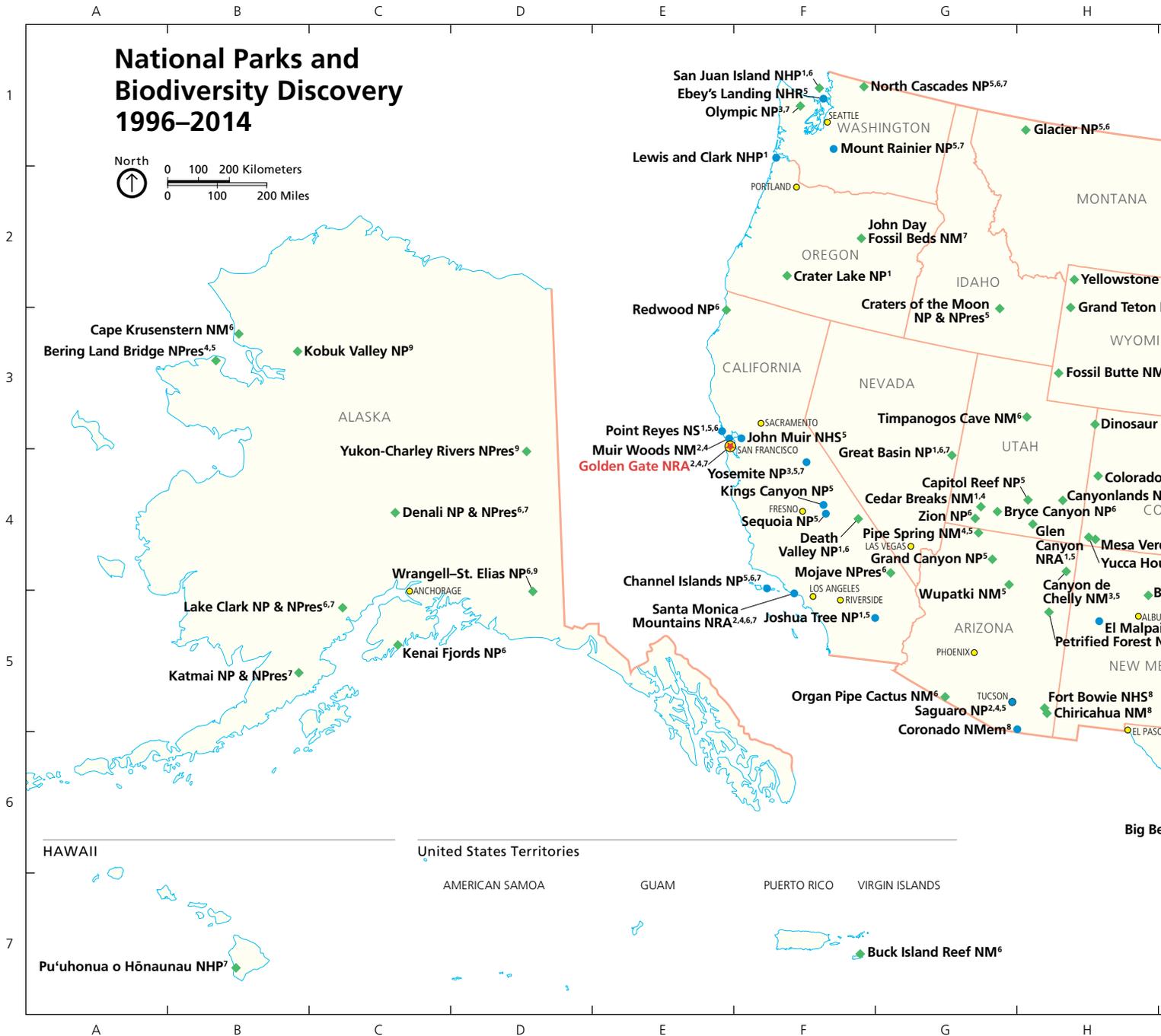
The story of biodiversity discovery in our national parks is exciting and continues to unfold. Small and large parks across the National Park System increasingly are taking part in these scientific activities that capture the public’s imagination and enthusiasm. Moreover, urban and suburban residents are participating in biological surveys and biodiversity conservation, concepts typically associated with textbooks and more remote parks.

The graph on page 13 illustrates that these events have proliferated since the first bioblitz was held at Kenilworth Park and Aquatic Gardens in Washington, D.C., in 1996, and particularly since the NPS Call to Action item 7: “Next Generation Stewards” was announced in 2011. Numbering 109 in the last four years, biodiversity discovery activities are increasing our knowledge of park biota and providing edu-

