



**ON THE COVER**

Ranger Cindy Micheli gave an inspirational speech and led visitors in signing “Happy Birthday” for the NPS Centennial celebration at Capitol Reef National Park on August 25, 2016.NPS photo.



The National Park Service, Natural Resource Stewardship and Science office in Fort Collins, Colorado, publishes a range of reports that address natural resource topics. These reports are of interest and applicability to a broad audience in the National Park Service and others in natural resource management, including scientists, conservation and environmental constituencies, and the public.

The Natural Resource Report Series is used to disseminate comprehensive information and analysis about natural resources and related topics concerning lands managed by the National Park Service. The series supports the advancement of science, informed decision-making, and the achievement of the National Park Service mission. The series also provides a forum for presenting more lengthy results that may not be accepted by publications with page limitations.

All manuscripts in the series receive the appropriate level of peer review to ensure that the information is scientifically credible, technically accurate, appropriately written for the intended audience, and designed and published in a professional manner.

This report received formal peer review by subject-matter experts who were not directly involved in the collection, analysis, or reporting of the data, and whose background and expertise put them on par technically and scientifically with the authors of the information.

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## Executive Summary

The National Park Service (NPS) manages the Nation's most iconic destinations that attract millions of visitors from across the Nation and around the world. Trip-related spending by NPS visitors generates and supports a considerable amount of economic activity within park gateway communities. This economic effects analysis measures how NPS visitor spending cycles through local economies, generating business sales and supporting jobs and income.

In 2016, the National Park System received an estimated 330,971,689 recreation visits. Visitors to National Parks spent an estimated \$18.4 billion in local gateway regions (defined as communities within 60 miles of a park). The contribution of this spending to the national economy was 318 thousand jobs, \$12.0 billion in labor income, \$19.9 billion in value added, and \$34.9 billion in economic output. The lodging sector saw the highest direct contributions with \$5.7 billion in economic output directly contributed to local gateway economies nationally. The sector with the next greatest direct contributions was the restaurants and bars sector, with \$3.7 billion in economic output directly contributed to local gateway economies nationally.

Results from the Visitor Spending Effects report series are available online via an interactive tool. Users can view year-by-year trend data and explore current year visitor spending, jobs, labor income, value added, and economic output effects by sector for national, state, and local economies. This interactive tool is available at <https://www.nps.gov/subjects/socialscience/vse.htm>.

## Introduction

The National Park System includes 417 areas covering more than 84 million acres in every state, the District of Columbia, American Samoa, Guam, Puerto Rico, and the Virgin Islands. Lands managed by the National Park Service (NPS) serve as recreational destinations for visitors from across the Nation and around the world. On vacations or on day trips, NPS visitors spend time and money in the gateway communities surrounding NPS sites. Spending by NPS visitors generates and supports a considerable amount of economic activity within park gateway economies. The NPS has been measuring and reporting visitor spending and economic effects for more than 25 years. The 2012 analysis marked a major revision to the NPS visitor spending effects analyses, with the development of the Visitor Spending Effects model (VSE model) which replaced the previous Money Generation Model (see Cullinane Thomas et al. (2014) for a description of how the VSE model differs from the previous model). This report provides VSE estimates associated with 2016 NPS visitation.

System-wide visitation set a new record in 2016 with 331 million recreation visits, a 7.7% increase (up 23.7 million visits) compared to the previous record of 307.2 million recreation visits in 2015 (Ziesler, 2017). In 2016, seventy-seven parks set new records for annual recreation visits, and four parks received more than 10 million recreation visits. The NPS centennial, the NPS Find Your Park campaign, and good travel weather contributed to this record setting visitation.

This report begins by presenting an overview of economic effects analyses, followed by a description of the data and methods used for this analysis and 2016 model updates. Estimates of NPS visitor spending in 2016 and resulting economic effects at the local, state, regional, and national levels are then presented. The report concludes with a description of current data limitations. Park-level spending and economic effects estimates are included in the appendix.

