

STATE
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March 2009

CUMBERLAND ISLAND NATIONAL SEASHORE

A Resource Assessment



National Parks Conservation Association®
Protecting Our National Parks for Future Generations®

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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 condition of critical resources.

The National Parks Conservation Association initiated the State of the Parks program in 2000 to assess the condition of natural and cultural resources and to 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, or to learn more about the Center for State of the Parks, visit www.npca.org/stateoftheparks or contact: NPCA, Center for State of the Parks, 230 Cherry Street, Suite, 100, Fort Collins, CO 80521; phone: 970.493.2545; email: stateoftheparks@npca.org.

Since 1919, the National Parks Conservation Association has been the leading voice of the American people in protecting and enhancing our National Park System. NPCA, its members, and partners work together to protect the park system and preserve our nation's natural, historical, and cultural heritage for generations to come.

- * More than 325,000 members
- * Twenty-five regional and field offices
- * More than 120,000 activists

A special note of appreciation goes to those whose generous grants and donations made this report possible: Dorothy Canter, Ben and Ruth Hammett, Lee and Marty Talbot, and anonymous donors.

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Cover photo of the Boat Captain's House and the Ice House courtesy of the National Park Service.



REPORT SUMMARY



ANN FROSCHAUER

Cumberland Island National Seashore encompasses 36,347 acres of barrier island and salt marsh in southeastern Georgia, just north of the Florida border. The national seashore includes all of Cumberland Island, which has a total length of 17.5 miles and a width of about three miles at its broadest point. It is the largest barrier island in Georgia, offering visitors undeveloped sandy beaches, views of the Atlantic Ocean, and opportunities for wildlife

viewing and hiking through wilderness areas. Visitors may also learn about the island's rich history of human habitation and use.

As one of the last essentially undeveloped islands along the Atlantic seaboard, Cumberland Island offers visitors the opportunity to experience the rich natural resources that once covered much of the Southeast. Much of the park consists of upland habitat, while the remainder is salt marsh or submerged land.

Cumberland Island National Seashore's rich natural resources are on full display throughout the park's 36,347 acres.

MOLLI SONGCO



Cumberland Island's beaches and sand dunes provide nesting habitat for a host of shorebirds as well as the federally listed threatened loggerhead sea turtle.

The beaches and dunes provide nesting habitat for numerous species of shorebirds and threatened loggerhead sea turtles, while adjacent marine habitats shelter endangered species such as green and leatherback sea turtles, Florida manatees, and North Atlantic right whales. The park is home to one of the largest maritime forests in the United States, as well as the largest wilderness area in a national seashore on the East Coast. A 9,886-acre portion of the island is federally designated wilderness, with 10,731 acres of potential wilderness area waiting to be included once certain conditions are met, such as the cessation of all uses prohibited by the Wilderness Act and/or transfer of title to the National Park Service. The wilderness areas provide valuable habitat for a multitude of species, including some of those that are federally listed as threatened or endangered. It is a management challenge for the Park Service to provide the isolation, solitude, and absence of the hand of

humans that is the very purpose of wilderness in an area that includes a road and reserved rights estates.

In addition to abundant natural resources, Cumberland Island National Seashore preserves a rich tradition of human use that dates back more than 4,000 years. Evidence of this history is present in archaeological resources that include prehistoric shell middens, mounds, and shell scatter, as well as the remains of historic missions, forts, and slave quarters. Historic structures such as the Plum Orchard Mansion represent the splendor of estates built on the island by prominent families in the late 19th century.

Cumberland Island was first recognized as a landscape that warranted preservation in the 1950s, when the State of Georgia formed a committee to explore the possibility of creating a state park on the island. In 1954, the National Park Service identified Cumberland Island as an area of national significance and began to study the possibility of creating a national park unit there. It would take nearly two decades for the necessary funds to be raised and initial lands to be acquired before Congress established Cumberland Island National Seashore in 1972. A decade later, Congress designated a 9,886-acre wilderness area within the national seashore's boundaries. This protection guaranteed that future uses within this boundary would maximize the land's value for tranquility and as quality habitat for wildlife.

The National Park Service manages the majority of Cumberland Island, though the State of Georgia has jurisdiction over the tidal beaches and marshlands. There are also several tracts of private property on the island, and there are a number of reserved estate parcels within the park's boundaries. In total, there are 20 private entities as well as the U.S. Navy, U.S. Army Corps of Engineers, and the aforementioned State of Georgia, with entitlement in one or more parcels of land on the island. With respect to the reserved estate lands, private indi-

viduals have agreements with the Park Service that allow them to continue to use the property for private residences for an established period of time into the future. Once these retained-rights agreements expire, the inholdings will be under the full management of the Park Service.

Visitors reach Cumberland Island primarily by the concessioner-operated ferry that departs the park's visitor center in St. Marys, Georgia, twice each day. They may also travel to the island via private watercraft. The park currently does not provide any transportation for visitors once they reach the island, although bicycles may be rented from the park's sole concessioner and used only on designated roads (not on the beaches, hiking trails, or within the wilderness boundaries). As a result, most visitation is concentrated on the southern end of the island where the ferry boats and the majority of private watercraft dock. However, with the 2004 enactment of the Cumberland Island Wilderness Boundary Adjustment Act (Public

Law 108-447), transportation will be expanded within the seashore according to a transportation management plan that should be finalized in spring of 2009. In addition to removing the island's main road and two other routes from wilderness designation, the legislation mandated that the Park Service complete a management plan to ensure that not more than eight and not fewer than five round-trips are made available daily for the purpose of transporting visitors to and from the historic sites located adjacent to wilderness areas.

In recognition of the significant natural and cultural resources protected within Cumberland Island National Seashore, the National Parks Conservation Association's Center for State of the Parks conducted an assessment to determine current conditions of those resources. This report contains the results of that assessment.

The park's main road runs north-south through much of the island. Upon completion of the park's transportation management plan, scheduled for spring of 2009, tours to Plum Orchard, the First African Baptist Church, and other historic sites on the north end of the island will be offered daily.

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RESOURCE MANAGEMENT HIGHLIGHTS

- **Sea turtles protected.** The park uses interns from the Student Conservation Association during the summer to help protect sea turtle nests—mostly those of loggerheads—on Cumberland Island. These interns identify new nests each morning, document their location, cover them with wire screen to prevent intrusion by predators such as hogs and raccoons, and keep track of the nests until the eggs hatch. Interns also present educational talks to island visitors. Increases to the park's budget are needed to ensure this important work continues.
 - **Museum collections better protected and more accessible.** In the past seven years, the park has relocated the majority of its museum collection to a newly renovated building on the mainland in St. Marys. This facility provides the objects with more space, better climate and pest control, and proper storage containers. The mainland location is more accessible to people who might not visit the island.
 - **Historic mansion rehabilitated.** The Park Service has put considerable effort into rehabilitating the Plum Orchard Mansion, a Georgian Revival mansion built for Lucy Carnegie's son George. A new roof has been installed and the exterior has undergone extensive repairs. The latest phase of interior restoration was recently completed and included documentation, cleaning, and conservation of the wallpaper; lead paint and asbestos remediation; installation of structural steel where necessary; wall and floor repair; installation of security and fire suppression systems; and mechanical and electrical systems repair. Though it is currently only open for guided tours twice each month, tours of the mansion and grounds will increase with implementation of the transportation management plan. Staff are
- considering making Plum Orchard into a historic house museum, which would enable visitors to better imagine the lives of some of the island's past inhabitants.
- **Park works to preserve African-American history.** Park staff are working to stabilize and preserve the Stafford Chimneys, which are the remains of quarters that housed enslaved Africans during the plantation era. Although the chimneys are located on a private estate, the park is implementing a strategic plan to preserve and fortify the standing chimneys and repair or rebuild those that have fallen. Through this work, staff will be able to preserve a significant representation of the island's African-American culture.
 - **Invasive plants targeted.** An exotic plant management team based out of Congaree National Park in South Carolina has helped the staff of Cumberland Island National Seashore remove non-native plants on the island. More than six acres of invasive plants—including bamboo, tung oil tree, Chinese tallow, tree of heaven, and tamarisk—have been brought under control. These aggressive plants will require treatment with herbicides, monitoring, and retreatment as necessary until populations are eradicated. The park must also take into account the preservation of some non-native plants as part of the cultural landscape. For example, island residents established ornamental plants such as bamboo and oleander over the course of the island's history. Some of these plants remain and must be preserved as components of cultural landscapes. However, some are invasive and have escaped into native habitat. Park staff must decide which plants to eradicate and which to maintain as part of the cultural landscape.

