

STATE
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PARKS®

april 2004

CHESAPEAKE AND OHIO CANAL
NATIONAL HISTORICAL PARK

A Resource Assessment



NATIONAL PARKS CONSERVATION ASSOCIATION



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STATE OF THE PARKS® Program

More than a century ago, Congress established Yellowstone as the world's first national park. That single act was the beginning of a remarkable and ongoing effort to protect this nation's natural, historical, and cultural heritage.

Today, Americans are learning that national park designation alone cannot provide full resource protection. Many parks are compromised by development of adjacent lands, air and water pollution, invasive plants and animals, and rapid increases in motorized recreation. Park officials often lack adequate information on the status of and trends in conditions of critical resources. Only 10 percent of the National Park Service's (NPS) budget is earmarked for natural resources management, and less than 6 percent is targeted for cultural resources management. In most years, only about 7 percent of permanent park employees work in jobs directly related to park resource preservation. One consequence of the funding challenges: two-thirds of historic structures across the National Park System are in serious need of repair and maintenance.

The National Parks Conservation Association initiated the State of the Parks® program in 2000 to assess the condition of natural and cultural resources in the parks, and determine how well equipped the National Park Service is to protect the parks—its stewardship capacity. The goal is to provide information that will help policy-makers, the public, and the National Park Service improve conditions in national parks, celebrate successes as models for other parks, and ensure a lasting legacy for future generations.

For more information about the methodology and research used in preparing this report and to learn more about the State of the Parks® program, visit www.npca.org/stateoftheparks or contact: NPCA, State of the Parks® program, P.O. Box 737, Fort Collins, CO 80522; Phone: 970.493.2545; E-mail: stateoftheparks@npca.org.

The National Parks Conservation Association, established in 1919, is America's only private, nonprofit advocacy organization dedicated solely to protecting, preserving, and enhancing the U.S. National Park System for present and future generations by identifying problems and generating support to resolve them.

- * Nearly 300,000 members
- * 7 regional offices
- * 32,000 activists



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REPORT SUMMARY



AN AMERICAN TREASURE IN PERIL

The Chesapeake and Ohio Canal National Historical Park (C&O Canal) extends 184.5 miles along the Potomac River, a treasure hidden in plain sight. From Georgetown in the District of Columbia to Cumberland, Maryland, the park preserves a wealth of our nation's history and a rich array of rare natural resources. Many visitors enjoy recreational benefits,

such as hiking and cycling, yet pass through without realizing the park's significance or its true scope.

Within the boundaries of the park lie the clues to understanding thousands of years of human habitation. Prehistoric artifacts, American Indian village sites, colonial settlements, and 19th century engineering marvels all whisper their tales from the park's lands. The American story plays out on the grounds of

Visitors can get a glimpse of how the canal appeared in its heyday.

CHESAPEAKE AND OHIO CANAL NATIONAL HISTORICAL PARK AT A GLANCE

- Protects thousands of years of human history, from pre-colonial American Indian sites to Civilian Conservation Corps campgrounds.
- Preserves the historic Chesapeake and Ohio Canal, as well as 1,365 historic structures, and nearly 140,000 museum and archive collection items.
- Eighty-five percent of the park lies in the 100-year floodplain of the Potomac River, and the park experiences major floods every 12 years on average.
- Extends 184.5 miles along the Potomac River, encompassing 19,587 acres of predominantly riparian habitat.
- Includes the Maryland side of the Potomac Gorge, a place called “one of the country’s most biologically diverse areas.”
- Provides a home to more than 200 federal and state rare, threatened, and endangered species.

KEY CHALLENGES

This historic place faces many modern threats. Flooding (though beneficial and even necessary to the existence of some plant species and habitats), invasive exotic species, rapid development of adjacent lands, utility rights of way, lack of funding, and staffing shortfalls all contribute to the decline in park resources. And because of a lack of staff and money, the park is not able to fully educate visitors about the park’s history and biological importance.

Millions of dollars are needed to repair and restore the 1,365 historic structures that make up the heart of C&O Canal’s cultural legacy, as well as adequately preserve and manage the array of rare species and natural communities found within the park’s boundaries.

The Park Service has approved plans by Georgetown and George Washington universities to build large boathouses on parkland within sight of the canal towpath. Congress must first approve transferring the parkland to these special interests. These plans threaten the integrity of the resources near Georgetown.

And perhaps among the most difficult challenges to quantify, a large portion of the park’s visitors see it as nothing more than a recreational trail along the Potomac and fail to understand the rich history and biological diversity around them. Visitors cannot be strong advocates for resources they don’t fully understand.



R. H. WIEGAND

More than 200 globally or state rare natural communities and species are found in the Potomac Gorge, including Wild False (blue) Indigo (*Baptisia australis*).

the C&O Canal. American Indians, African American slaves and freedmen, indentured servants from the Old World, newly arrived Irish and German immigrants, the Founding Fathers of our nation, and the Civilian Conservation Corps all played a role in the history of the “Great National Project.” In addition to its rich history, the park is home to an array of rare habitats and species that make it one of the premier natural areas in the eastern United States. C&O Canal serves as a haven for many rare, threatened, and endangered species, including the bald eagle (*Haliaeetus leucocephalus*). One section of the park in particular, the Potomac Gorge, is described by The Nature Conservancy as “one of the country’s most biologically diverse areas, serving as a meeting place for northern and southern species, Midwestern and eastern species, and montane and coastal species.”

STATE OF THE PARKS® ASSESSMENT

In this report, the National Parks Conservation Association (NPCA) summarizes findings from an assessment by its State of the Parks® program to describe the current condition of Chesapeake and Ohio Canal National Historical Park's resources and the stewardship challenges ahead.

In the chart on the following page, up arrows indicate conditions will likely improve over the next ten years, down arrows indicate conditions will likely deteriorate during that time, and flat arrows indicate no change is likely.