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## Economic Contribution Analysis

Economic contribution analyses describe the gross economic activity associated with NPS visitor spending within a regional economy. Results can be interpreted as the relative magnitude and importance of the economic activity generated through NPS visitor spending in the regional economy. Economic contributions are estimated by multiplying *total visitor spending* by regional economic multipliers. Total visitor spending includes spending by both local visitors who live within the local gateway regions and non-local visitors who travel to NPS sites from outside the local gateway regions.

An economic contributions analysis should not be confused with an economic impact analysis. Economic impact analyses estimate the net changes to the economic base of a regional economy that can be attributed to the inflow of new money to the economy from non-local visitors. Economic impacts can be interpreted as the economic activity that would likely be lost from the local economy if the National Park was not there. Previous VSE reports included both park-level economic contribution estimates and park-level economic impact estimates which created confusion between the results. To minimize this confusion, only park level economic contributions are provided in this report.

Four types of regional economic effects are described in this report:

- **Jobs** are measured as annualized full and part time jobs that are supported by NPS visitor spending.
- **Labor Income** includes employee wages, salaries and payroll benefits, as well as the incomes of sole proprietors that are supported by NPS visitor spending.
- **Value Added** measures the contribution of NPS visitor spending to the Gross Domestic Product (GDP) of a regional economy. Value added is equal to the difference between the amount an industry sells a product for and the production cost of the product.
- **Economic Output** is a measure of the total estimated value of the production of goods and services supported by NPS visitor spending. Economic output is the sum of all intermediate sales (business to business) and final demand (sales to consumers and exports).

## **Economic Regions**

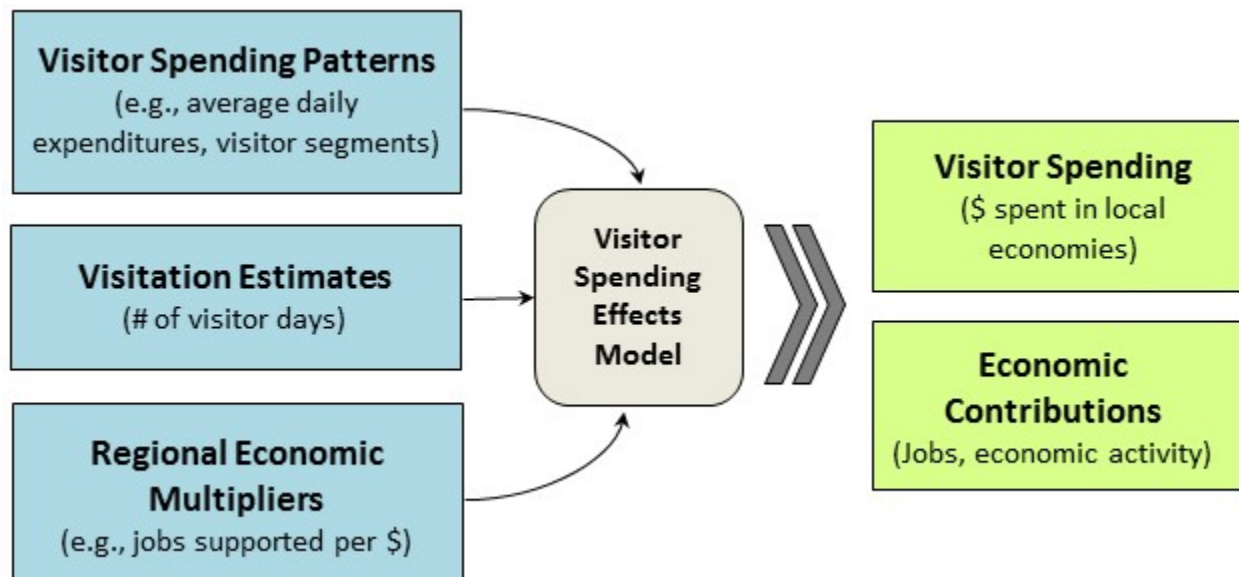
In order to assess the economic effects of NPS visitor spending, appropriate local regions need to be defined for each park unit. For the purposes of this analysis, the local gateway region for each park unit is defined as all counties contained within or intersecting a 60-mile radius around each park boundary. Only spending that took place within these regional areas is included as supporting economic activity.