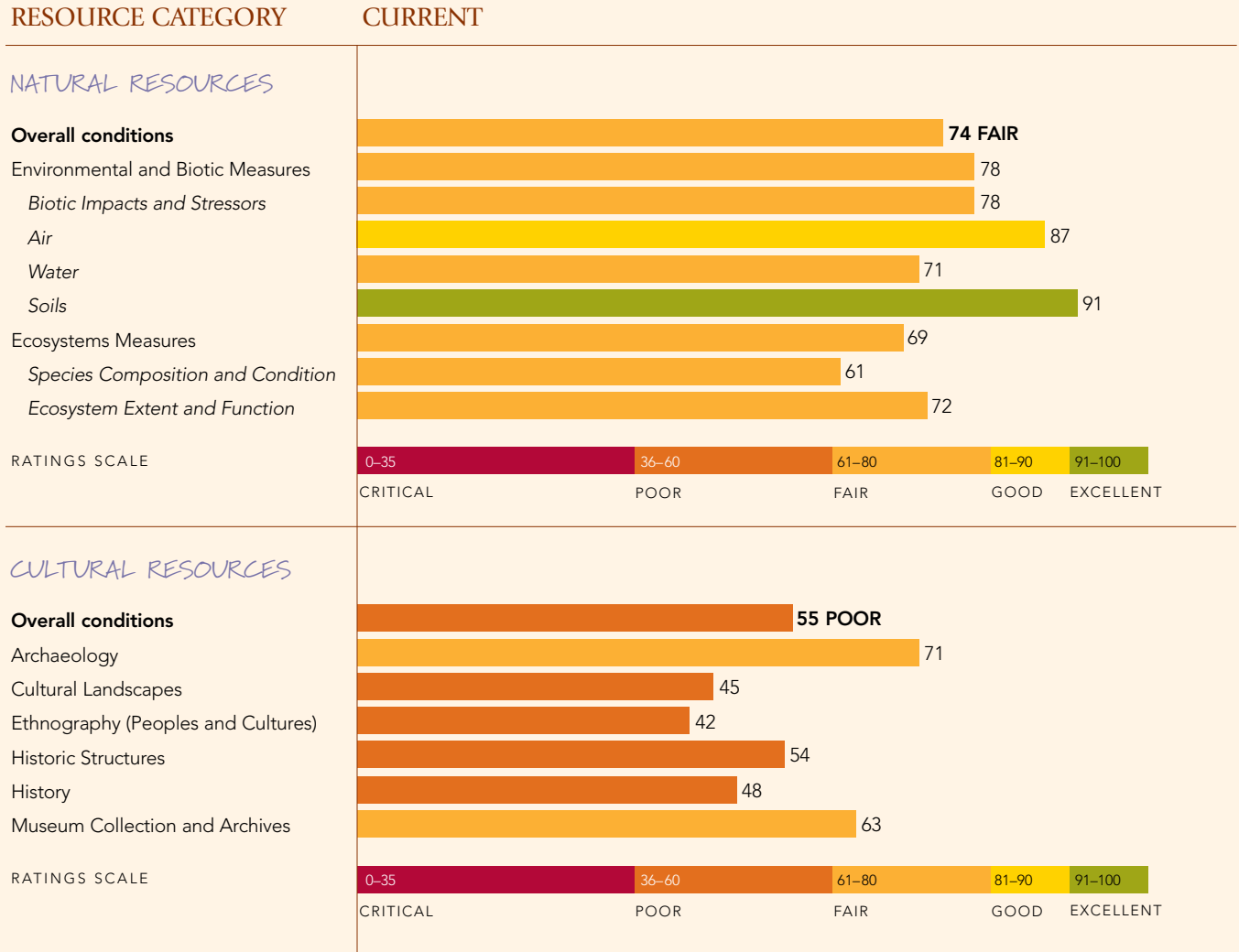
Fireplace chimneys mark the locations of slave quarters within the Stafford Historic District. Park staff are working to stabilize and restore the chimneys.





CATHY NORRIS

Note: When interpreting the scores for resource conditions, recognize that critical information upon which the ratings are based is not always available. This limits data interpretation to some extent. For Cumberland Island National Seashore, 72 percent of the natural resources information was available and 87 percent of the cultural resources information was available.



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 pre-dating the park's creation. The intent of the Center for State of the Parks is not to evaluate National Park Service staff performance, but to document the present status of park resources and determine what actions can be taken to protect them in the future.

RATINGS

Current overall conditions of the known natural resources within Cumberland Island National Seashore rated a “fair” score of 74 out of 100. Ratings were assigned through an evaluation of park research and monitoring data using NPCA’s Center for State of the Parks comprehensive assessment methodology (see “Appendix”). Factors influencing the score include the effects of feral hogs and horses on natural ecosystems (i.e., overgrazing, increased erosion, displacement of native species, disturbance of turtle and shorebird nesting); degraded water quality resulting from feral animals as well as nearby activities and discharge sources (i.e., regional development, dredging, three superfund sites, two paper mills); and past land use (i.e., sea island cotton production, timber harvesting, extensive diking and channelization, infrastructure, and construction).

Overall conditions of the park’s known cultural resources rated 55 out of a possible 100, indicating “poor” conditions. The scores for cultural resources are based on the results of indicator questions that reflect the National Park Service’s own *Cultural Resource Management Guideline* and other federal policies related to cultural and historic resources.

The park suffers from a lack of current management documents and a shortage of cultural resource staff. Needed positions include a cultural resource specialist, an archaeologist, and a museum or archival technician. Funds are needed to restore, maintain, and interpret historic structures and cultural landscapes. Vulnerable archaeological sites also require much-needed attention, and support is needed to pursue ethnographic research and interpretation of all the groups of people who have helped to shape Cumberland Island over time.

CUMBERLAND ISLAND NATIONAL SEASHORE AT A GLANCE

- **Protected barrier island:** Cumberland Island, located just north of the Florida border, is the largest barrier island off the coast of Georgia. Established in 1972, Cumberland Island National Seashore preserves 36,347 acres of salt marsh, meadows, and upland forests. Nearly 10,000 acres within the seashore are federally designated wilderness.
- **Recreational activities:** Each year about 45,000 people visit Cumberland Island National Seashore to experience one-of-a-kind cultural resources and habitats that are becoming rare elsewhere along the coast. Visitors can explore these resources by strolling the grounds of historic structures and ruins and by hiking through wilderness along 50 miles of trails.
- **Historic structures:** Evidence of the island’s cultural history is present in its historic structures, ruins, and archaeological sites. The Plum Orchard Mansion, built in 1898, stands as an impressive reminder of the island’s role as a sanctuary for wealthy families. The Park Service provides tours of the mansion twice each month. The First African Baptist Church, located in the northern end of the island, was a worship site for African-American island residents. The church is open to the public. Upon completion of the park’s transportation management plan, scheduled for spring of 2009, tours to Plum Orchard, the First African Baptist Church, and other historic sites on the north end of the island will be offered daily.
- **Important habitat:** Cumberland Island National Seashore provides important habitat for a host of federally listed endangered and threatened species, including the North Atlantic right whale, Florida manatee, wood stork, piping plover, loggerhead sea turtle, and green sea turtle. In addition to these protected species, the park is also a haven for myriad species of resident and migratory birds.