The findings in this report do not necessarily reflect past or current park management. Many factors that affect resource conditions are a result of both human and natural influences over long periods of time, in many cases before a park was established. The intent of the State of the Parks® program is to document the present status of park resources and determine which actions can be taken to protect them into the future.

RATINGS

Current overall conditions of known **natural resources** rated 57 out of 100, indicating that they are "endangered." Ratings were assigned through an evaluation of park research and monitoring data (see Appendix). Challenges include non-native pests, urban encroachment, and boundary management issues.

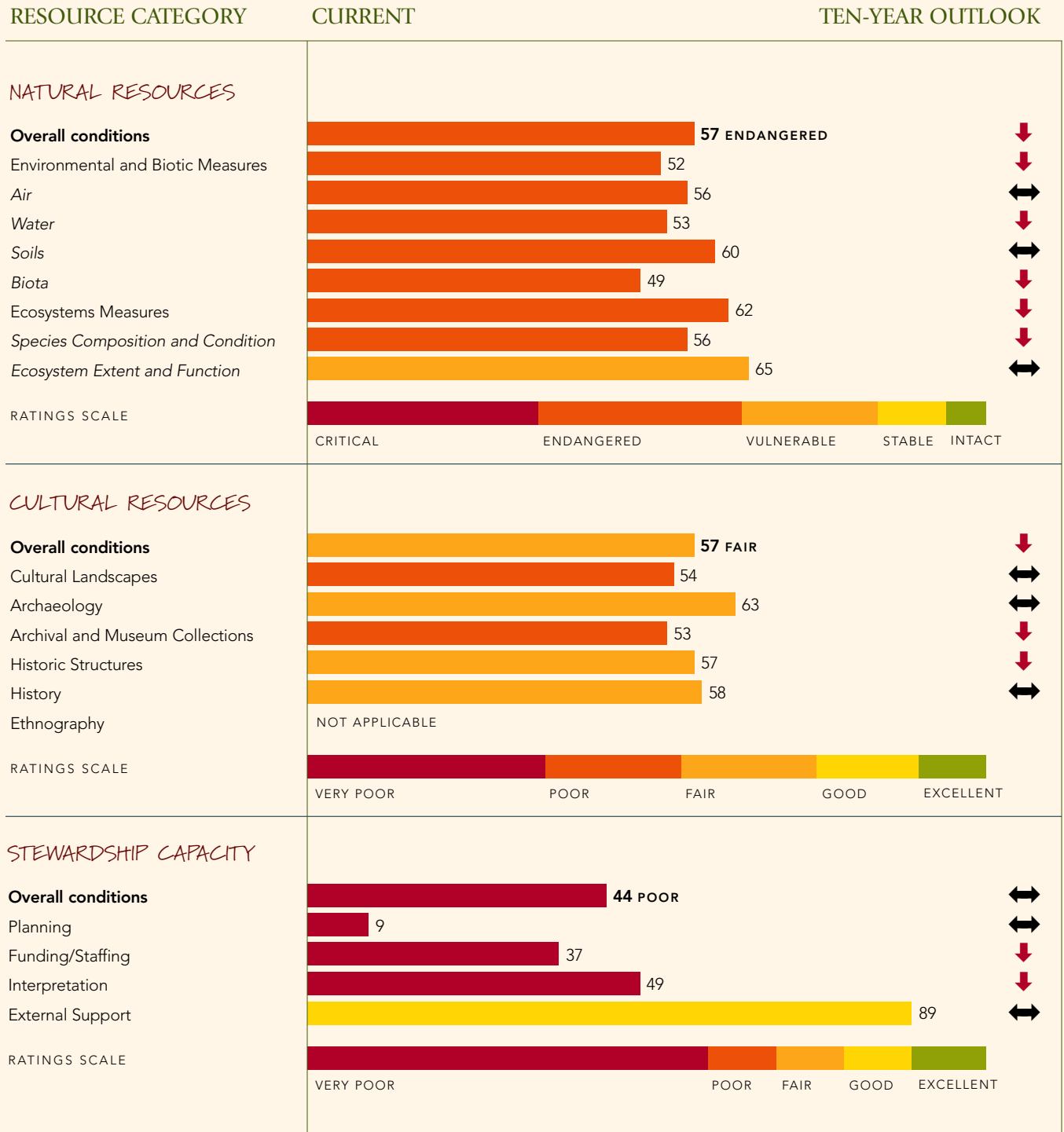
Cultural resources at the park rated 57 out of 100, indicating they are generally in "fair" condition. Insufficient staff and funding, the park's chronic maintenance backlog, and damage caused by repeated flooding contribute to this score.

The current overall **stewardship capacity**—the Park Service's ability to protect park resources—rated a "poor" score of 44 out of 100. This score reflects the park's large budget shortfall, outdated General Management and Resource Management plans, and the absence of several key staff positions.