Geographic information systems (GIS) data were used to determine the local gateway region for each park unit by spatially identifying all counties partially or completely contained within a 60-mile radius around each park boundary. As an exception, the economic regions for parks in Alaska and Hawaii are defined as the State of Alaska and the State of Hawaii, respectively. Due to data limitations, the island economy of the State of Hawaii is used as a surrogate economic region for the U.S. territories of American Samoa, Guam, Puerto Rico, and the Virgin Islands.

The 60-mile radius method results in some relatively large local gateway regions, especially in some western states where counties are large. Because of this, there is the potential for including some areas that are not intrinsically linked to the local economies surrounding each park. Efforts are underway to improve local gateway region definitions.

## Data Sources and Methods

As shown in Figure 2, three key pieces of information are required to estimate the economic effects of NPS visitor spending: visitor spending patterns in local gateway regions, the number of visitors who visit each park, and regional economic multipliers that describe the economic effects of visitor spending in local economies. Visitation source data are derived from a variety of efforts by the NPS Social Science Program. The data sources and methods used to estimate these inputs and the resultant economic effects are described below.



**Figure 2.** The Visitor Spending Effects Model.

### Visitor Spending Patterns

Visitor spending patterns for this analysis are derived from survey data collected through the Visitor Services Project (VSP). The NPS has conducted VSP surveys since 1988. These surveys measure visitor characteristics and visitor evaluations of importance and quality for services and facilities. Starting in 2003, a subset of VSP surveys included questions on visitor spending. Between 2003 and 2015, VSP surveys were administered at 130 National Park units, of which 57 park surveys included the requisite visitor spending questions necessary for this analysis. Spending data from these 57 surveyed parks were adjusted to 2016 dollars, and were used to develop spending patterns for the surveyed parks. Non-surveyed parks were classified into four park types: parks that have both camping and lodging available within the park, parks that have only camping available within the park, parks with no overnight stays, and parks with high day use (including National Recreation Areas, National Seashores and National Lakeshores). Generic spending profiles for each of these park types were developed using data from the 57 surveyed parks. Some National Park units are not well represented by the four park types constructed using the VSP survey data. For these parks, profiles were constructed using the best available data. These units include parks in Alaska, parks in

the Washington D.C. area, parkways, parks in highly urban areas, and several other parks<sup>1</sup>. Additional information on data limitations for these parks is included in the Limitations section of this report.

The VSP data is also used to segment visitors by type of trip. NPS recreation visitors are split into the following seven distinct **visitor segments** in order to help explain differences in spending across user groups:

- *Local day trip*: local visitors who visit the park for a single day and leave the area or return home,
- *Non-local day trip*: non-local visitors who visit the park for a single day and leave the area or return home,
- *NPS Lodge*: non-local visitors who stay at a lodge or motel within the park,
- *NPS Campground*: non-local visitors who stay at campgrounds or at backcountry camping sites within the park,
- *Motel Outside Park*: non-local visitors who stay at motels, hotels, or bed and breakfasts located outside of the park,
- *Camp Outside Park*: non-local visitors who camp outside of the park, and
- *Other*: non-local visitors who stay overnight in the local region but do not have any lodging expenses. This segment includes visitors staying in private homes, with friends or relatives, or in other unpaid lodging.

Spending is broken into the following eight **spending categories** derived from the VSP survey data:

- Hotels, motels and bed and breakfasts,
- Camping fees,
- Restaurants and bars,
- Groceries and takeout food,
- Gas and oil,
- Local transportation,
- Admission and fees, and
- Souvenirs and other expenses.

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<sup>1</sup>Including Big Cypress National Preserve, Everglades National Park, Glen Canyon National Recreation Area, Grand Canyon National Park, Isle Royale National Park, the Rio Grande Wild and Scenic River, Valley Forge National Historical Park, and Cuyahoga Valley National Park.

## Recreation Visitation Estimates

This analysis estimates visitor spending and associated economic effects for National Park units that collect visitation data. The NPS Visitor Use Statistics Office<sup>2</sup> compiles detailed park-level visitation data for 376 of the 417 National Park units and publishes this data in an annual Statistical Abstract. The annual NPS recreation visitation estimates published in the 2016 Statistical Abstract are used for this analysis (Ziesler, 2017). The abstract reports total recreation visits and the number of overnight camping and lodging stays within the parks.