KEY FINDINGS

- The park is currently operating with several key positions vacant, including the superintendent, fire management officer, purchasing agent, and maintenance mechanic. As a result of these vacancies, there has been a suspension of prescribed fires; work contracts must go through the regional office, a process that is often slow; and the park's capacity to address routine and backlogged maintenance has been reduced. Without a superintendent, the park is unable to fill the vacated positions or hire additional staff to meet resource management and park operational needs.
- The park is unable to accomplish a host of natural and cultural resource management activities due to staffing and funding shortfalls. These include management of the feral horse population; monitoring, protection, and restoration of critical bird habitat; monitoring and management of coastal dynamics; cultural landscape management; monitoring, protection, and study of threatened archaeological resources; preservation of historic museum collections and furnishings; and maintenance of historic structures. To accomplish this work, the park needs a biologist, biological technicians, protection rangers, a geologist, a cultural resource specialist, an archaeologist, a museum or archival technician, and skilled trades personnel.
- Over the past two centuries, settlers introduced non-native animals such as horses and hogs to Cumberland Island. These species became feral and are damaging park ecosystems and competing with native species for food and habitat. Recent estimates indicate there are 200 horses currently roaming Cumberland Island. These horses graze intensely on salt marsh grasses, exacerbating erosion and degrading habitat for wildlife. They also destabilize sand dunes, trample shorebird nests, and adversely affect water quality and wetlands habitat. Studies have indicated that reducing the herd to 50 to 70 animals is necessary to protect park ecosystems. However, addressing the island's feral horses is a challenge because of public and political appeal for the animals.
- In addition to horses, feral hogs also contribute to overgrazing and pose a threat to federally protected loggerhead sea turtles, as individuals are capable of learning to root up sea turtle nests and consume eggs. Their persistent rooting alters and destroys natural habitat as well as cultural landscapes and archaeological sites. The park recognizes the damage these animals are causing and has taken steps to remove hogs through hunting and trapping. Feral hogs are capable of reproducing twice a year, which makes it difficult to reduce or eliminate populations. Despite ongoing control efforts, park resource managers estimate there are between 200 and 300 hogs on the island at any given time.
- To achieve a comprehensive understanding of the park's natural resources, staff need more information on basic parameters such as air and water quality. Currently, there are no air-quality stations within the park's boundaries, and there are only two water-quality stations—both at the dock at Plum Orchard Mansion. The park is part of the Southeast Coast Network of the Park Service's Inventory and Monitoring (I&M) Program, and there are plans to increase monitoring of air quality, water quality, and sea level rise within the park's salt

marshes, but these projects rely on adequate funding. Even with the I&M program, many of the park's key resources, such as freshwater wetlands and aquatic systems, will go without monitoring and assessment due to lack of funds.

- Additional ethnographic research on the island would result in a more thorough understanding of the park's history, and it would contribute to a comprehensive interpretation of cultural resources. Currently, most museum objects and exhibits address just one group of people, the Carnegie family. The history of African Americans and American Indians should also be conveyed to park visitors.
- More and more people are moving near Cumberland Island National Seashore, spurring developments that include large waterfront homes and marinas, built directly west of the park. Development brings new sources of air, water, and noise pollution, as well as an increased likelihood of disturbing wildlife. The significant bird populations that forage, roost, and/or nest on the island's southern tip may be disturbed by an increase in boat landings and visitation to that area. In addition, endangered sea turtles and manatees that travel the waters between the island and the mainland will be at greater risk of being hit by vessels. Greater boat traffic may also lead to an increase in uncontrolled landings on the island's western shoreline, which could adversely affect archaeological sites and other resources, and narrow tidal creeks could be negatively affected by greater use. Increased noise pollution from boat traffic could have negative impacts on both terrestrial and marine animals at the park.



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- Additional plans and research are needed to address resource management issues, including a horse management plan, a fire management plan that incorporates fire use and prescribed fire (current plan is for full suppression), a wilderness plan, a non-native plant management plan, a south end management plan, a Plum Orchard management plan (covering maintenance, visitation, and interpretation), inventories and reports for Stafford and High Point-Half Moon Bluff Historic Districts, and a scope of collections statement.

As the surrounding area's population grows, more visitors are arriving on Cumberland Island via private watercraft. Increased visitation and boat landings increase the likelihood of disturbing wildlife, including several federally and state-listed rare species.

THE CUMBERLAND ISLAND ASSESSMENT

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Cumberland Island National Seashore



A boardwalk leads visitors into salt marsh habitat at Cumberland Island National Seashore, one of the park's 22 distinct habitats and ecosystems featuring a wide variety of plant and animal species.

NATURAL RESOURCES—QUALITY HABITAT PERSISTS DESPITE ECOSYSTEM ALTERATIONS

NPCA's Center for State of the Parks assessment rated the current overall condition of natural resources at Cumberland Island National Seashore a "fair" score of 74 out of 100. Existing conditions are the product of historic uses before the park was created, as well as human

activities that continue to affect park resources. The park struggles to address ecosystem damage caused by feral horses and hogs, while development outside the park could bring additional threats in the form of increased boat traffic, visitation, and pollution. The jetty on the south end of the island, dredging, and boat wakes—including those from large vessels—affect marine and coastal communities. Additional information on the status of the park's natural

resources is needed to achieve a more comprehensive understanding of resource conditions and to guide management activities.

PARK HABITATS—PARK PROTECTS DIVERSE ECOSYSTEMS

Cumberland Island National Seashore was preserved primarily for the valuable natural resources that abound within and around Cumberland Island. The park contains at least 22 different habitats and ecosystems, ranging from swampy salt marsh to forested upland. Extensive historic land use activities have significantly altered many of these ecosystems, which have begun to recover since the park was established. In terms of total area, salt marshes cover about 34 percent of the park, followed by oak-pine and oak-palmetto forests at 16 and 13 percent, respectively. These park habitats are particularly important because salt marshes and maritime oak forests are becoming increasingly rare elsewhere as development on other barrier islands and along the mainland Atlantic coast continues. These losses are of concern because these areas provide important habitat for a wide array of wildlife.

Cumberland Island also contains a number of freshwater wetlands that are home to a variety of wading birds, mammals, and amphibians. The wetlands in the interior of the island continue to be threatened by the presence of causeways and other manmade features, which have blocked, filled, channelized, diverted, and/or otherwise altered those systems. Sand dunes on the island, constantly being shaped by the forces of wind and water, are another important habitat. These dunes are critical for animal species of management concern, such as shorebirds and nesting sea turtles. The absence of stabilizing vegetation and shell material is allowing dunes in some areas to grow abnormally large and to move inland, which threatens the future of adjacent habitats.

PAST AND PRESENT LAND USE—PARK CONTENDS WITH HISTORIC AND CONTEMPORARY ISSUES

Natural forces such as wind and waves have long shaped Cumberland. Humans have also played a role in shaping the barrier island and its habitats. Various groups of American Indians, including the Timucuan people, began using island resources about 4,000 years ago. Though the untrained eyes of today's visitors do not easily discern evidence of these peoples' activities, it exists in the form of archaeological sites around the island.

Dramatic changes came to Cumberland Island with the arrival of the Spanish in the mid-16th century. They established various settlements on the island, including the missions of San Pedro de Mocama and San Pedro y San Pablo de Porturibo. They brought horses, hogs, and other livestock to the island, used natural resources for sustenance and building materials, and cleared land for agriculture

Salt marsh covers about 34 percent of the park. Protecting these areas is particularly important as similar habitat is being lost to development along the Atlantic coast of the United States.



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and structures. The Spanish and the British spent the 17th century fighting one another for control in the region. Eventually the British gained control and constructed two forts on Cumberland Island.

After the Revolutionary War, American settlers established plantations and plowed more than half of the island for the cultivation of rice, indigo, fruits, and sea island cotton (*Gossypium barbadense*), a species of cotton that originated in Peru. In addition to growing crops, they harvested live oaks (*Quercus* spp.) to supply lumber for everything from ship masts to shingles. They brought cattle, horses, and hogs to the island and raised them as livestock. Agricultural production on the island peaked right before the Civil War, and by that time about two-thirds of the island had been cleared of its native vegetation.

After the Civil War, many island residents left, never to return. Former slaves settled on the northern end of the island where they lived

as subsistence farmers and eventually worked for the hotel and estates that were built after the war. The era of large-scale agricultural production had come to an end, but northern aristocrats would soon occupy these former plantations and begin to develop their family estates. Included on these compounds were large mansions, outbuildings to house staff and store goods, elaborate ornamental gardens, and highly manicured landscapes. Two families, the Carnegies and Candler, eventually came to control the vast majority of Cumberland Island and would continue to do so until turning over control to the National Park Service. Heirs of these families and others still maintain holdings and/or residences on portions of the island either through fee-simple ownership or reserved estate agreements with the Park Service. Uses for these inholdings range from a full-service inn to vacation homes and rentals to permanent residences.