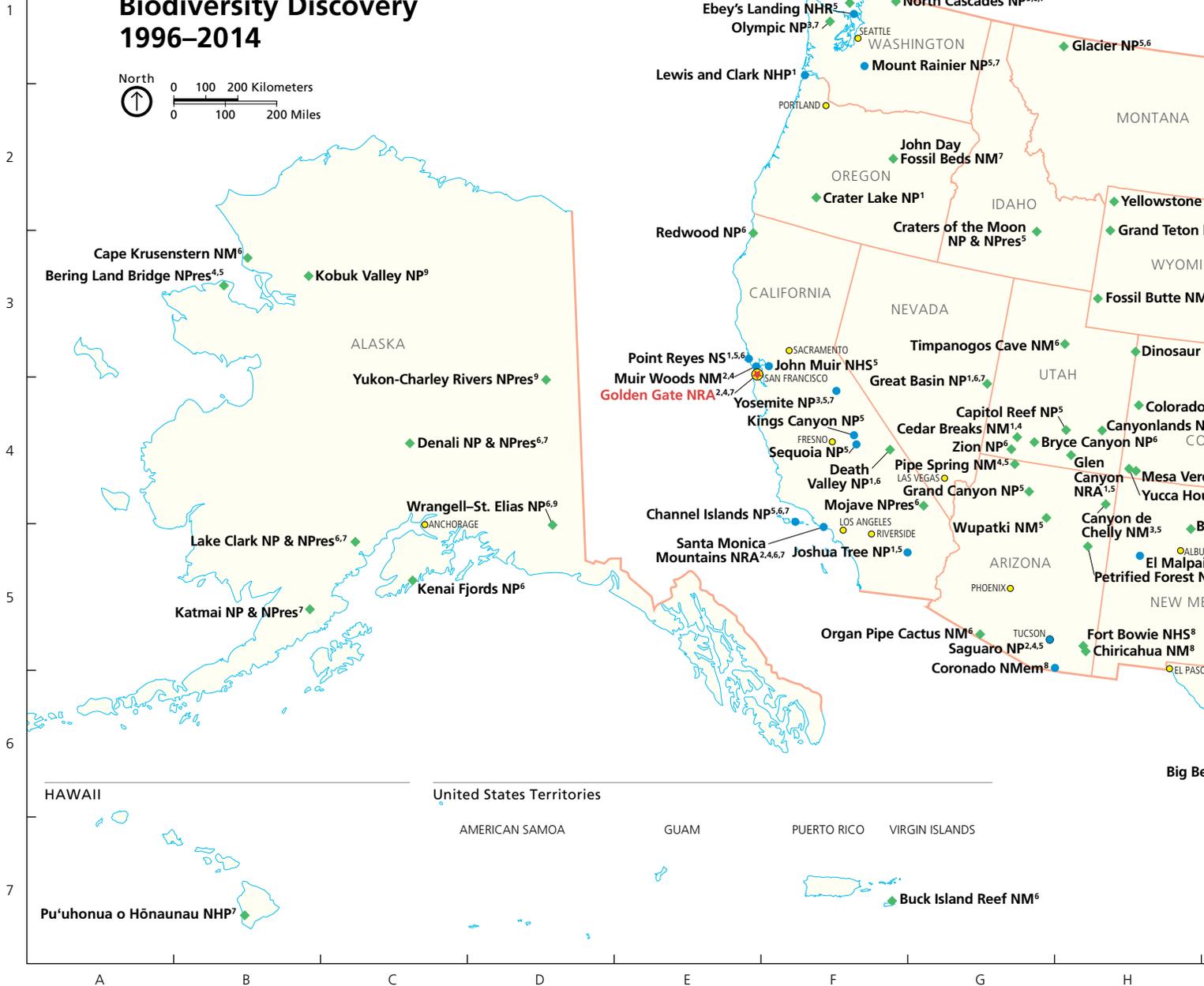
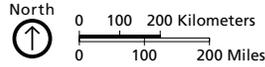
cational and park bonding experiences for a multitude of volunteers and park visitors.

In biodiversity discovery, a rich and dynamic enterprise is taking shape in our parks, and with continued focus and resources, there is potential to do more. For the onetime, independent, or less formal inventories an opportunity exists to build on the information they produced and put it into a broader, more complete context by planning follow-up activities that address knowledge gaps and involve the public. Parks that have already carried out an activity can add to their knowledge of park biota and increase their public outreach by tweaking and repeating the events. Parks that have yet to get involved can draw from the considerable experience of those that have already done so and design an activity that meets their needs and matches their goals.

Biodiversity discovery is a concept in shared stewardship, and it seems to be working. If the trend continues, particularly after the NPS centennial celebration in 2016, it would not be surprising to see another 50–100 national parks plan and carry out a biodiversity discovery event over the next 5–10 years. Considering the recent growth in this enterprise and the potential for more, we may well want to revisit this topic in *Park Science* around that time to continue to gauge our progress.



National Parks and Biodiversity Discovery 1996–2014



Legend

- ★ **Urban Park (5)***
- **Park Relatively Near City (49)[†]**
- ◆ **More Distant Park (67)[‡]**
- **City Nearest Park (38)[§]**

* Located in a city with a population of 250,000 or more. NPS considers Ocmulgee NM to be an urban park, though it is not in a city of this size.
[†] Within a 100-mile drive of a city with a population of 250,000 or more.
[‡] More than a 100-mile drive away from a city with a population of 250,000 or more.
[§] City nearest park(s) with a population of 250,000 or more. Locations approximate.