For each park, visitation is measured as *visits*<sup>3</sup>. Visitor spending profiles are in terms of spending per party per day (for visitors on day trips) or spending per party per night (for visitors on overnight trips). To estimate visitor spending, it is necessary to convert visit data to party days and party nights. Party days are the combined number of days that parties on day trips spend in the local area surrounding the park. Party nights are the combined number of nights that parties on overnight trips spend in the local area surrounding the park. A party is defined as a group that is traveling together and sharing expenses (e.g., a party could be a family, a couple, or an individual on a solo trip). To estimate total party days/nights, park visit data from the NPS Statistical Abstract are combined with trip characteristic information derived from the VSP surveys. Trip characteristic data include average party size, reentry rate (i.e., the average number of days parties enter the park over the course of a trip), and length of stay (i.e., the average number of days or nights that parties spend in the local area). Visitation data are converted to total party days/nights using the following conversion:

For day-trip segments, **party days** = (visits ÷ party size) × days in local area, and

For overnight segments, **party nights** = (visits ÷ reentry rate ÷ party size) × nights in local area.

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<sup>2</sup> <https://irma.nps.gov/Stats/>

<sup>3</sup> Parks count visits as the number of individuals who enter the park each day. For example, a family of four taking a week-long vacation to Yellowstone National Park and staying at a lodge outside of the park would be counted as 28 visits (4 individuals who enter the park on 7 different days). A different family of four, also taking a week-long vacation to Yellowstone National Park but lodging within the park, would be counted as 4 visits (4 individuals who enter the park on a single day and then stay within the park for the remainder of their trip). These differences are a result of the realities of the limitations in the methods available to count park visits.

## **Regional Economic Multipliers**

The multipliers used in this analysis are derived from the IMPLAN software and data system (IMPLAN Group LLC). IMPLAN is a widely used input-output modeling system. The underlying data drawn upon by the IMPLAN system are collected by the IMPLAN Group LLC from multiple Federal and state sources including the Bureau of Economic Analysis, Bureau of Labor Statistics, and the U.S. Census Bureau. This analysis uses IMPLAN version 3.0 software with 2013 county, state, and national-level data. Economic effects are reported on an annual basis in 2016 dollars (\$2016). Where necessary, dollar values have been adjusted to \$2016 using Bureau of Economic Analysis (BEA) deflators.

This analysis reports economic contributions at the park-level, state-level, NPS region-level, and national level. Park-level contributions use county-level IMPLAN models comprised of all counties contained within the local gateway regions; state-level contributions use state-level IMPLAN models; regional-level contributions use regional IMPLAN models comprised of all states contained within the NPS region<sup>4</sup>; and the national-level contributions use a national IMPLAN model. The size of the region included in an IMPLAN model influences the magnitude of the economic multiplier effects. As the economic region expands, the amount of secondary spending that stays within that region increases, which results in larger economic multipliers. Thus, contributions at the national level are larger than those at the regional, state, and local levels.

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<sup>4</sup> The regional IMPLAN model for the National Capital Region includes the state of D.C., and also includes all counties included in the gateway regions for the National Capital Region park units.