Human land use has altered the landscape of

The island's expansive live oak trees were harvested by American settlers following the Revolutionary War to provide lumber for building materials and ship masts, among many other uses.



Cumberland Island in various ways over time. The most significant changes to the island's landscapes came during the plantation era of the 19th century. Since the creation of Cumberland Island National Seashore, agricultural and pasturelands have diminished to the point that only three open pasture areas remain, and overall vegetative cover is increasing. Forests at the seashore are recovering in most areas through natural succession.

The hydrology of the island has also been altered through the years. Plantation managers channelized streams and redirected flow for agriculture. Early residents constructed three freshwater ponds on the island as landscape features. More recently, the closure of the Durango paper mill in neighboring St. Marys, Georgia, has had an unintended impact on water resources and habitat within the park. When it was operating, the paper mill drew millions of gallons of water per day from the deep artesian aquifer that underlies the area. Since the plant no longer operates, water flow has been renewed at eight artesian wells within the park, which were dug long before the park was created and never capped properly. This spillage has created habitat that the park must decide how to manage.

Today, Cumberland Island is essentially undeveloped, containing only buildings associated with previous settlements or residential structures on fee-simple and reserved parcels. To handle park operations and housing needs the Park Service uses existing historic and modern structures that were in place upon acquisition. Therefore, while habitat fragmentation does exist at Cumberland Island, especially surrounding roads that cut through wetlands, it does not seriously threaten the functioning of park ecosystems. As the Park Service continues to acquire parcels of land when retained-rights leases expire, habitat fragmentation will be further reduced.



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NATIVE SPECIES—QUALITY HABITAT CRUCIAL FOR THE SURVIVAL OF NATIVE SPECIES

Cumberland Island National Seashore provides habitat for 32 species of mammal, including two federally listed endangered marine mammals—the North Atlantic right whale (*Eubalaena glacialis*) and the Florida manatee (*Trichechus manatus latirostris*). The area surrounding Cumberland Island is especially important for right whales because it is a known breeding and calving ground, and the National Marine Fisheries Service has designated it as critical habitat.

Terrestrial mammals include white-tailed deer (*Odocoileus virginianus*), river otter (*Lutra canadensis*), mink (*Mustela vison*), and several species of shrews, moles, and bats. Historically, the island supported black bears (*Ursus americanus*), bobcats (*Lynx rufus*), gray foxes (*Urocyon cinereoargenteus*), and southeastern pocket gophers (*Geomys pinetis*), until Euro-American

Loggerhead sea turtles, a federally listed threatened species, nest on Cumberland Island's sandy beaches.

Brilliantly colored male painted buntings migrate to Cumberland Island each year to find a mate, breed, nest, and raise their young. The variety of habitats on the island support more than 320 species of resident and migratory birds.



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settlers caused their decline and ultimate extirpation from the island through hunting and habitat destruction. Though the park considered reintroducing bears, the idea was rejected because of concerns about interactions with humans in the small island setting. Bobcats have been reintroduced, however, with efforts in the early 1970s and again in the late 1980s. While no recent density studies have been conducted, bobcat sightings and signs (tracks and scat) are common across the entire island.

There are 17 species of amphibian and 42 species of reptile found within and around the borders of the seashore. The loggerhead sea turtle (*Caretta caretta*), a federally listed threatened species, nests on the island's ocean beach. Cumberland supports the largest nesting population of loggerhead sea turtles on the Georgia coast, averaging more than 200 nests each year. In addition, green sea turtles (*Chelonia mydas*) and leatherback sea turtles (*Dermochelys coriacea*) have been documented nesting on Cumberland, and Kemp's ridley (*Lepidochelys kempii*) and hawksbill (*Eretmochelys imbricata*) sea turtles annually migrate through the area (all four species are listed under the Endangered Species Act).

The park is part of the Georgia Sea Turtle Cooperative, a group consisting of state, federal, and private interests dedicated to the conservation of sea turtles. Cumberland Island conducts a sea turtle nest monitoring and protection program annually, which runs from May through October. The park uses interns from the Student Conservation Association to conduct the program. Daily surveys identify new nests and document their location. Nests are covered with wire screen to prevent predation by hogs and raccoons. The interns monitor the nests until the eggs hatch and maintain a database on a variety of variables, including clutch size, incubation periods, and hatching success. Historically the park's Resource Management Division secured funding for this work from outside sources due to a lack of available funding from within. A recent increase in the park's base budget has helped ensure that the sea turtle program will receive annual funding.

The island also has several gopher tortoise (*Gopherus polyphemus*) colonies. This species is state listed as endangered and is protected in Georgia. This species' presence on Cumberland is believed to be the result of past human introduction.

Cumberland Island hosts more than 320 bird species, including three that are protected under the Endangered Species Act— piping plover (*Charadrius melodus*), Kirtland's warbler (*Dendroica kirtlandii*), and wood stork (*Mycteria americana*)—and eight state-listed species—bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), gull-billed tern (*Sterna nilotica*), Wilson's plover (*Charadrius wilsonia*), least tern (*Sterna antillarum*), American oystercatcher (*Haematopus palliatus*), black skimmer (*Rynchops niger*), and red knot (*Calidris canutus*). The abundant salt marsh and freshwater habitats provide valuable foraging, nesting, and loafing habitat for numerous shorebird and wading bird species. The island's interior forest, field, and scrub habitats support a variety of resident birds and neotropical migrants.

NON-NATIVE SPECIES—FERAL HORSES AND HOGS DAMAGE SENSITIVE ECOSYSTEMS

Humans have introduced non-native species to Cumberland Island both deliberately (in the case of livestock and ornamental plants) and unintentionally (in the case of insect pests and diseases). Without any natural predators, these non-native species can thrive in their new environment and significantly damage the area's natural resources. Non-native plant species often gain an advantage when non-native and feral animals are present. They can become entrenched in disturbed areas, to the point where native plant species can no longer survive.

Over the past two centuries, settlers introduced non-native animals such as horses (*Equus caballus*) and hogs (*Sus scrofa*) to Cumberland Island. These species became feral and present a major threat to the health of island ecosystems. Current estimates indicate there are approximately 200 horses on Cumberland Island. Evaluation of annual horse census data suggests that the population is relatively stable, likely a

result of the herd reaching the carrying capacity of the island's habitat. However, the current density of horses is high enough to harm the park's natural resources by overgrazing salt marsh and dune-stabilizing grasses, degrading water quality with waste and sedimentation caused by movement along shorelines, and destroying shorebird nests. To protect island ecosystems, the park needs to address the problem of feral horses. Solutions may include removal of the entire herd from the island; reducing the number of horses with contraceptive methods; or establishing a small captive herd confined to the south end of the island where the majority of visitors would be able to view them.

Feral hogs contribute to many of the same problems as feral horses (i.e., overgrazing, erosion, water quality degradation) while also disturbing soil communities through their rooting behavior and competing with native wildlife for a variety of food sources. They pose a threat to federally protected loggerhead sea turtles that nest on Cumberland Island's extensive beach. Hogs are capable of learning to root



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Previous landowners released horses on Cumberland Island. The horses became feral and now roam the island, posing a threat to the park's cultural and natural resources. Some of their impacts include overgrazing native plant species and degrading water quality.

Feral hogs are another introduced non-native species that are negatively affecting Cumberland Island's ecosystems and native wildlife, particularly the threatened loggerhead sea turtles. The park has a feral hog management plan in place and is working to reduce their population on the island.



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up turtle nests and consume eggs. The park's Resource Management Division staff conducts control measures throughout the year, primarily using hunting and trapping. While the park has a goal of eradicating feral hogs from the island, this is difficult to achieve given the high reproductive capacity of this species and the dense vegetation present over a large portion of the island. Park resource managers estimate there are between 200 and 300 hogs on the island at any given time.