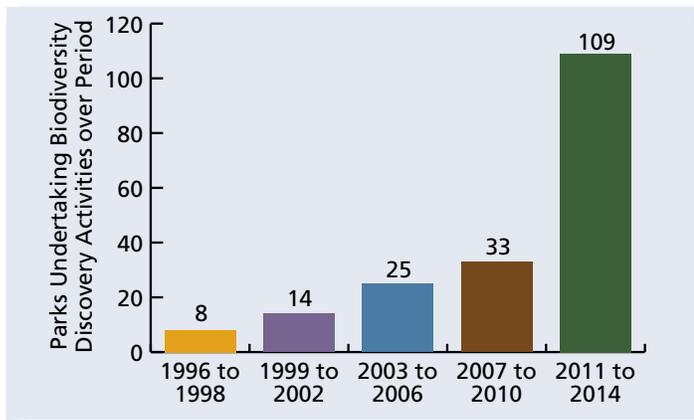
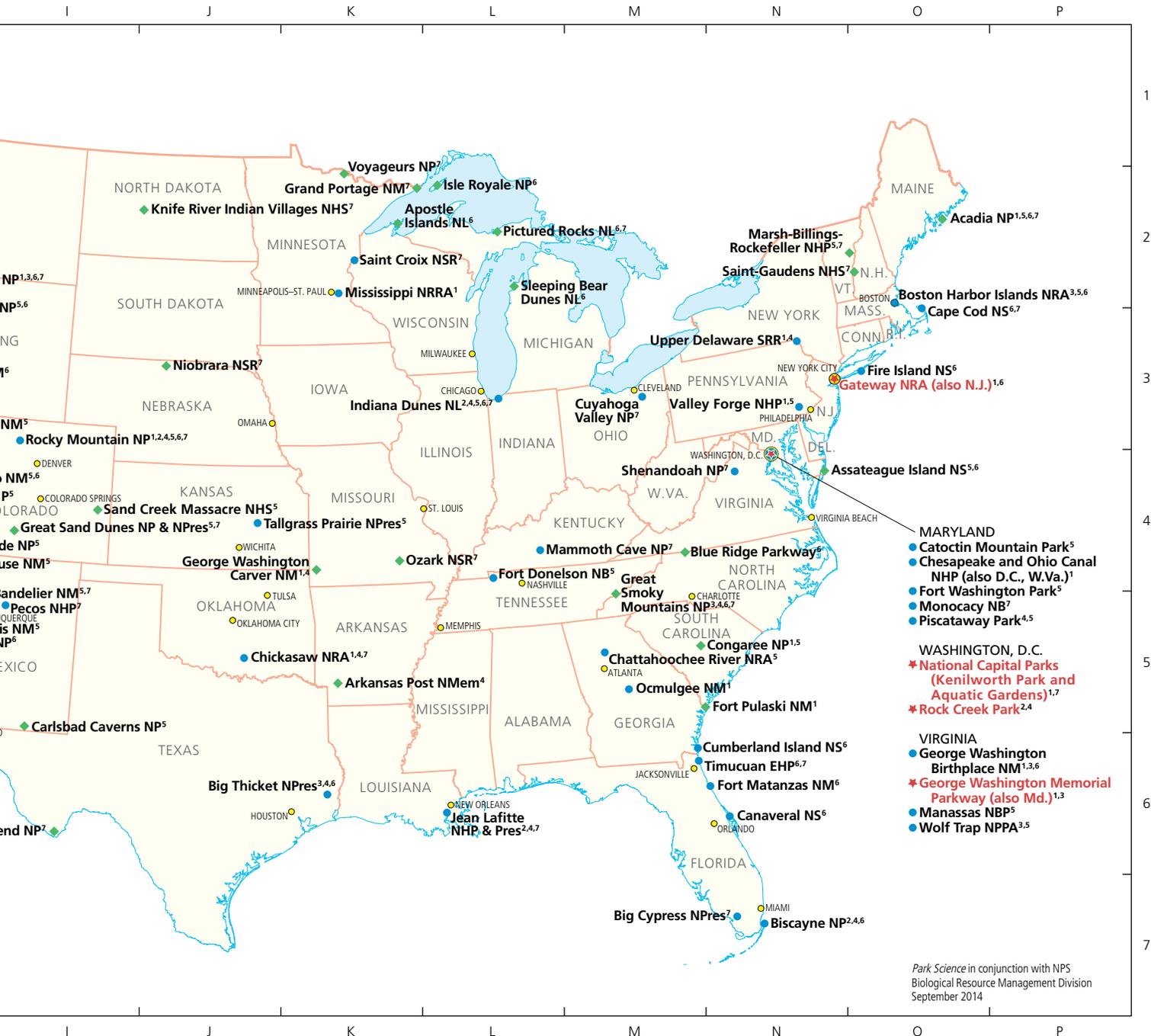
Abbreviations

EHP	Ecological and Historic Preserve	NP	National Park
Mem	Memorial	NPPA	National Park for the Performing Arts
NB	National Battlefield	NPres	National Preserve
NBP	National Battlefield Park	NRA	National Recreation Area
NHP	National Historical Park	NRRA	National River and Recreation Area
NHR	National Historical Reserve	NS	National Seashore
NHS	National Historic Site	NSR	National Scenic Riverway(s)
NL	National Lakeshore	Pres	Preserve
NM	National Monument	SRR	Scenic and Recreational River
NMem	National Memorial		

Note: To review the listing of biodiversity discovery activities that informed production of this map please visit www.nature.nps.gov/ParkScience/index.cfm?ArticleID=6777?.