TOP TEN KEY RECOMMENDATIONS

- Congress must increase funds for the park to allow additions of staff in all categories; update museum exhibits and fully fund the archaeological survey currently under way; provide funding for historic structure preservation; evaluate and research all park landscapes to enhance understanding and interpretation; fund ethnographic research to enhance interpretive messages; compile existing and future baseline research; and establish an Exotic Plants Management Team in the park. At the bare minimum, a historic architect, curator (with archival experience or background), hydrologist, natural resource specialist, interpretive rangers, and archaeologist are needed.
- Additionally, a historic preservation crew should be created and base money should be added to ensure the park conducts preservation maintenance on historic structures, not just emergency repairs.
- The park should update all basic planning documents, such as the Resource Management Plan and the Collection Management Plan.
- The park should explore innovative preservation opportunities, such as the current historic leasing program and partnerships with outside organizations. Hire a full time lease coordinator with a background in historic architecture to administer the present historic leasing program.
- Given the park's recognized biological diversity, priority funding should be allocated by the regional office to compile existing and future baseline research and produce much needed natural resource management documents.
- The park needs to examine procedures and facilities to determine ways of mitigating the fragmentation of the resource.
- Before the opportunities pass the park by, funding should be increased by Congress to fully fund a boundary survey and purchase more restrictive easements or fee own lands for resource protection.
- The park should implement a comprehensive "Leave No Trace" public educational initiative, to convey sensitive recreational use practices like staying on trail, carrying out trash, keeping dogs on leash, and cleaning shoe treads and boat bottoms to prevent the spread of invasive species.
- Congress should fully fund the Army Corps of Engineers' Middle Potomac General Investigation Study, several components of which will directly benefit natural resource management objectives at the C&O Canal.
- Congress must oppose transferring C&O parkland to private interests.

Note: Critical information upon which the natural resource ratings are based is not always available. The extent to which data requirements for the assessment methodology are met is called information adequacy and provides a basis for interpreting ratings. In this assessment, the park met only 57 percent of the information requirements, an indication of the amount of research needed in the park.





A HISTORICAL AND NATURAL GEM HIDDEN IN PLAIN SIGHT



The C&O Canal attempted to realize George Washington's vision of uniting the Potomac and Ohio valleys. The Chesapeake and Ohio Canal Company, incorporated in 1824, decided to build a canal along the Maryland side of the Potomac River. Construction began in 1828 in the District of Columbia and was completed in 1850 in Cumberland, Maryland. As soon as small sections were completed, the canal was opened for boat traffic while formal operation began in 1850. The canal never made it to the Ohio River Valley. Construction was plagued by a lack of inexpensive labor, material shortages, a cholera outbreak, geographic difficulties, funding shortages, and legal battles with the competing Baltimore and Ohio Railroad, another east to west transportation venture. The final price tag for the canal was a then astronomical \$11,000,000. When the

C&O Canal was finally completed, the B&O Railroad already had been operating for eight years. A devastating flood in 1889 proved to be the final straw, as the canal went into receivership to the B&O Railroad, which operated the canal at a loss until another flood in 1924 closed the canal for good.

Although short-lived, the canal engendered a unique way of life. Entire families, including African Americans, lived and worked on canal boats as they made their way from Cumberland to Georgetown and back again, primarily carrying coal to Washington, D.C. Other families made their livelihoods as lock-tenders or by providing services or merchandise to the canal boats and their trusty mules. Closure of the canal opened the next chapter in its history. In 1938, the federal government acquired the canal holdings for \$2 million, and President Franklin Roosevelt quickly

Canal boats plied their trade up and down the canal, passing through towns like Williamsport.

C&O CANAL NATIONAL HISTORICAL PARK



ALTHOUGH
SHORT-LIVED,
THE CANAL
ENGENDERED
A UNIQUE
WAY OF LIFE.

established Civilian Conservation Corps (CCC) projects to restore the first 20 miles of the canal. These two camps, located near Carderock, were some of the only African American CCC units working to improve what would become America's parklands. During this period, a proposal surfaced to build a scenic parkway on the canal that was modeled after Skyline Drive in Shenandoah National Park in Virginia. Fortunately, the plans for the parkway moved slowly, allowing for one of the more famous interventions in Park Service lore.

In 1954, the *Washington Post* published an editorial in favor of the parkway. In response, Supreme Court Justice William O. Douglas, an avid outdoorsman, penned a challenge to the editors of the *Washington Post* and *The Evening Star* to walk the entire length of the canal with him to enjoy its natural beauty and historic significance. He wrote, "It is a refuge, a place of retreat, a long stretch of quiet and peace at the Capital's back door—a wilderness area where we can commune with God and with nature, a place not yet marred by the roar of wheels and the sound of horns." The editors accepted, and the great conservation hike began.

By the time the group left Cumberland, Maryland, on March 20, 1954, its numbers had swelled to 58 souls, including Sigurd Olson, President of the National Parks Association (now known as the



Supreme Court Justice William O. Douglas (far left) led the charge to protect the canal from destruction and create a national historical park.

National Parks Conservation Association). As the hike progressed, media attention on one man's quest to save the canal grew. People came out to cheer the hikers on as they passed by, and 5,000 canal supporters greeted them as they finished their hike in Georgetown. Douglas' dream became a reality in 1961 when President Eisenhower established C&O Canal National Monument. In 1971, after years of deliberation, Congress passed and President Richard Nixon signed legislation designating the entire 184.5-mile canal as a National Historical Park.

MATT KANIA

NATIONAL PARK SERVICE



THE C&O CANAL ASSESSMENT



NATURAL RESOURCES—DIVERSE RIPARIAN HABITAT THREATENED

Most visitors to C&O Canal never suspect they are walking in one of the most diverse natural areas in the United States. Geography and the park's relatively protected nature combine to provide a sanctuary to a broad array of plants and animals. For its size, C&O Canal represents one of the most biologically diverse parks in the National Park System: More than 1,200 vascular plants species are recorded for the park, plus 192 birds, 64 fish, 62 reptiles and amphibians, and 47 species of mammals. Of these,

nearly 200 are state or federally listed as rare, threatened or endangered. The total number of species may be underestimated because the park's species lists are incomplete. The only federally endangered plant species in the National Capital Region (NCR), Harperella (*Ptilimnium nodosum*), is found in C&O Canal. Because of these outstanding resources, C&O Canal was selected to participate in the Service-wide Inventory and Monitoring (I&M) Program. As the historic park runs along the Potomac River it passes through four major physiographic regions, Ridge and Valley, Blue Ridge, Piedmont, and Coastal Plain, making it one of the most geologically interesting national parks in the

Beautiful scenery attracts visitors to the Potomac Gorge. This portion of the park is a highly diverse natural area.