Along with hogs and horses, past residents of Cumberland Island introduced plant species as both decoration and crops. These plant species include tung oil trees (*Aleurites fordii*), Chinese tallow (*Triadica sebifera*), giant reed (*Arundo donax*), oleander (*Nerium oleander*), bamboos, and a variety of citrus trees. Of the 620 species of vascular plants found on the island, 72 are non-native. Non-native plants compete with native plants for space and nutrients. Some of the non-native species introduced by island resi-

dents can be invasive (e.g., bamboo), and they have escaped from their original cultural settings into native habitat. The park needs to decide which plants to eradicate as a threat to native habitat and which ones to maintain as part of the cultural landscape.

Currently, the park's Resource Management Division has staff experienced in exotic plant management. Additional help from Student Conservation Association (SCA) interns and the Park Service's exotic plant management team based in Congaree National Park in South Carolina has resulted in significant reduction of non-native species in certain critical areas. Control efforts are ongoing on Cumberland. The park has secured a seasonal SCA intern to assist with exotic plant control for 2009 through 2011. In addition to this, the Park Service has requested funds to continue support of the exotic plant management team.

The redbay ambrosia beetle (*Xyleborus glabratus*), an Asian beetle that was first found in the

United States in 2002, is now found on Cumberland Island. It is believed the beetle entered the country in solid-wood packing materials, such as crates and pallets, brought into shipping ports in the Savannah, Georgia, and Charleston, South Carolina, areas. The beetle transmits a fungus (*Ophiostoma* sp.) that infects redbay trees (*Persea borbonia*), causing them to wilt and die. The beetle is responsible for significant redbay mortality throughout the island and poses a danger to this native species. A U.S. Forest Service plant health scientist has monitored the progression of the redbay decline on Cumberland for the past two years. Several fungicides have been tested during this time. However, there are currently no proven treatments for prevention or control of the redbay ambrosia beetle and its associated pathogen. In an effort to save redbay trees for the future, the park has collected seeds, which are stored at a U.S. Department of Agriculture seed bank. These seeds can be stored for a long time and replanted at the park if controls for the beetle and fungus are discovered.

AIR AND WATER QUALITY—LIMITED MONITORING MEANS UNANSWERED QUESTIONS

There are no air-quality monitoring stations within the boundaries of Cumberland Island National Seashore, and no on-site monitoring has been done on any scale. The closest monitoring stations are in Chatham and Glynn Counties in Georgia and Duval and Nassau Counties in Florida. Data from these stations indicate that ozone, sulfur dioxide, and particulate matter are of concern regionally. Nearby pollution sources include the urban areas of Brunswick, Georgia, and Jacksonville, Florida, as well as the Interstate-95 corridor, and two paper mills located approximately one mile south of the park in Fernandina Beach, Florida. Any effects these pollution sources might be having on the park's air quality are currently unknown. To achieve an accurate understanding of air quality

within Cumberland Island National Seashore, monitoring is needed on the island, with a permanent station being the best solution.

Water quality appears to be fair at the park, though there are several concerns. Pollution sources in the vicinity of the park include waste facilities, industrial sites, and continuing commercial and residential development. Water-quality issues at the park include low pH in the inland freshwater ponds, low dissolved oxygen and elevated mercury levels in Cumberland Sound, and organic matter in groundwater. Low pH in freshwater ponds and lakes is likely the result of acid rain deposition. The origin of the dissolved oxygen problem is uncertain. A low level of dissolved oxygen can be harmful to both plants and animals and can alter the species composition of the marine environment. Dissolved oxygen levels are being continuously monitored at two park sites as part of the I&M Network's water-quality program.

Agricultural runoff and Superfund sites on the mainland, and possibly runoff from the island itself, contribute to high levels of mercury in the waters surrounding the island. The Satilla River and the St. Marys River, both of which drain into Cumberland Sound, contain segments where mercury is a parameter of concern. In addition, high mercury concentrations have been found in fish and shellfish tissues collected in lower Cumberland Sound.

On the island, feral horses and hogs, as well as aging septic systems, contribute to organic matter in the groundwater, posing a threat to drinking water sources. The park monitors water quality at each of the wells it maintains to ensure compliance with regulatory standards. Freshwater supplies on the island also may be compromised by drawdown of the deep Floridan aquifer, which underlies the area. Water demands by urban centers in the area are taxing the aquifer, and there is evidence of saltwater intrusion within the surficial aquifer at some locations to the north in the Brunswick area.



The redbay ambrosia beetle, an invasive non-native species from Asia, is responsible for transmitting a fungus that has killed a significant number of the park's redbay trees, as shown here. With no known treatment for the fungus, park staff have begun to save seeds and are storing them for the future.

DEVELOPMENT, ACCRETION, EROSION, AND CLIMATE CHANGE AFFECT CUMBERLAND ISLAND

Development of nearby lands, increased shoreline erosion in some areas and accretion in others, and changes brought on by global climate change are all serious issues for Cumberland Island National Seashore's ecosystems.

Development

The population of Camden County, Georgia, where the park is located, is exploding and this pressure has spurred new housing developments, including large waterfront homes built directly across Cumberland Sound from the park. The 2000 census counted 43,664 people living in the county; a dramatic increase from 1980 when just 13,371 called Camden County home. Several important development projects that could have significant impacts to Cumberland Island National Seashore have either begun or are in the planning phases. One proposed development, Cumberland Harbour, is a gated community located directly across from the park. Plans for the approximately 1,000-acre development include more than 1,000 homes, clubhouses, private docks, and two marinas that would have a combined capacity of more than 700 boats. Homes, a few private docks, and infrastructure have been built in the past few years. The developer must finalize permits with the Georgia Department of Natural Resources and the U.S. Army Corps of Engineers. The sharp downturn in the housing market has placed doubt on some of the developer's plans.

If the Cumberland Harbour project proceeds according to existing plans, this development will almost certainly bring increased recreational boat traffic and sources of pollution to the waters around

Cumberland Island National Seashore. Many of the other developments planned or proposed for the area also have plans for marinas or other boating facilities, which will likely lead to an increase in uncontrolled park visitation, as boaters search for recreational areas on Cumberland's shores and in tidal streams. The increase in boats and visitors will raise the likelihood of disturbance to nesting seabirds and sea turtles. In addition, sea turtles, manatees, and whales that travel the waters around the island will be at greater risk of being hit by boats.

The best place for private boats to land is at the southern tip of the island, which is also an important nesting, foraging, and roosting area for birds. Consequently, much of the current recreational boater impact is concentrated there and an increase in traffic and visitation could adversely affect these birds even more. American oystercatchers, least terns, and Wilson's plovers, all state-listed species, are annual nesters on the south-end beach. Resource managers post signs on the south-end beach to keep visitors out of critical shorebird areas and install additional signage and barriers where nests of American oystercatchers and least terns are located.

In addition to these wildlife-related concerns about development, there are three rivers on the mainland that drain into the waters surrounding Cumberland Island, and as regional development increases, those rivers will deliver greater amounts of contaminants to the waters surrounding the park, affecting other water quality measures such as temperature and turbidity.

Accretion

A 2.5-mile long jetty located at the southern end of Cumberland Island is disrupting the natural movement of sand, which has resulted in the buildup of sand in the area. The jetty was constructed to help maintain the navigational channel through St. Marys Inlet, which separates Cumberland from Amelia Island in Florida. A similar jetty is located on the north end of Amelia. The jetties disrupt the longshore and channel flow of sediments, resulting in an unnatural buildup of sand on the southern tip of Cumberland Island. This has resulted in the creation of more than 500 acres of new land on the ocean side of Cumberland Island.

Erosion

Erosion is a significant problem on Cumberland Island's western shoreline, with an overall rate of approximately 2.6 feet per year. This erosion not only carries away valuable marsh and uplands, but also destroys mature vegetation, established habitat, and archaeological sites. It also threatens historic structures and island infrastructure.

The sources for the erosion, whether they are natural or anthropogenic, are not completely understood. There are manmade conditions in place that have the potential to contribute to the erosion problem. The Cumberland River and Cumberland Sound, which constitute the western boundary of the park, are part of the Atlantic Intracoastal (IC) Waterway. This waterway is a main commercial and recreational water route that runs the entire length of the Atlantic seaboard. On the south end, the navigational channel for the Kings Bay Naval Submarine Base amplifies the depth and width of the IC through Cumberland Sound. Dredging to maintain these channels and the wakes created by the transiting vessels have the potential to cause shoreline erosion. Wakes from smaller

craft in tidal streams, such as the Brickhill River, may also contribute to the problem. In some locations bulkheads and hardened shorelines have been erected to slow erosion and protect structures. However, these additions only transfer and potentially magnify the erosion downstream. Elsewhere, natural components that may deter erosion may have been removed from the system, including oyster beds and intertidal grasses that absorb the force of waves and tides. It is known that the island's feral horses graze on these grasses, reducing them to stubble.