Activity Types

- ¹ Bioblitz(es) (focal taxa/habitat or general)
- ² NPS–National Geographic Society BioBlitz
- ³ All-Taxa Biodiversity Inventory
- ⁴ Educational programs, biodiversity fair
- ⁵ Other (count, survey, monitoring, photographic/digital documentation, observation, training)
- Multipark projects*
- ⁶ Pollinator inventory (native bees)
- ⁷ Environmental mercury in dragonfly larvae
- ⁸ Automated camera/photo sampling (mammals)
- ⁹ Acoustic monitoring of wood frogs to determine breeding phenology



(Graph) Since the advent of the bioblitz in 1996, national parks, their partners, and the public have planned and carried out biological diversity discovery activities with increasing frequency. The graph illustrates growth in this type of research and stewardship work over five periods in the last 19 years, particularly since 2011. That year the National Park Service set numerous goals to be achieved by 2016, the NPS centennial, including a challenge to conduct biodiversity discovery activities in at least 100 parks, at least 5 of which are located in an urban area.

Biodiversity Discovery Activities 1996–2014

Map Supplement

This list summarizes biodiversity discovery activities undertaken by national parks from around 1996 to 2014. It was developed in conjunction with and provides detail to the map and synthesis article on pages 11–13. Parks are cross-referenced with the map grid by letter and number for ease of location. Activity types are indicated according to the categories listed in the legend. We recognize that some listings may be incomplete or inaccurate. We invite you to help improve this list by sharing news of your park's biodiversity discovery activities that we missed, adding detail to those that are sparse, and clarifying misinterpretations. To log your input please write to editor Jeff Selleck at jeff_selleck@nps.gov.

Legend

Park Name (Map Location)

▪ Year(s) | Activity Type | Focal Taxa/Habitats | Participation | Highlights

Individual Park Projects

- ¹ Bioblitz(es) (focal taxa/habitat or general)
² NPS—National Geographic Society BioBlitz
³ All-Taxa Biodiversity Inventory
⁴ Educational programs, biodiversity fair
⁵ Other (count, survey, monitoring, photographic/digital documentation, observation, training)

Multipark Projects

- ⁶ 2013–2014 | multipark pollinator inventory | native bees | scientists from NPS, USGS, Harvard University | 46 parks | ~685 species
⁷ 2013–2014 | multipark environmental mercury study | dragonfly larvae | ~300 citizen scientists | 700 larvae collected in 6 odonate families
⁸ 2013–2014 | multipark six-week automated photographic sampling, educational programs | mammals | I&M network, U.S. Fish and Wildlife Service, Student Conservation Association interns, public | 30 species
⁹ 2012–2014 | breeding phenology through acoustic monitoring | wood frogs | Alaska Region, citizen scientists, student intern

Acadia NP (O2)^{6,7}

- 2003–2014¹ | annual 24 hr targeted taxa bioblitzes | ants, aquatic insects, beetles, butterflies, flies, macrofungi, moths, spiders, true bugs, other insects | amateur entomologists and mycologists, school groups, public, academic institutions, state government, naturalist organization | 20 species of butterflies, 300 species of moths, 226 species of aquatic insects
- ongoing⁵ | hawk migration observation | volunteers in conjunction with Cornell Lab of Ornithology

Apostle Islands NL (K2)⁶

Arkansas Post NMem (K5)

- 2012–2013⁴ | biodiversity fair | mammals, herpetofauna, nighttime species | I&M network scientists, public

Assateague Island NS (N4)⁶

- 2012⁵ | science field day/survey | marsh and bay biota, mole crabs, water quality | educators, schoolchildren

Bandelier NM (H5)⁷

- 1992–2014⁵ | surveys, monitoring | ground-dwelling arthropods: beetles, crickets/grasshoppers, selected true bugs, spiders and other arachnids; species-habitat associations and shifts because of climate change | 300 species | University of New Mexico

Bering Land Bridge NPres (B3)

- 2013^{4,5} | science engagement through videography | loons | high school students, educational and nongovernmental partners

Big Bend NP (I6)⁷

Big Cypress NPres (N7)⁷

Big Thicket NPres (K6)⁶

- 2006–2014^{3,4} | ATBI, educational fairs and programs, seminars | amphibians, aquatic true bugs and ectoparasites, butterflies and moths, fishes, fungi, lichens, mussels, orchids, pseudoscorpions, slime molds, tardigrades, terrestrial arthropods, vascular and nonvascular plants | professional scientists, public, students | 2,761 species, 103 new to park, 1 (crayfish) new to science