FLOODS: IMPORTANT PARTS OF THE NATURAL SYSTEM

While it is certainly true that floods are dangerous or damaging, there are positive sides to high water events. For example, floodplain scourbars, found the length of the park, experience the most intense and violent scouring effects of floods. Yet these rocky, low-lying areas contain rare, threatened, and endangered herbaceous plants, such as federally endangered *Harperella* and state-endangered Virginia mallow (*Sida hermaphrodita*). *Harperella* is a top conservation priority for the C&O Canal. The park is currently engaged in a three-year \$150,000 project with George Washington University to restore this species within its historical range in the park.



eastern United States. All told, more than 40 state and nationally significant natural areas, including rare limestone outcrops and scoured bedrock floodplain, are found in the park. The park also protects the largest extant block of upland forest in Maryland's Piedmont, known as the Goldmine Tract near Great Falls, and the highest quality limestone and calcareous shale habitats remaining in the state, Ferry Hill bluffs and Chilton Woods.

Perhaps one of the most important areas in the park is the Potomac Gorge, called "one of the country's most biologically diverse areas," by The Nature Conservancy. More than 200 rare species and communities can be found within the gorge, including 12

plants and four animals that are considered globally rare. Its diversity is created by the gorge's unique hydrogeographic features, which attracts an unusual mix of species from many different areas in America. Several natural communities and species found in the gorge are considered globally rare, such as the Channel Shelf Dry Mesic Woodland and the Bedrock Terrace Rim Xeric Forest. Perhaps more recognizable is one threatened species that makes its home within the Potomac Gorge, the bald eagle. Two nesting pairs have been sighted within C&O Canal. A joint partnership project with The Nature Conservancy, C&O Canal, and George Washington Memorial Parkway resulted in the Potomac Gorge Site Conservation Plan, which identified the area's most critical natural resources, threats to their survival, and strategies to conserve and restore their health and viability. As part of this partnership, the Potomac Gorge Project leader has been hired to implement the plan and mobilize stakeholder groups and forge partnerships to achieve the plan's objectives over the next three years.

NATURAL RESOURCE THREATS

The staff at the C&O Canal provide a strong level of resource protection despite limited resources. Even so, the natural resource category scored at the endangered level. Ratings were assigned through an evaluation of park research and monitoring data. Overall, this stunning natural area is under attack from a variety of external threats that continue to undermine the integrity of the park. Given its biological diversity and its unique function as a 184.5-mile long biological corridor along the river, the lack of sufficient baseline data to guide management decisions is worrisome, although the Inventory and Monitoring Program is working throughout the region to alleviate this shortfall. For example, little air quality data is compiled specifically for the park nor are impacts on resources that may be occurring due to air quality problems documented. Due to the fact that the Washington, D.C. area persistently exceeds EPA recommended pollution allowances, the park is classified as a Class II airshed, making it difficult to reverse or even study any impacts.

In virtually every category, the park lacks crucial information about the natural resources it is supposed to protect for future generations. While there are efforts to correct these deficiencies, such as the ongoing vegetation mapping work, verification of documented species records, and regionally-funded biological inventories, the money and the staff needed to correct major knowledge gaps simply do not exist.

One of the most pervasive threats to natural resources throughout the National Park System is posed by invasive species, and the C&O Canal is no stranger to this. The park considers deer overbrows and invasive species the most significant natural resource threat. The park has documented more than 200 exotic plant species and 14 exotic animal species. Over the years, park staff, and more recently, the National Capital Region Exotic Plant Management Team (EPMT), have been working to inventory, map, and remove exotic plants from important areas in the park. Invasive plants routinely overrun park structures and out compete native plants, posing a significant threat to the numerous rare, threatened, or endangered plant species that have made the C&O Canal their home for generations. In some areas, Japanese stiltgrass (*Microstegium vimineum*), Japanese honeysuckle (*Lonicera japonica*), ground ivy (*Glechoma hederacea*), and English Ivy (*Hedera helix*) threaten to literally carpet large sections of the park. The park must have its own exotic plant management team of specialists to work alongside the National Capital Region's team if it is going to reach and maintain its goal of protecting this important and rich biological diversity.

Deer have also aided the spread of invasives by overbrowsing, becoming a significant menace to the resources of C&O Canal. A recent study estimated that there are 38 deer per square kilometer (98 deer per square mile), well above the identified sustainable eight to 16 deer per square kilometer (20-40 deer per square mile) threshold. The deer have altered the structure and composition of upland forests and terrace communities by effectively eliminating some native plants, including nearly all saplings, and facilitated the spread of invasives.



R. H. WIEGAND

Development of lands outside the park in the Washington, D.C. metropolitan area has had both direct and indirect negative effects on natural resources in the park. Lands that were once rural during the canal's heyday are now increasingly urban or suburban. As the suburbs expand, more of the surface area in the Potomac watershed is being stripped of its natural growth and replaced with impermeable surfaces, such as roads and parking lots.

For example, the population of Frederick County, Maryland, grew by 30 percent between 1990 and 2000. As a result, storm events cause volumes of water significantly greater than historic levels to rush through the park, damaging the habitats around tributary streams, as well as eroding the historic waterways and washing sediment into the park that routinely blocks many of the 180 historic culverts engineered to handle water flows of the early to mid-1800s. In addition to eroding parklands, these elevated stream flows wash an increasing number of exotic species and chemical pollutants into the park from adjacent properties.

The Potomac Sewage Interceptor runs under parkland and discharges into the Potomac River, often producing foul odors and overflowing into the park during storm events. Fortunately, the park may receive some assistance from the NPS Water Resources Division (WRD) in the near future, although this is unclear.

Deer abundance has a profound impact on forest communities and wildlife habitat.