Climate Change

Global climate change could cause dramatic changes to the natural resources at Cumberland Island in the future. Rising sea levels over the next century may completely inundate the marsh that surrounds the island, reducing its overall area significantly. A host of resident and migratory mammal and bird species, including some that are federally listed as threatened or endangered, uses the park's marshes. Rising sea levels will also increase the possibility of saltwater intrusion into area aquifers that provide freshwater on the island. Saltwater has already been found in the surface aquifer on the southern end of the island. Nineteen miles of Cumberland's seashore have been assessed for vulnerability to sea-level rise. Half of this area was determined to be either highly or very highly vulnerable to sea-level rise, and some resources would likely be more vulnerable in some areas rather than in others. Negative impacts could include inundation, flooding, erosion, wave damage, storm damage, and higher tidal effects.

Erosion, which has the potential to be exacerbated by human activities such as boat traffic and dredging, and the overgrazing of vegetation by feral animals, threatens Cumberland Island's western shoreline and the vegetation growing there.





The National Park Service has been unable to fully protect every historic structure on the island and must focus its limited resources on certain structures. The Recreation House at Dungeness slowly decayed and collapsed, as shown here.

CULTURAL RESOURCES— PARK PRESERVES AND INTERPRETS ISLAND'S RICH HISTORY

Cumberland Island National Seashore contains an amazing array of cultural and historical resources. The park preserves a long history of human use dating back some 4,000 years, when the Timucuan American Indians were present on Cumberland Island. The island later hosted Europeans from Spain and England. From the late 18th century onward, Euro-American settlers developed plantations and constructed mansions, some of which still stand today. The island is also home to the First African Baptist

Church, established on the north end in 1893 and later rebuilt in the 1930s.

Cumberland scored 55 out of 100 for overall cultural resource conditions, which indicates the park's cultural resources are in "poor" condition. Properly caring for cultural resources is a challenge for park staff, who are short-handed, underfunded, and lack some of the proper management documents needed to guide their work.

HISTORY—ISLAND HAS IMPORTANT
PREHISTORIC AND HISTORIC STORIES
TO TELL

Cumberland Island National Seashore preserves a rich and diverse history that has been documented through several studies, most of which were completed during the 1970s, shortly after the park's establishment. An archaeological survey identified 17 prehistoric sites and two prehistoric zones of significance. An extensive historic resource study was completed at about the same time and detailed the periods of Spanish and English occupations, the island in the American Revolution, the Federal and Antebellum periods, the Civil War and Reconstruction era, the Carnegie period, lighthouses, cemeteries, and the main road. Information from the historic resource study is still relevant and is used in museum exhibits and in management planning, but updates to the study are needed to incorporate recent decades. Other research done in the 1970s includes archaeological research on slave cabins

referred to as the Stafford Chimneys and reports on the Plum Orchard Mansion and the Tabby House and Recreation House at Dungeness.

More recent research at the park includes a book by Lary M. Dilsaver titled *Cumberland Island National Seashore: A History of Conservation Conflict*. Published in 2004, this work acts as an administrative history of Cumberland Island National Seashore. Additional research on topics such as American Indian history and African-American history would round out understandings of the people who helped shape Cumberland Island. Currently, much of the park's interpretation focuses on the large estates that were established on the island, the remnants of which still dominate the island's cultural landscapes.

The park does not have a historian on staff to complete new research. The museum curator is trained in historical research, but other duties consume all available time. A staff historian would be an asset to the park.



Located within the Dungeness Historic District, the Tabby House originally served as a caretaker's residence. The house was named after its construction material. Tabby was an early predecessor to cement, made by mixing lime, sand, and sea shells.

MOLLI SONGCO

HISTORIC STRUCTURES—PARK'S PREEMINENT STRUCTURES REQUIRE CONSTANT MAINTENANCE

Cumberland Island's historic landscapes and structures provide tangible links to integral periods of the island's history, allowing visitors to better understand past eras. Within the park, historic structures are primarily located throughout four districts listed in the National Register of Historic Places: Dungeness, Plum Orchard, Stafford, and High Point-Half Moon Bluff. Maintaining historic structures at the park has always been a challenge, and since 1972, this maintenance has been the responsibility of the Park Service. Deciding which structures required what level of preservation and then allocating the limited funding available to carry out this work proved to be the most difficult issue for early park managers. The park's 1984 general management plan provided some guidance, but acquiring adequate funds to support work on historic structures continues to be sporadic.

In general, all of the historic structures at Cumberland Island National Seashore are in need of some form of preservation, stabilization, rehabilitation, or restoration. The Park Service is able to perform regular maintenance on about 27 of the more than 150 structures on a weekly basis, while more in-depth assessments of structures are performed annually. Threats to historic structures include termites, carpenter bees, feral horses, the salt air, and the elements. Termites eat away the wood of the structures, weakening their structural integrity. A group from the University of Georgia examines buildings every three months with heat sensors and hearing devices to determine if termites are present; treatments are applied as necessary. Carpenter bees nest in the eaves, wood siding, and other locations on structures. Feral horses sometimes rub against the buildings, causing damage. Sun, wind, moisture, vegetation, and precipitation also take a toll on structures.

Inadequate numbers of staff and a lack of

management documents and plans hinder the care of historic structures at Cumberland Island National Seashore. The park does not have a historic preservation specialist, nor does it have enough craftsmen and workers to attend to the structural needs of the buildings. The demand for funds and labor to implement plans for restoration and rehabilitation, in addition to general everyday maintenance, greatly outstrips available monies. Without proper funding or adequate staffing, structures at Cumberland Island may deteriorate beyond salvation. Despite these challenges, the park recently completed two large projects—the restoration and stabilization of the interior and exterior of the Plum Orchard Mansion and the stabilization of the Dungeness mansion ruins (to halt further deterioration).

Dungeness Historic District. The Dungeness Historic District has the richest and most complex assortment of cultural and historical resources within the park, including historic structures, archaeological sites, landscape features, museum collections, and ethnographic resources. It is also the most visited and best-interpreted district. The boundaries of this historic district encompass about 250 acres of southern Cumberland Island. The land now within this district was originally purchased by Revolutionary War hero Nathanael Greene and developed as a plantation in the 1780s. In 1803, Greene's wife Catherine built a four-story mansion on the plantation, naming it Dungeness after the hunting lodge built on the island by James Oglethorpe in the early 1700s. During the Civil War, the mansion fell into disrepair and burned down sometime after April 1866. In 1881, Thomas Morrison Carnegie, brother and partner of steel magnate Andrew Carnegie, bought the plantation at Dungeness for his wife Lucy and their family. They built their mansion on top of the foundation of the original Dungeness mansion and kept the name. Lucy eventually acquired 90 percent of Cumberland Island, creating family



estates for four of her children.

In 1959, the Carnegies' mansion met the same fate as the original Dungeness mansion—it burned down. The remains of the building and the surrounding land remained in the possession of the Carnegie family until they were transferred to the National Park Foundation in 1970, then to the National Park Service in 1972. Today, the ruins of the Dungeness mansion are the most prominent of the 25 structures within the Dungeness Historic District. The Park Service recently completed a major stabilization project for the ruins, which will hopefully keep the structure's deterioration in check for years to come.

Among the district's other structures are a dock house, living quarters, a kitchen and dining hall, workshops, an ice house, and a carriage house. The Park Service has rehabilitated many of the buildings to support park

operations and for interpretation. Three structures within the Dungeness Historic District are open to the public—the Ice House, the Tabby House, and the Laundry Building. The Ice House, which was used to store ice that was brought from the north, contains a small exhibit space that provides general information about the history of the island. The building itself is not interpreted in the exhibit. The Tabby House, which was once used as a caretaker's house and later as an office, includes historic furnishings from the post-Civil War era. The house is open on a very limited basis and park staff must accompany visitors to ensure protection of the interior and furnishings. Part of the Laundry Building has been adapted for public restrooms. The rest contains a few pieces of old laundry equipment.