Biscayne NP (N7)⁶

- 2010^{2,4} | large, 24 hr bioblitz and fair (NPS-NGS) | marine species focus | with National Geographic Society, scientists, educators, public | 824 species tallied, 324 new listings for park

Blue Ridge Parkway (M4)⁶

Boston Harbor Islands NRA (O2)⁶

- 2013–2014⁵ | 4.5 hr pilot photo voucher bioblitz | flora and fauna | 13 public | 248 photo insect observations; 52 species, 23 new for Thompson Island
- 2005–2010³ | ATBI | invertebrates, intertidal species, mammals | entomologists, professional and citizen scientists, high school students, academic partners | 1,777 species

Bryce Canyon NP (G4)⁶

Buck Island Reef NM (F7)⁶

Canaveral NS (N6)⁶

Canyon de Chelly NM (H4)

- 2005–2007^{3,5} | inventories, ATBI | arthropods and other taxa | inventories of three habitats: mixed conifer forest, pinyon-juniper woods along canyon rim, riparian woodlands | volunteers, schoolchildren, professional scientists

Canyonlands NP (G4)

- ⁵ | survey | insects | entomologist

Cape Cod NS (O2/3)^{6,7}**Cape Krusenstern NM (B3)⁶****Capitol Reef NP (H4)**

- 1998–2005⁵ | inventories | rare plants | NPS, BLM, and other agencies; Canon USA grant

Carlsbad Caverns NP

- 2006–ongoing⁵ | survey | moths | lepidopterist

Catoctin Mountain Park (N4)

- 2008–2013⁵ | inventories | bees (93 species), damselflies and dragonflies (28 species), ground-beetles (103 species) | contractors | two odonates of conservation concern, 42 bees new to county, 1 bee new to Maryland, park insect list expanded from 364 to 588 species

Cedar Breaks NM (G4)

- 2013–2014^{1,4} | weekend “bioblast” | bat, bird, bug surveys | live identifications only, no specimens collected; educational fair to celebrate biodiversity at 10,000 feet; public participation; local universities, retired entomologist

Channel Islands NP (F4)^{6,7}

- 2009–2014⁵ | inventories | ants, beetles, lichens | local taxonomists, in cooperation with The Nature Conservancy

Chattahoochee River NRA (M5)

- 2011⁵ | inventory | pollinators (bees) | principal investigator, academic and federal partners | 8 species new to state, 1 new to science

Chesapeake and Ohio Canal NHP (N4)

- 2014¹ | bioblitz | invasive species
- 2006¹ | 30 hr bioblitz | algae, amphibians, arachnids, bryophytes, fungi, insects, reptiles, select flowering plants, slime molds | with The Nature Conservancy

Chickasaw NRA (J5)⁷

- 2011^{1,4} | 24 hr bioblitz, educational programs | 800 species | 40 scientists

Chiricahua NM (H5)⁸**Colorado NM (H4)⁶**

- multiple years^{5,6} | survey | insects | university researcher

Congaree NP (M5)

- 1995–present¹ | ~1 hr training followed by 3–4 hr guided observation | birds, butterflies, moths | naturalist partners, citizen scientists (average 75 per year)
- 2006–2007¹ | spiderblitz, three 3 hr sessions | arachnids | professional scientist, public
- ⁵ | survey | freshwater mussels | professional scientists, conservation partner volunteers

Coronado NMem (GH5)⁸**Crater Lake NP (F2)**

- 2014¹ | 24 hr bioblitz | moths and butterflies | entomologists, public

Craters of the Moon NM and NPres (G2/3)

- 2014⁵ | inventory | pikas and natural sounds | citizen scientists

Cumberland Island NS (M6)⁶**Cuyahoga Valley NP (M3)⁷****Death Valley NP (F4)⁶**

- 2007–2008¹ | bioblitz | invertebrates | taxonomists, school groups

Denali NP and NPres (C4)^{6,7}**Dinosaur NM (H3)**

- multiple years⁵ | survey | insects, other arthropods | entomologist

Ebey's Landing NHR (F1)

- 2004⁵ | monthly collecting forays (April, May, June, September) | vascular plants | professional and amateur botanists, public

El Malpais NM (H5)

- 2007–2008⁵ | ATBI | cave arthropods, bats, and other vertebrates | university researcher through CESU | 59 arthropods, 3 bats, 3 other vertebrates; many arthropod species new to science

Fire Island NS (O3)⁶**Fort Bowie NHS (H5)⁸****Fort Donelson NB (L4)**

- 2013–2014⁵ | targeted inventories, various techniques | plants and all animal species: photography; owls: audio calling; bats: echolocation recording; nighttime biota: infrared photography and night-vision scopes; bioluminescent species: UV illumination and high-intensity chemical lighting | volunteers, citizen scientists

Fort Matanzas NM (N6)⁶**Fort Pulaski NM (N5)**

- 2013¹ | 12 hr bioblitz | nonnative plants | park staff, 27 public (high school students, area naturalists) | new exotic species identified