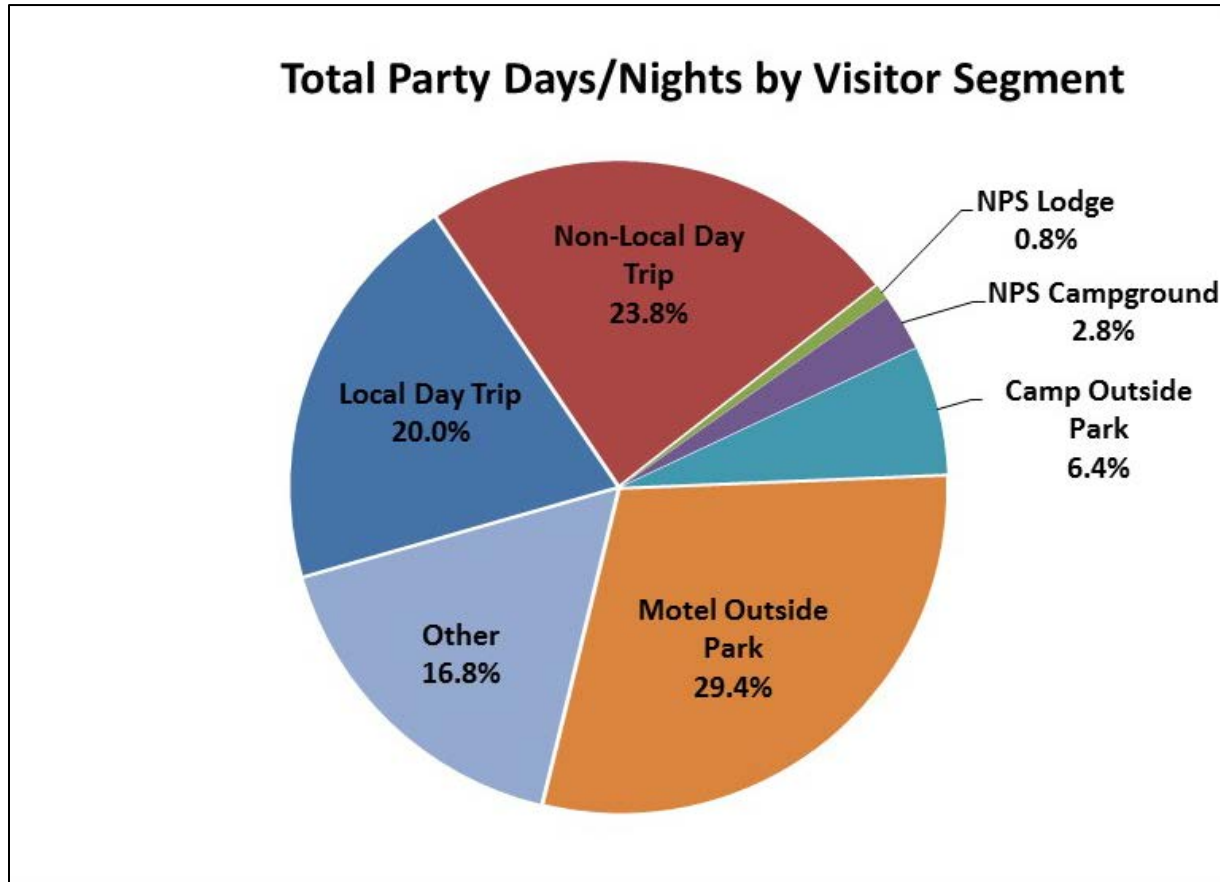




## Results

### Recreation Visits

A total of 330,971,689 NPS recreation visits are reported in the 2016 NPS Statistical Abstract (Ziesler, 2017). This is up 23.7 million visits from 2015 visitation. Total party days/nights are estimated for each park unit and for each visitor segment (as described in the *recreation visitation estimates* section). In 2016, visitor parties accounted for 133 million party days/nights. Figure 3 provides the distribution of total party days/nights by visitor segment.



**Figure 3.** Distribution of total party days/nights by visitor segment. Total party days/nights measure the number of days (for day trips) and nights (for overnight trips) that visitor groups spend in gateway regions while visiting NPS sites. In 2016, visitor groups accounted for 133 million party days/nights.

## Visitor Spending

In 2016, park visitors spent an estimated \$18.4 billion in local gateway regions while visiting NPS sites. Visitor spending was estimated for each park unit and for each visitor segment based on park and segment specific expenditure profiles (as described in the *visitor spending patterns* section). Total visitor spending is equal to total party days/nights multiplied by spending per party per day/night. Table 1 gives total spending estimates and average spending per party per day/night by visitor segment. Figure 4 presents the distribution of visitor spending by spending category. Lodging expenses account for the largest share of visitor spending. In 2016, park visitors spent \$5.7 billion on lodging in hotels, motels and bed and breakfasts, and an additional \$465.5 million on camping fees. Food expenses account for the next largest share of expenditures. In 2016, park visitors spent \$3.7 billion dining at restaurants and bars and an additional \$1.3 billion purchasing food at grocery and convenience stores.