The Black Barracks is located in the service area of the Dungeness Historic District and once

Pictured here are the gutted remains of Dungeness, a mansion built by the Carnegie family in the 1880s. A fire destroyed the mansion in 1959. Today Dungeness is managed by the National Park Service and is one of Cumberland Island's most visited cultural resources.

housed African Americans who worked at Dungeness. Currently, the building is used for meetings and housing. In the future, the Park Service may use the building to house exhibits interpreting African-American history at Cumberland Island; an associated ethnographic study that would inform interpretive efforts is slated for funding in fiscal year 2009.

Structures within the Dungeness Historic District that are not used by park staff or the public are maintained as needs and funds arise, though sometimes work cannot be done in time to save structures. During the 1980s and 1990s, the Recreation House within the district continued its decades-long slow decay and eventually collapsed. Other structures in this district are being overgrown by vegetation and suffer with rot from exposure to moisture and the elements. Since permanent funding is limited, the Park Service is working to determine the best method to document these structures, remove them before they become dangerous to visitors, and interpret what remains as part of the historic district. Staff have developed a plan, which will be funded in 2009, to salvage architectural elements from the most vulnera-

ble structures and add them to the museum collection.

Plum Orchard Historic District. The Plum Orchard Historic District is located seven miles north of Dungeness on the west side of Cumberland Island. It includes 16 historic structures, though just five of them are under the management of the Park Service. The rest are located on the portion of the district that is under a reserved estate. Seven of the 16 structures are in “good” condition, while the other nine are in “fair” or “poor” condition.

The premiere attraction within the Plum Orchard Historic District is the Plum Orchard Mansion, a Georgian Revival-style mansion constructed in 1898 for Lucy Carnegie’s son, George, and his wife, Margaret Thaw. Today, the Park Service owns and manages the mansion. Plum Orchard is the finest architectural structure on the island and includes a number of original furnishings, including Tiffany lamps. Finding the funds to provide long-term care for this and other structures in the district is a serious challenge. Accessing the structures can also be a challenge because the site is bordered by wilderness on three sides. As a result of

Plum Orchard Mansion, a stunning example of Georgian Revival architecture, was built for George Carnegie and Margaret Thaw in 1898. The Park Service has spent a great deal of time over the last decade stabilizing and restoring the mansion.



ANN FROSCHAUER



Portions of the interior of Plum Orchard Mansion have also been restored, but at current staffing levels the park is unable to fully care for the structure.

funding shortfalls and a lack of maintenance, the Plum Orchard carriage house slowly collapsed over the years. The Park Service has developed plans to remove what is left of the structure and preserve the foundation.

Until recently, major problems threatened the integrity of the Plum Orchard Mansion, necessitating extensive renovation of the structure's exterior and interior. In 1999, the Park Service began the process of stabilizing and restoring the mansion. In 2004, an architectural firm completed an extensive historic structure report for the mansion, focusing on structural and safety issues. The ongoing restoration projects for Plum Orchard Mansion have been the largest at Cumberland Island to date. The most recent stabilization and restoration work was completed in 2008, and focused on the building's interior.

Restoration work to Plum Orchard has included repairing and stabilizing exterior walls, painting, and installing a new roof. In addition,

portions of the mansion were reinforced with steel or timbers, the walls and floors were repaired, the original wallpaper was preserved, and lead paint and asbestos were removed. Fire suppression and security systems were also installed. Beyond the restoration efforts, however, there are no regular maintenance staff devoted to the mansion's upkeep. Resident volunteers help maintain the structures and grounds, and they assist with informal tours.

Plum Orchard Mansion is currently open for formal tours just two days each month due to staffing and transportation issues. Under the existing program, the concessioner ferry transports visitors to Plum Orchard. However, with implementation of the park's transportation management plan following its finalization in spring of 2009, Plum Orchard will become one of the primary features on vehicle tours of the island's north end.

High Point-Half Moon Bluff Historic District. The High Point-Half Moon Bluff

The First African Baptist Church was the centerpiece of the island's Settlement community, serving as a church, schoolhouse, and community center. African Americans moved to the Settlement to work in the hotels that operated on the island in the late 19th and early 20th centuries.



MOLLI SONGCO

Historic District is located on the north end of Cumberland Island, comprising more than 700 acres that are remote and rarely visited by the public. The district contains several important prehistoric and historic sites, including archaeological sites around Terrapin Point that represent aboriginal occupation as well as colonial endeavors, the former High Point hotel complex, and The Settlement at Half Moon Bluff. Several tracts in the area are under reserved estate agreements, including two that contain historic structures. The Park Service rarely accesses these reserved estates directly, and the reserved estate holders handle maintenance of the structures.

The High Point area encompasses a 38-acre compound that is under a reserved estate agree-

ment with descendants of the Candler family. The hotel and caretaker's house were built in 1883 and are on the Park Service's List of Classified Structures (LCS), a database of structures in which the Park Service has or plans to acquire legal interest. Both are listed in "good" condition. Other structures in the compound are not included on the LCS and have been modified over the years by the estate holders.

The Half Moon Bluff area of the historic district, more commonly referred to as The Settlement, consists of three structures on the LCS—two houses and a church. The Park Service manages two of these structures—the Alberty House and the First African Baptist Church. The third structure, the Trimmings House, is located on a reserved estate. The

Alberty House received both exterior and interior treatment over the past several years and is in “good” condition. It has been adapted for possible use as a visitor contact station for tours to the north end of the island. The one-room Baptist church is in “fair” condition.

The Settlement area is the remnant of an African-American settlement that was established around 1892. Many of the black community members who lived there worked at the High Point Hotel. Community life was centered around the First African Baptist Church, which also functioned as a schoolhouse and community center. Though park staff are not sure if furnishings found in the church are historic, they do know that certain items are missing based upon historic photographs. These include a lamp that hung over the knave, tables, pews, candleholders, a bell post and bell, and the original cornerstone of the church.

Stafford Historic District. The Stafford Historic District represents remnants of both the plantation and Carnegie eras on Cumberland Island. The district includes 14 items on the LCS—eight structures and six landscape features. All of the structures are located on a lifetime-reserved estate. The Park Service does not currently manage any of these structures directly, and park staff do not perform routine maintenance on them. In some cases, the Park Service has been able to intervene to preserve threatened resources or to conduct archaeological research. For example, the Park Service has conducted structural preservation and stabilization assessments of the Stafford Chimneys, which remain from the Stafford Plantation’s enslaved African-American community. Funding is in place to stabilize the chimneys, probably in fiscal year 2009. The Park Service has also conducted cyclic maintenance on Stafford Mansion.

ARCHAEOLOGY—STAFFING SHORTAGES PREVENT FURTHER EXPLORATION

Cumberland Island National Seashore is home to a wealth of archaeological resources that include prehistoric shell middens, mounds, and shell scatter, as well as historic missions, forts, slave cabins, other structures and complexes, roads, ponds, and jetties (see “Archaeological Resources Provide Clues to the Past” on page 34). So far, 59 archaeological sites have been identified and evaluated within the park. Based on the most recent documentation from 2005 and 2006, 47 of the sites are in “good” condition. Additional condition assessments are needed for the rest of the identified sites.

Most archaeological research in the park has been done on the western side of the island, where the majority of American Indian settlements were located. The interior of the island has not been surveyed and holds the potential to reveal additional archaeological resources. The park has submitted funding requests to complete more archaeological survey work. Future research may focus on locating sites that are known to have existed, including the Spanish mission of San Pedro de Mocama, built

Archaeologists sift through soils as they search for historic artifacts. Cumberland Island staff would like to conduct further surveys on the interior of the island, which has not been well studied.



NATIONAL PARK SERVICE

during the 1560s; the prehistoric Timucuan village of Tacatacuru; and Fort St. Andrews, which was built by the British in the 1740s to defend against the Spanish.

The park does not employ any archaeological staff and is unable to devote the necessary attention and research to archaeological resources. As funds become available, the park relies on assistance from the Park Service's Southeast Archeological Center to complete field research and store the majority of its archaeological objects (61,609 out of 97,608 items). The Southeast Archeological Center also developed an archaeological overview and assessment for the park.