Fort Washington Park (N4)

- ongoing⁵ | video and direct observation monitoring | bald eagles | citizen scientists

Fossil Butte NM (H3)⁶**Gateway NRA (N3)⁶**

- 2007–2008,¹ 2010¹ | bioblitzes, ATBI | all taxa, 3 focal areas | scientists, 50 preregistered public

George Washington Birthplace NM (N4)⁶

- 2007–2009,^{1,3} 2012^{1,3} | bioblitzes, ATBI | arthropods, including terrestrial and aquatic insects, birds, fungi, vascular and nonvascular plants | professional and amateur scientists, partners, schools | 377 arthropod species identified

George Washington Carver NM (K4)

- 2013^{1,4} | bioblitz | aquatic and terrestrial invertebrates, small mammals, vascular plants, water mites | 4 professional scientists, 20 volunteers; 15 attended a related educational program | 141 species, 89 of which were new to park

George Washington Memorial Parkway (N4)

- 2006–2014^{1,3} | 30 hr bioblitz, ATBI | algae, amphibians, arachnids, bryophytes, fungi, insects (including microwasps), reptiles, select flowering plants, slime molds | students, 59 citizen naturalists, academic institutions, museum | 378 genera (comprising 377 species) of insects

Glacier NP (H1)⁶

- ongoing⁵ | focal taxa inventories | butterflies, diatoms, ferns, mayflies, mollusks, mycobacteria, vascular plants

Glen Canyon NRA (H4)

- 2009¹ | bioblitz | animals, plants | professional and amateur scientists | with The Nature Conservancy
- 2004⁵ | surveys | amphibians, arthropods, reptiles, small mammals, vascular and nonvascular plants | professional scientists

Golden Gate NRA (E3)⁷

- 2014^{2,4} | large, 24 hr bioblitz and fair (NPS-NGS) | all taxa | with National Geographic Society

Grand Canyon NP (G4)

- 2007⁵ | inventory | ground-dwelling arthropods | professional scientist
- 1999–2004⁵ | surveys | aquatic annelids | park staff, professional scientists, public

BIODIVERSITY DISCOVERY ACTIVITIES 1996–2014 (CONTINUED)

- ~2004⁵ | surveys | amphibians, arthropods, reptiles, small mammals, vascular and nonvascular plants | professional scientists
- 2001–2003⁵ | inventory | terrestrial and riparian invertebrates | professional scientist | 1,127 taxa collected

Grand Portage NM (K2)⁷**Grand Teton NP (H2/3)⁶**

- 2004⁵ | surveys

Great Basin NP (G4)^{6,7}

- 2009,¹ 2011–2013¹ | annual 24 hr targeted taxa bioblitzes | arachnids (2 orders and several families new to park, white cave mite may be new to science), bees and wasps (65 species), beetles, flies (47 families, 19 species new to park) | professional and amateur scientists, public, volunteers | average 60 participants per year

Great Sand Dunes NP and NPres (I4)⁷

- ⁵ | survey | insects | entomologist

Great Smoky Mountains NP (M4/5)^{6,7}

- 1998–present^{3,4} | ATBI, grant-funded projects involving TWIGs, bioblitzes, educational programs, workshops | ~130 focal taxa projects over 17 years, including algae, annelids (including oligochaeta), ants, aphids, aquatic bugs, bacteria (hemlock, plant, soil, waterborne), beetles (leaf, long-horned, wood), butterflies, cave and karst biota, crickets, diatoms, dry cliff plants, elk stomach biota, ferns and fern viruses, fish, flies (biting, bloodsucking, crane-, horse-, moth-, tephritid), flat worms, forest litter, freshwater invertebrates, fungi and microfungi (including pyrenomycetes), grasshoppers, hemlock insects, homoptera, hymenoptera (including wasps), insect viruses, internal bird parasites, leeches, lichens, microspore parasites, mosquitoes, moths (clearwing, micro-, noctuidae, owl-), pauropoda, planthoppers/leafhoppers, pollinators, slime molds (including myxomycetes), soil mites, spiders, springtails, stream microbes, tardigrades, thysanoptera, tree-canopy life, vascular plants, violets, viruses (plant), waterborne spores, water mites | partner-led, long-term study; researchers; volunteers; student participation through research learning center; public events | 18,038 species total; 7,636 species new to park, 923 new to science | 400+ participants in 2013

Indiana Dunes NL (L3)^{6,7}

- ongoing⁵ | monitoring, counts | birds, plants of concern | 21 citizens, area naturalists | 52 bird species tallied
- 2009^{2,4} | large, 24 hr bioblitz and fair (NPS-NGS) | all taxa | with National Geographic Society | more than 1,200 species tallied

Isle Royale NP (L2)⁶**Jean Lafitte NHP and Pres (L6)⁷**

- 2013^{2,4} | large, 24 hr bioblitz and fair (NPS-NGS) | all taxa | 458 species tallied | with National Geographic Society, 1,500 adults, 1,500 children, 100 scientists | Louisiana milk snake, mud minnow