The 19,587 acres within C&O Canal represent a fragmented landscape. The canal and related structures essentially divide the park in half lengthwise. In addition to the towpath, at least 16 miles of designated foot trails, a number of social trails, and 32 miles of roadbed run through the park. Significant resource impacts arise from utility rights of way the park is legislatively mandated to provide and from rights of way that the park acquired during boundary expansions. The habitat fragmentation caused by these rights of way increasingly leads to edge effects in sensitive habitats throughout the park. The opportunity still exists to acquire more restrictive easements or acquire lands in undeveloped areas in counties where development has been minimal such as Washington County, Maryland.

A park goal is to conduct a thorough boundary survey that would distinguish parkland from private ownership. Currently, about 15 percent of the park boundary has been surveyed. The completion of the inventory and mapping of utility rights-of-way and

other types of deeded or reserved rights within or across the park is necessary to better manage this program. Funding and a position dedicated to this program area are important.

Pollution issues occupy much of the staff's time to track and determine their scope and resource impact. Many of these issues are also politically important and require lengthy negotiations with many agencies. Large volumes of sediment, possibly toxic, are regularly discharged from the Army Corps of Engineers water treatment facility in and near the park. The park is working with the Corps and other agencies to develop alternative sediment removal methods. Hazardous petroleum wastes are routinely monitored and are being partially mitigated near Brunswick. There are several old mines within the park that are suspected of discharging a certain amount of hazardous waste, but more study is needed to determine the extent of the pollution. In fact, more study of this type is needed throughout the park.

Finally, the park needs management plans for both plants and animals. For example, no plan exists to manage deer in the park, although their impacts are well-known and widespread. However, given the profound lack of staff and limited money for planning, it will be difficult for the park to develop these management documents. A 2002 estimate by the Natural Resources Management Assessment Program projected the park would need 27.9 full-time equivalent employees to meet basic resource management standards. They currently have 5.4 full-time equivalent employees on staff, and only one full-time natural resource specialist.

Japanese honeysuckle vine alters or destroys the understory of communities it invades.



DAVID MOORHEAD, UNIVERSITY OF GEORGIA



CHUCK BARGERON, UNIVERSITY OF GEORGIA



CULTURAL RESOURCES—RICH NATIONAL HISTORY AWAITING EXPLORATION

Everywhere you turn in C&O Canal, echoes of the past call out to you. In some areas, it is easy to imagine the canal boats slowly plying their trade, the mules plodding along the towpath as they carry their load down to Georgetown. The park's significance is not limited to the canal operation only: C&O Canal's cultural heritage extends across most eras of American history. Whether you are interested in prehistoric native cultures along the Potomac, the

Underground Railroad, or the Great Depression, C&O Canal's resources have stories to tell. Unfortunately, the State of the Parks Assessment has rated the condition of cultural resources in the park as fair, primarily because of chronic underfunding and understaffing.

Though frequent flooding is a natural process along the Potomac River necessary to maintain certain vegetation communities, flooding poses a constant challenge to historic structures and landscapes. Unfortunately, cultural resources don't receive anywhere near the money and staff necessary to prevent significant degradation in nearly every resource category in this report. For example, only emergency

Entire families and their mules lived on canal boats.



RESTORATION PARTNERSHIPS

Large scale restoration projects require support from outside interested and committed parties and Congress. The Monocacy Aqueduct (named in June 1998 by the National Trust for Historic Preservation as one of the 11 most endangered structures in the United States), for example, is currently receiving stabilization construction with funding received from Congress and donations. A sustainable design for stabilization allows for the removal of the existing unsightly support system. Stabilization of the aqueduct is strongly supported by the C&O Canal Association, the C&O Canal Advisory Commission, the National Trust for Historic Preservation, the Maryland Historic Trust, local preservation groups, and the Maryland congressional delegation.

repairs are conducted on the park's historic structures. Preventive maintenance is performed as time and funds allow, although little to no staff time or funding is given to preservation maintenance activities. However, with new projects, the concept of sustainability is built into the engineering designs, when feasible, with the intent that future impacts to cultural resources will be lessened. Meanwhile, the park has done an amazing job of recruiting volunteers and partners to assist professional park staff in protecting the park. However, even these efforts are not enough to compensate for the staffing and funding shortages.

HISTORIC STRUCTURES

The defining features of the park are the Chesapeake and Ohio Canal and its associated structures, such as the towpath, aqueducts, culverts, locks, and lockhouses. During its period of operation, some canal innovations were hailed as engineering marvels, such as the Georgetown Inclined Plane, a massive counterweight system that lowered canal boats 300 feet from the canal to the Potomac River. Another structure, the famous Paw Paw Tunnel, took 12 years to build and nearly bankrupted the C&O Canal Company.

Today, sections of the canal are rewatered year round to recreate the historic scene and allow interpretive canal boat tours. But these sections of the canal and related structures then require constant maintenance. The park also contains historic farmhouses, locks and lockhouses. Bridges and tunnels that date back to the early 20th century serve as reminders of the now defunct Western Maryland Railway. There are 237 features in the park that remain from the railroad.

Altogether, the park has 1,365 historic structures on its List of Classified Structures, and the entire park has been listed in the National Register of Historic Places as one historic district. Some features, such as stonework in areas of the park, have not been entered into the list, and their conditions are not tracked.

Overall, the structures in the park are deteriorating. Only 13 percent of the structures (178) are listed in good condition, and preservation maintenance falls by the wayside because priority funding is given

to emergency repairs. Frequent floods cause major damage to park structures. Two 1996 floods caused damages estimated at more than \$65.2 million, although only \$23.3 million in flood recovery funds were provided to the park. This shortfall was exacerbated in 2003, when another flood associated with Hurricane Isabel caused an additional estimated \$17 million in damages. No historic preservation crew exists in house, although three maintenance employees have graduated from the National Park Service's Historic Preservation Training Center. Despite the large number of structures, the park lacks a historic architect. The park lacks all cultural resources personnel except for a historian, who spends most of his time on general cultural resource management projects and has limited opportunities for scholarly work.