**Table 1.** NPS visitor spending estimates by visitor segment for 2016.

Visitor Segment	Total Spending (\$ Millions, \$2016)	Percent of Total Spending	Average Spending per Party per Day/Night (\$2016)
Local Day Trip	\$1,081.5	5.9%	\$40.63
Non-Local Day Trip	\$2,902.2	15.8%	\$91.62
NPS Lodge	\$444.6	2.4%	\$432.97
NPS Camp Ground	\$505.1	2.7%	\$136.09
Motel Outside Park	\$11,409.9	62.1%	\$291.62
Camp Outside Park	\$1,092.0	5.9%	\$128.36
Other	\$948.2	5.2%	\$42.48
Total	\$18,383.5	100%	\$138.23























































**Table 6.** Park unit type abbreviations.

<b>Park Unit Type</b>	<b>Abbreviation</b>
Ecological & Historic Preserve	EHP
International Historic Site	IHS
Memorial	MEM
Memorial Parkway	MEM PKWY
National & State Parks	NP
National Battlefield	NB
National Battlefield Park	NBP
National Expansion Memorial	NEM
National Historic Site	NHS
National Historical Park	NHP
National Historical Park and Preserve	NP&PRES
National Lakeshore	NL
National Memorial	NMEM
National Military Park	NMP
National Monument	NM
National Monument & Preserve	NM&PRES
National Monument and Historic Shrine	NM&SHRINE
National Monument of America	NM
National Park	NP
National Park & Preserve	NP&PRES
National Preserve	NPRES
National Recreation Area	NRA
National Recreational River	NRR
National Reserve	NRES
National River	NR
National River & Recreation Area	NRRA
National Scenic River	NSR
National Scenic Riverways	NSR
National Seashore	NS
National Wild and Scenic River	W&SR
Park	P
Parkway	PKWY
Scenic & Recreational River	NSR&NRR
Wild & Scenic River	W&SR

**Table 7.** Visit allocation to states for multi-state parks.

<b>Park Unit</b>	<b>State</b>	<b>Share</b>
Assateague Island NS	Maryland	33%
Assateague Island NS	Virginia	67%
Big South Fork NRR	Kentucky	41%
Big South Fork NRR	Tennessee	59%
Bighorn Canyon NRA	Montana	54%
Bighorn Canyon NRA	Wyoming	46%
Blue Ridge PKWY	North Carolina	62%
Blue Ridge PKWY	Virginia	38%
Chesapeake & Ohio Canal NHP	District of Columbia	24%
Chesapeake & Ohio Canal NHP	Maryland	76%
Chickamauga & Chattanooga NMP	Georgia	50%
Chickamauga & Chattanooga NMP	Tennessee	50%
Cumberland Gap NHP	Kentucky	93%
Cumberland Gap NHP	Virginia	7%
Delaware Water Gap NRA	New Jersey	71%
Delaware Water Gap NRA	Pennsylvania	29%
Dinosaur NM	Colorado	74%
Dinosaur NM	Utah	26%
Gateway NRA	New Jersey	20%
Gateway NRA	New York	80%
Glen Canyon NRA	Arizona	8%
Glen Canyon NRA	Utah	92%
Great Smoky Mountains NP	North Carolina	44%
Great Smoky Mountains NP	Tennessee	56%
Gulf Islands NS	Florida	75%
Gulf Islands NS	Mississippi	25%
Hovenweep NM	Colorado	44%
Hovenweep NM	Utah	56%
Lake Mead NRA	Arizona	25%
Lake Mead NRA	Nevada	75%
Natchez Trace PKWY	Alabama	7%
Natchez Trace PKWY	Mississippi	80%
Natchez Trace PKWY	Tennessee	13%
National Capital Parks East	District of Columbia	90%
National Capital Parks East	Maryland	10%
Saint Croix NSR	Minnesota	50%
Saint Croix NSR	Wisconsin	50%

**Table 7 (continued).** Visit allocation to states for multi-state parks.

<b>Park Unit</b>	<b>State</b>	<b>Share</b>
Upper Delaware NSR&NRR	New York	50%
Upper Delaware NSR&NRR	Pennsylvania	50%
Yellowstone NP	Montana	51%
Yellowstone NP	Wyoming	49%



The Department of the Interior protects and manages the nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

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**National Park Service**  
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