John Day Fossil Beds NM (F2)⁷**John Muir NHS (E3)**

- 2011–2013⁵ | phenology monitoring | 50 high school students

Joshua Tree NP (FG5)

- 2011–2013¹ | 36 hr “biodiversity hunts” | terrestrial, aquatic, and aerial insects at park oases | university taxonomists and students, local naturalists, public education programs | range of 40–105 citizen scientists/event | new families, genera, and species to park
- 1994–present⁵ | checklist updates, counts, inventories, surveys | amphibians, breeding birds, butterflies, lichens, mammals, including bats and rodents, reptiles, terrestrial arthropods, including insects, vascular plants | park staff, academic institutions
- 1968–present⁵ | Christmas bird count | National Audubon Society
- 1991,⁵ 1993,⁵ 1999–2001⁵ | surveys | bats | UCLA, Bat Conservation Int¹

Katmai NP and NPres (B5)⁷**Kenai Fjords NP (C5)⁶****Kings Canyon NP (F4)**

- 2014 | inventory⁵ | DNA analysis of harvestmen (arachnid)
- ongoing⁵ | Christmas bird count
- 2002–2004⁵ | inventory | cave invertebrates | contractor | about 30 new species (combined with those reported for Sequoia NP)
- ⁵ | roadside acoustic surveys | bats

Knife River Indian Villages NHS (J2)⁷**Kobuk Valley NP (B3)⁹****Lake Clark NP and NPres (C5)^{6,7}****Lewis and Clark NHP (F1)**

- 2012¹ | bioblitz | macroinvertebrates | 300 participants

Mammoth Cave NP (L4)⁷**Manassas NBP (N4)**

- 1995–2014⁵ | annual breeding bird surveys | birds, grasslands, shrublands | local Audubon chapter | designation as Important Bird Area, 10 species of regional conservation concern; butterflies, bees, plants also documented

Marsh-Billings-Rockefeller NHP (N/O2)⁷

- 2013–2014⁵ | Atlas of Life field day, pilot digital documentation | bees, birds, moths, plants | 40 workshop/program participants | 90 observations/photographs by smartphone submitted to iNaturalist

Mesa Verde NP (H4)

- 1999–2007⁵ | invertebrates and other arthropods | university entomologists | state range extensions, pinned collection
- inventory⁵ | spiders | fire-burned areas | museum partner
- inventory⁵ | ground-dwelling arthropods, spiders | comparison of burned and unburned pinyon-juniper forest | graduate student

Mississippi NRR (K2)

- 2011–2013¹ | annual 24 hr focal-area bioblitzes | birds, fish, fungi, insects, mammals, plants | 100 participants in 2013, local university and museum | 322 species in 2013

Mojave NPres (G4)⁶**Monocacy NB (N4)⁷****Mount Rainier NP (F1)⁷**

- 2004–2007⁵ | annual forays at different park locations | vascular plants | botanists, public
- survey⁵ | caddisflies, mayflies, stoneflies | entomologist

Muir Woods NM (E3)

- 2014^{2,4} | large, 24 hr bioblitz and fair (NPS-NGS) | diverse taxa | with National Geographic Society

National Capital Parks (Kenilworth Park and Aquatic Gardens) (N4)⁷

- 1996¹ | 24 hr bioblitz | NPS and USGS scientists

Niobrara NSR (J3)⁷**North Cascades NP (F1)^{6,7}**

- ongoing⁵ | inventories | insects, lichens | independent researchers
- 2002–2007⁵ | annual forays at different park locations | vascular plants | botanists, public

Ocmulgee NM (M5)

- 2013¹ | 2-day butterfly bioblitz | 480 participants | butterflies (28 species), dragonflies (5 species) | field identifications only (i.e., specimens not collected)

Olympic NP (F1)⁷

- 2008³ | ATBI | fungi, insects, lichens, liverworts, microbes, mosses, spiders | before large-scale Elwha watershed restoration | park staff, academic institutions

Organ Pipe Cactus NM (G5)⁶

Ozark NSR (K4)⁷**Pecos NHP (I5)⁷****Petrified Forest NP (G5)⁶****Pictured Rocks NL (L2)^{6,7}****Pipe Spring NM (G4)**

- 2011–2012^{4,5} | surveys, educational programs | bats, especially migratory species | academic partner | 18 species identified, 600 public participants

Piscataway Park (N4)

- 2013–2014^{4,5} | videography, educational programs | bald eagles

Point Reyes NS (E3)⁶

- 2002–2014^{1,5} | 24 hr bioblitzes, counts, forays, grants, 2- to 3-day inventories | algae, benthic invertebrates, crabs, diatoms, eelgrass, fish, fungi, intertidal biota, invasive species, lichens, mollusks, oysters, phytoplankton, sea squirts, shellfish, stream butterflies | taxonomists, students, 15–100 public and scientists per year depending on event

Pu'uhonua o Hōnaunau NHP (B7)⁷**Redwood NP (E2/3)⁶****Rock Creek Park (N4)**

- 2007^{2,4} | large 24 hr bioblitz and fair (NPS-NGS) | amphibians, aquatic insects, birds, fish, fungi, mammals, microbes, plants, reptiles, and terrestrial invertebrates (including insects) | with National Geographic Society | more than 650 species tallied