To enhance protection and increase interpretation of historic structures, the park relies on partnerships and a historic leasing program. Each demonstrates the vibrant relationships that help support the park's staff. At the Abner Cloud House (built in 1801), the Colonial Dames have restored the interior and provide interpretive programs for visitors. Without their support, the park would not be able to open this structure to the public. Riley's Lockhouse, a home for Irish immigrants who tended the lock and worked as stonecutters, is also operated and interpreted by volunteers from the local Girl Scouts. While these partnerships have many benefits, the



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Park Service needs to take a more active role in the oversight of these houses to ensure the consistency and accuracy of interpretive messages. Additionally, the NPS staff needs to more closely manage the historic leasing program to prevent historically inaccurate additions or changes to the buildings and landscapes. Currently, six historic structures are part of this program, yet the Park Service did not complete a Historic Structure Report for any of them before they were turned over to the lessees for rehabilitation. Thus, some inadvertent and/or inappropriate changes were made to the structures and surround-

Today's visitors learn about canal operations by visiting working locks.



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Visitors experience life on the canal through interpretive boat tours.



President Grover Cleveland stayed at the Pennyfield House. The house is now deteriorating.

ing landscapes. The park has been more actively managing these leases in recent years, but a full-time lease coordinator is needed to ensure this program benefits both the park and the lessees.

CULTURAL LANDSCAPES

Although the park has 15 identified cultural landscapes, the resource staff prefer to think of the entire park as one long landscape, accentuated by different vignettes along the way. In 2004, the National Capital Region's Cultural Landscape Program will complete two Cultural Landscape Inventories for the park, one for Great Falls Tavern and another for Pennyfield Lock. Both of these landscapes have a rich history related to the development of the canal. President Grover Cleveland came to Pennyfield Lock to fish for bass and stay at the Pennyfield house located near the lock. The crumbling lockhouse stands boarded up and unused, while the Pennyfield house deteriorates in the background. The National Capital Region is also preparing a Cultural Landscape Report treatment plan for Great Falls Tavern. The Great Falls area remains one of the most popular in the park. Here, visitors can watch demonstrations of how the lock system worked. Great Falls Tavern, originally a lockhouse and then expanded over time, houses a visitor center today.

Two other landscapes have complete Cultural Landscape Reports: Ferry Hill and Williamsport. The Ferry Hill Plantation, formerly the park's headquarters, was named for a ferry that crossed the Potomac River nearby. Although the plantation is most famous

for associations with Henry Kyd Douglas, a member of Stonewall Jackson's staff during the Civil War, before the war the plantation housed an active slave operation and is today listed in the Underground Railroad Network to Freedom Program. The Underground Railroad Network to Freedom program was established in 1998 to tell the story of those who resisted enslavement through escape and flight, and the supporters who assisted them along the way.

Williamsport represents a quintessential canal town. Canal boats unloaded much of their coal inventories here. Not all was peaceful in Williamsport. Rival gangs of Irish canal workers fought several bloody battles nearby in 1834, and the town's location at a strategic river crossing made it a frequent scene of troop movements and encampments during the Civil War.

With the many stories the park has to tell, more effort must be made to fully research the cultural landscapes at C&O Canal. Most of the work in this area comes out of the severely overstretched regional office, leaving the park without a dedicated steward of its landscapes. While the maintenance and resource staffs have a solid working relationship and exhibit a strong sensitivity to the landscapes in the park, without a Cultural Landscapes Management Plan, inadvertent damage can be done. The significance of the resources in the park certainly warrants the addition of a historic landscape architect to actively research and manage the cultural landscapes in the park. Additionally, significant funding resources should be allocated toward fully evaluating and researching all the park's landscapes to enhance understanding and interpretation of this important resource.

ARCHAEOLOGY

Perhaps the greatest "undiscovered treasure" in the park remains its archaeological resources. Archaeologists consider the lands preserved by C&O Canal to contain a rich diversity of prehistoric and post-contact information about the native peoples in the area. Yet only 5 percent of the park has been surveyed for archaeological resources. A recent NPS archaeological overview for the National Capital Area concluded: "The C&O Canal contains sites critical to documenting

the response of American Indian groups to European settlement throughout the 18th century." Examples of other historical archaeological sites include Civil War encampments and fortifications, domestic sites from the 18th and 19th centuries, and industrial sites.

One hundred ninety sites are listed on the Archaeological Site Management Information System (ASMIS), of these 171 have condition assessments and 134 are listed in good condition. However, this represents only a small fraction of the potential archaeological sites, and looting is known to have occurred to some areas that are not yet completely documented. Currently, 25 sites are listed in the National Register of Historic Places. Canal and canal-related features are all listed in the National Register of Historic Places. Numerous other sites have been determined eligible but have not been nominated yet due to time and staffing restrictions.

Fortunately, the park and regional archaeologist recently have been able to contract with an outside firm to undertake a nine-year archaeological identification and evaluation study, currently in year two. This will help give resources managers a better sense of the extent of the archaeological resources in their midst, provided funding is given for the full nine-year period of research. Although continued funding for this necessary project is not guaranteed, it is the number one priority for the Systemwide Archaeological Inventory Program in the region and is therefore quite likely to be funded until it is completed. This work will complement a recently completed Archaeological Overview and Assessment for the park. At the end of 2010, the National Park Service will have spent 13 consecutive years and nearly \$1.4 million dollars to provide the park with one of the best and most up-to-date archaeological databases.

A lack of trained park staff significantly hampers the park's ability to protect and preserve its archaeological resources. Although the regional archaeologist is available, he is responsible for the entire archaeologically rich National Capital Region. Consequently, the park ends up contracting for a substantial portion of even its most basic compliance work, either from Harpers Ferry NHP or outside contractors.

PEOPLE'S STORIES WAITING TO BE TOLD

Although no formal ethnographic studies have been done for the C&O Canal and no funding is available for a program, there may be some traditional social ties still affiliated with the park. For example, two families that currently operate concessions in the park, the Fletchers and the Swains, date back to the time of the canal's operation. A community of freedmen, called Tobeytown, was located near Pennyfield lock. The park suspects many of the descendants of the original inhabitants still live in nearby communities. Many of the Irish, German, and British immigrant families that served as canal workers still live near the park and share family stories about that time.

Finally, because of a family interest in the canal, President Franklin Roosevelt established two Civilian Conservation Corps campsites, composed entirely of African Americans, in the Carderock area to restore a long stretch of the canal. All of these historical connections should be explored to see if the park should develop an ethnographic program.

Many stories of canal families remain to be researched and told.



NATIONAL PARK SERVICE

MUSEUM
COLLECTIONS
AT C&O
CANAL TELL
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AND FALL OF
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LIFESTYLE.

ARCHIVAL AND MUSEUM COLLECTIONS

Museum collections at C&O Canal tell a tale of the rise and fall of the canal lifestyle. Nearly 140,000 items are included in the collection, the vast majority of which are archaeological. Collection items include instruments, tools, and equipment used in the surveying, construction, operation, and maintenance of the C&O Canal; historic objects and furnishings associated with canal boat families and canal lock keepers; and paintings, drawings, and prints illustrating all aspects of the C&O Canal. Aside from a few items exhibited in park visitor centers, the vast majority of the collection items are stored at the National Park Service National Capital Region Museum Resource Center (MRCE) in Landover, Maryland because of the lack of adequate storage facilities in the park. The park's extensive archival collection of documents relating to the C&O Canal Company and the B&O Railroad are now protected in the National Archives in College Park, Maryland. Additionally, the park has an extensive archive of historic photographs located at park headquarters. Researchers can look through this collection, witness

the day-to-day lives of the canal families, and get a glimpse of late 19th century life.

Unfortunately, the majority of the historical objects are not on display, and the few items on view are not displayed properly or in a way that will preserve them. Aside from the new visitor center in Cumberland, all the exhibits are in fair to poor condition and poorly designed by today's standards. Staff have requested funding to upgrade the exhibits, but this money is not likely to materialize anytime soon. The Collection Management Plan for the C&O Canal dates to 1986 and is not used to manage resources. The park also lacks a curator. Although the park historian has a curatorial background, he has virtually no time to inspect and update the exhibits. The park also has no archivist, thus park resource records are disorganized and difficult to locate, hampering the resource protection abilities of the staff. Overall, the lack of appropriate staff has adversely affected the condition of the museum collection and archives in the park. If more money and staff are not allocated to address these problems, the condition of the exhibit collection in particular will continue to decline.





STEWARDSHIP CAPACITY—PARK FACES CHALLENGES

Stewardship capacity assesses the Park Service’s ability to protect park resources. The score for this category was a low 44 out of 100. The rating was calculated by averaging the four components of stewardship capacity, then weighting the funding and staffing component at 40 percent of the overall score to reflect its importance. The low overall score reflects severe funding and staffing shortfalls.

FUNDING AND STAFFING

The C&O Canal is woefully underfunded and understaffed. According to the park’s Business Plan—an analysis of operating funds completed for FY 2001-

the park requires an additional 170.5 full-time equivalent employees and has an annual operating deficit of \$13,719,502, nearly twice the park’s annual budget. Shortfalls of this magnitude are severely hampering resource preservation and protection, as well visitor enjoyment and safety. An analysis of the park’s budget compared to costs, adjusted for inflation, shows that the park has fewer and fewer dollars to spend per visitor every year. Visitor center hours are being scaled back, and fewer interpretive staff are available. For example, some visitor centers have only one full time ranger. If the ranger is not available to work, the visitor center does not open. Chronic underfunding has left the park in a state of perpetual catch-up where the resource conditions continually degrade until they get to emergency status.

The popularity of the park increases as the population of Washington D.C. grows.

WHAT YOU CAN DO TO HELP

- **Become a member of groups helping to protect the park:** C&O Canal Association (<http://www.CandOCanal.org/>), NPCA (https://www.npca.org/support_npca/), and regional organizations.
- **Volunteer in the Parks.** Many parks are looking for dedicated people who can lend a helping hand. There are opportunities for people to maintain buildings and trails, do landscaping, provide technical web expertise, assist with welcoming visitors, and much more. To learn about opportunities at C&O Canal, contact the park at 301.739.4200.
- **Walk in the footsteps of Justice William O. Douglas and be an advocate for C&O Canal.** Contact your members of Congress. Urge them to support increasing the park's day-to-day operations budget so the park can protect and interpret natural and historical resources. Urge your members of Congress to oppose proposals to transfer park lands to private owners for special interest projects, such as boathouses, especially when other reasonable alternatives exist. For more information, links to Congressional offices, and to join our advocacy network and receive a free biweekly electronic newsletter with the latest park news and ways you can help, visit http://www.npca.org/take_action.

The canal, a key Union Army supply line, witnessed many battles during the Civil War. Volunteers recreate the scene.