Rocky Mountain NP (I3)^{6,7}

- 2012^{2,4} | large, 24 hr bioblitz and fair (NPS-NGS) | all taxa | with National Geographic Society, 5,000 public, schoolchildren, scientists, partners | 490 species total, 138 new to park (including 2 mammals)
- 2008–2009¹ | 2-day mycoblitz | fungi | professional and citizen scientists, local naturalist organization
- 2008–2009⁵ | waterblitz | water sampling at 168 and 140 park locations, respectively | scientists, public
- survey⁵ | caddisflies, mayflies, stoneflies | entomologist

Saguaro NP (G5)

- 2012–2014⁵ | student monitoring of 10,000 saguaro cacti and other plants and animals
- 2011^{2,4} | large, 24 hr bioblitz and fair (NPS-NGS) | all taxa | with National Geographic Society, 5,500 public, schoolchildren, scientists, partners | 859 species tallied, 400 new to park, 1 may be new to science

Saint Croix NSR (K2)⁷**Saint-Gaudens NHS (O2)⁷****San Juan Island NHP (F1)⁶**

- 2014¹ | 2-day bioblitz | all taxa | students to help run event

Sand Creek Massacre NHS (I4)

- ⁵ | survey | insects | entomologist

Santa Monica Mountains NRA (F5)^{6,7}

- 2009–2014⁴ | annual biodiversity festival (1.5 days) | 2,000 people
- 2008^{2,4} | large, 24 hr bioblitz and fair (NPS-NGS) | all taxa | with National Geographic Society, 2,000 public, schoolchildren, scientists, partners | more than 1,700 species tallied

Sequoia NP (F4)

- 2014⁵ | inventory | DNA analysis of harvestmen (insect)
- ongoing⁵ | Christmas bird count
- 2002–2004⁵ | inventory | cave invertebrates | contractor | about 30 new species (combined with those reported for Kings Canyon NP)
- ⁵ | roadside acoustic surveys | bats

Shenandoah NP (N4)⁷**Sleeping Bear Dunes NL (L2)⁶****Tallgrass Prairie NPres (J4)**

- 2009–2013⁵ | annual count | butterflies | 70 participants | 2013: 50 species (3,070 specimens), 5 species new to park

Timpanogos Cave NM (H3)⁶**Timucuan EHP (M6)^{6,7}****Upper Delaware SRR (N3)**

- 2013–2014^{1,4} | 24 hr bioblitz | all taxa | 2013: 50 scientists, amateur naturalists, 25 volunteers, 250 educational program attendees | 1,024 species in 2013

Valley Forge NHP (N3)

- 2014^{1,5} | “Summer of Bugs” (two 24 hr bioblitzes and a summer-long “photoblitz”) | terrestrial invertebrates | university partner with public participation | catalog bugs present in two seasons; includes macrophotography workshop and use of iNaturalist to log photos
- 2009⁵ | “Crayfish Corps” | inventory and manual removal of nonnative rusty crayfish | volunteers from schools, summer camps, corporate groups, conservation organizations, families, park neighbors | native-to-nonnative crayfish ratio is 4:1
- 2003⁵ | inventory | crayfish | 1 undescribed species and 1 new to state

Voyageurs NP (K2)⁷**Wolf Trap NPPA (N4)**

- 2013^{3,5} | photo inventory, ATBI | birds, insects (including pollinators: bees, butterflies, moths), plants | volunteer and federal biologist, professional and volunteer naturalists, public, local naturalist organizations | 100 bird species, thousands of photo insect and plant observations

Wrangell–St. Elias NP (D4/5)^{6,9}**Wupatki NM (G4)**

- 2012–ongoing⁵ | ATBI cave arthropods, bats, and other vertebrates | university researcher through CESU | 1 bat and at least 2 arthropod species new to science

Yellowstone NP (H2)^{6,7}

- 2009¹ | 24 hr bioblitz, public event | various taxa | taxonomic working groups, public
- 2007–2009^{1,3} | aquatic molecular ATBI | aquatic DNA of Yellowstone Lake, various taxa | largest study of environmental DNA: 7 billion base pairs of DNA sequenced | academic institutions

Yosemite NP (F4)⁷

- 2007–2014³ | ATBI with annual targeted taxa and habitats | bryophytes, caves, cliff lichens, high-elevation lakes | park staff, taxonomists, contractor, American Alpine Club | 500 lichen species new to park, some new to Sierra Nevada and North America, a few new to science; more than 300 bryophyte species identified
- 2004–2010⁵ | inventory | vertebrates | park, academic, and federal scientists | repeat of early 1900s Grinnell Survey
- 2002–2004⁵ | inventory | cave invertebrates | contractor | 1 new species

Yucca House NM (H4)

- 1 year⁵ | survey | insects | entomologist

Yukon-Charley Rivers NPres (D3/4)⁹**Zion NP (G4)⁶**