NATIONAL PARK SERVICE

INTERPRETATION

Interpretive rangers at the C&O Canal are highly trained professionals with innovative ideas and sincere dedication to their mission. For example, the park publishes a newly revised newsletter and calendar of events called *The Canaller*; is developing 16 new way-side exhibits, and has revised the park handbook. That's the good news. The bad news is that budget erosion means that fewer and fewer interpretive staff are available to interact with an increasing number of visitors. The small numbers of staff mean that visitor centers are closing earlier and open for fewer hours to the public, interpretive materials become outdated, and public educational outreach is not meeting its potential. For example, the Brunswick Visitor Center is opened in partnership with the B&O Railroad Museum for parts of four days a week, yet a park ranger is not available to park visitors. And while recent interpretive partnership programs have been added, such as geology talks, more time could be spent providing natural resource messages to the public.

The park has done a fantastic job of recruiting volunteers to augment interpretive staff. Without those volunteers, the park would face a serious challenge in keeping the visitor centers operating and open and providing other interpretive services. Some areas of

the park, such as in western Maryland, have had difficulty recruiting volunteers, diminishing the interpretive capacity in that section of the park. The C&O Canal has provided basic interpretive training for all volunteers. However, the low number of trained park professionals seriously restricts the availability of educational interpretive services.

EXTERNAL SUPPORT

As mentioned above, the C&O Canal has a large and active volunteer base. One thousand eight hundred and forty-seven volunteers donated 44,912 hours of service last year (2003). This includes the Bike Patrol, a 120-member force that dedicates a minimum of 40 hours per person per year. Support does not stop there. Groups such as the Potomac Conservancy, the C&O Canal Association, District of Columbia Audubon Society, and The Nature Conservancy have been valuable partners in preserving park resources. For example, the C&O Canal Association provided funding last year to publish a park newsletter, *The Canaller*. The Potomac Conservancy, working with the park, received a \$30,000 challenge cost share grant for restoration of the Lockhouse at Lock 8 to its early 20th century appearance. The structure will be used for environmental education and community outreach programs. The Potomac Appalachian Trail Club (PATC) have taken over responsibility for trail oversight on nearly all trails in the Great Falls area with a team of ten volunteer overseers. These groups continue to advocate for the protection of the park.

The park has developed a fundraising strategy by partnering with local community foundations in each of the counties that border the park. Working with key volunteers, the "C&O Canal Fund" has been established in the community foundations of Frederick, Washington, and Montgomery counties. More than \$100,000 in donations have been collected to date. The concept is to provide an opportunity for park neighbors to contribute to a fund that will support projects earmarked for their area of the park. Another example is a recent Save America's Treasures grant that was awarded to the park. The \$150,000 grant to restore 12 lockhouses requires \$150,000

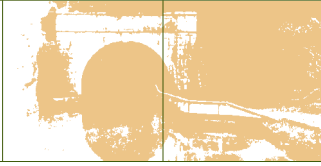


match from outside partners, and the park has been fairly successful in recruiting these partners from local communities. Without these matching funds, the park would lose the grant and the lockhouses would fall into further disrepair. However, this amount is small compared to the true funds required to stabilize the lockhouses, and the park continues to seek public support for this restoration effort. Without these and other partnerships, as well as continuing congressional support, the park's capacity to protect and interpret its resources would be greatly diminished.

PARK PLANNING

Some basic park planning documents are woefully out of date. The 1976 General Management Plan (GMP) does not reflect current park management philosophies. The park is now in initial planning stages for a new GMP. The Resource Management Plan, dating to 1996, also fails to reflect current resource conditions in the park. In addition to out-of-date plans, the park lacks documents that would greatly assist in resource management, such as a landscape management and historic leasing management plans, deer management and vegetation management plans. The park has a current Emergency Flood Response plan and Land Protection Plan. Much of the staff's time is consumed by significant pollution issues, flood emergencies, significant rare species, and caring for historic resources. They have little time or money to address resource stewardship activities or to write management plans.

Volunteers provide services to the park that are not covered by current inadequate funding levels.



APPENDIX: METHODOLOGY

To determine the condition of known natural and cultural resources at C&O Canal National Historical Park and other national parks, the National Parks Conservation Association developed a resource assessment and ratings process. It examines current resource conditions, evaluates the park staff's capacity to fully care for the resources, and forecasts likely conditions over the next ten years. Researchers gather available information from a variety of sources in a number of critical categories.

The natural resources rating reflects assessment of more than 120 discrete elements associated with environmental quality, biotic health, and ecosystem integrity. Environmental quality and biotic health measures (EBM) address air, water, soils, and climatic change conditions, as well as their influences and human-related influences on plants and animals. Ecosystems measures (ESM) address the extent, species composition, and inter-relationships of organisms with each other and the physical environment for indicator, representative, or all terrestrial and freshwater communities. The ratings elements, their definitions and the methods employed in their scoring are described in full in the document entitled **Natural Resources Assessment and Ratings Methodology** which can be found on-line at NPCA's State of the Parks® web site (www.npca.org/stateoftheparks/).

The scores for cultural resources are determined based on the results of indicator questions that reflect the National Park Service's own Cultural Resource Management Guideline and other cultural resource management policies of the Park Service. Methodology can be found on-line at the above website.

Stewardship capacity refers to the Park Service's ability to protect park resources. Information is collected and circulated to park staff and peer reviewers for analysis. An overall average based on a 100-point scale is used to determine the ratings, based on numerous benchmarks. An overall score is obtained by weighting the funding and staffing component at 40 percent, recognizing its critical importance, and the remaining three elements at 20 percent each.

NPCA's State of the Parks program represents the first time that such assessments have been undertaken for units of the National Park System. Comments on the program's methods are welcome.



R. H. WIEGAND

Before the leaves emerge on canopy trees, the C&O Canal blooms with spring wild flowers such as Dutchmen's britches (*Dicentra cucullaria*).

ACKNOWLEDGMENT

NPCA thanks the staff at Chesapeake and Ohio Canal National Historical Park who reviewed the factual accuracy of this report. We also thank peer reviewers for their valuable comments and suggestions.

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