The largest threat to archaeological resources on the island is back-barrier erosion. On the west side of the island, many areas are losing nearly three feet of shoreline to erosion each year, including untold archaeological artifacts. It is assumed that the major portion of significant features, such as the Spanish mission(s) and Fort St. Andrews, have been lost. Several attempts were launched in the past to mitigate

areas of shoreline erosion with shell breaks, but the buffers quickly failed in the face of wave and tidal action.

Another challenge facing park staff is that it is difficult to fully survey, document, research, monitor, and understand the scope of the park's archaeological resources and other cultural resources that are located on reserved estate tracts. For these tracts, reserved estate agreements have been established that allow private individuals to retain rights to and use of lands that they had interest in before creation of the national seashore. Each of these agreements is unique and allows for varying uses. During 2010 and 2011, six of the agreements that are under a 40-year time period will expire and the properties will come under full management of the Park Service. The remaining 12 are lifetime-reserved estates, some of which could conceivably last another 50 to 75 years. To access resources on any of the reserved estates, park staff must get permission and/or develop agreements with the reserved estate holders.

Archaeologists conduct field work within the Dungeness Historic District among some members of the island's feral horse population.



CULTURAL LANDSCAPES—EVIDENCE OF EXTENSIVE HUMAN HABITATION ON THE ISLAND STILL VISIBLE

Cultural landscapes tell the stories of how humans have shaped and been shaped by their surroundings. The lands within Cumberland Island National Seashore have long histories of human use. The cultural landscapes within the park include formal gardens, historic cotton fields, cemeteries, and community settlements. Unfortunately, many of these varied and unique landscape features are either in poor condition or no longer exist in their traditional forms. Restoration, rehabilitation, and interpretation of these cultural landscapes at the park can be difficult, in part, because the Park Service either does not own or does not have access to all lands on the island. It is likely that visitors do not understand or even recognize that cultural and historic landscapes are part of the park's resources. Tools that may help provide an understanding of the significance of these altered landscapes are period photographs. Copies of some of these photographs are in the park's archival collection.

In the Dungeness Historic District, the cultural landscape and its components are obscured, fragmented, or gone altogether. Much of the ornamental vegetation has been lost due to inattention, forest encroachment and succession, and the advancing age of the flora. Routine grounds maintenance from staff has not been able to overcome past neglect. Visitors also struggle to envision what the original landscape looked like because native and non-native vegetation quickly invades the landscape, forming a dense screen and cover. Roads and paths within the district have become obscured or in some cases realigned to accommodate modern-day use patterns. Feral horses and hogs have also altered the landscape by grazing on vegetation and digging up the lawn in search of food. In addition, landscape features such as fountains and garden walls have suffered the ravages of time and weather similar to what is seen with



historic structures. To address some of the issues in the Dungeness landscape, a cultural landscape report was completed in 2008. The park is also slated to receive funds over the next five years to conduct landscape restoration within the district.

The cultural landscape in the Plum Orchard Historic District suffers from the same problems as the Dungeness district and is further complicated by the reserved estate status for a large portion of the property. The National Park Service is therefore largely prevented from overseeing and conducting any kind of restoration or maintenance on these landscape features. The historic vegetation within this district is out of control or in decline, and its disappearance will strongly affect the integrity of the landscape. The park is scheduled to receive funding for a cultural landscape report of the Plum Orchard Historic District in fiscal year 2009. This report will determine the condition and significance of the Plum Orchard landscape.

The Stafford Historic District encompasses 250 acres. Although fewer than 50 acres within the district are held as private inholdings or reserved estates, those areas contain all of the major historic structures and many of the land-

Cumberland Island National Seashore's cultural landscapes include all the features of the grounds of the former estates: mansions, outbuildings, formal gardens, and the landscaping that was present throughout the sprawling grounds. Many of these features have deteriorated and are no longer visible. Pictured here is the partially restored pergola at Dungeness.

scape features. This district contains a large agricultural landscape, historically associated with Robert Stafford Jr. and, later, the Carnegie family. Robert Stafford Jr. was the proprietor of a large plantation, best known for the production of sea island cotton. The interpretation of the landscape is primarily focused on Stafford and his plantation. He owned a large number of slaves, whose presence is marked by the slave settlement, known today as the Stafford Chimneys.

A tabby wall surrounds the Stafford mansion. The present vegetation consists of green space in the front and the back of the house. More formal landscape features are still present in various conditions, including the remnants of a reflecting pool, a fountain, and walkways, all of which are associated with the Carnegie era. To the southeast of the mansion grounds is House Field, now commonly referred to as Stafford Field. It was at one time a cotton field and is now maintained by the park as an open, fallow field. The field is grazed by feral horses and also supports a grass runway for small airplanes. The site has several small shell mounds and the park hopes that future archaeological surveys of the mounds will help to determine their cultural significance.

In the High Point-Half Moon Bluff Historic District, all of the historic structures and landscape features within the High Point area are located on a reserved estate. High Point's historic landscape is largely unknown and has likely been altered over the years. The compound now consists of a large expanse of open lawns and fields accented by live oaks, palm trees, ornamental ponds, and sweeping vistas of the marsh. Elsewhere in the historic district, the cultural landscape of The Settlement is also undefined and most of its extent has been reclaimed by the island environment. The district also includes a cemetery, as well as the remains of the Cumberland Wharf and the corridor for the horse-drawn railway that supported the High Point complex. High Point-

Half Moon Bluff has been the least studied of the park's historic districts and is in need of baseline information such as a cultural landscape inventory and eventually a cultural landscape report.

The Main Road, which runs from Dungeness in the southern part of the island to the Cumberland Wharf on the north end, is listed in the National Register of Historic Places as a historic structure. Segments of the Main Road follow alignments present on 1802 maps, and its full north-south connection appears by 1870. The 13-mile long, single-lane dirt road has served as the primary transportation and communication link on the island since the early plantation years and continues to serve that purpose today. The Park Service continues to maintain the road in its same historic alignment and in the same general condition.

Staffing shortfalls and a lack of management documents are two of the greatest challenges to cultural landscape management at Cumberland Island. The park does not have a permanent landscape specialist on staff and relies on assistance from a historical landscape architect at the Park Service's Southeast Regional Office. Regional staff serve many parks, however, so the time that can be spent at each one is limited. Though the park may not need a full-time landscape specialist, the maintenance and resource management divisions would benefit from the addition of personnel to help maintain the historic landscapes.

Cumberland Island is also in need of cultural landscape documents to assist in the management of these resources. With the exception of the Dungeness Historic District, cultural landscape inventories and reports have not been undertaken at the park. Cultural landscape inventories enable the park to assess cultural landscapes and determine the priority of repair and restoration necessary for their future preservation. Without these documents, it is difficult to determine how to care for cultural landscapes or how to best interpret them for visitors.



MUSEUM COLLECTION AND ARCHIVES—NEW MUSEUM FACILITY GREATLY IMPROVES PROTECTION

Cumberland Island National Seashore has a museum collection comprised of archival, historic, archaeological, and biological artifacts and specimens. The park's entire collection, as reported in the fiscal year 2008 collections management report, includes nearly 204,000 objects. More than 139,000 of these artifacts and archival documents are located at the Southeast Archeological Center in Tallahassee, Florida. The remainder of the collection is housed at the park or to a lesser extent at outside repositories, particularly in the case of natural resource specimens.

Formerly housed on the island, the park's on-site museum and archival collections are

now largely stored at the mainland museum facility in downtown St. Marys. The facility better protects the park's museum collection, and it allows greater access to the artifacts for employees as well as researchers. There is large and appropriate storage space there, as well as the proper climate control, which is necessary to ensure that artifacts do not deteriorate. Although the building lacks central relative-humidity controls, humidifiers are placed throughout the storage areas to help control relative humidity. The design of the museum allows for both permanent and temporary exhibits, which enables the park to display a wide array of objects from the collection. Open space also permits the park to display larger pieces, such as several carriages that are now on view for visitors for the first time.

These period furniture pieces are just a few of the 204,000 items that are part of the park's museum collection.

While the park has been successful in obtaining funding to restore three antique horse-drawn carriages, several carriages remain in need of conservation treatment.



ANN FROSCHAUER

A portion of the park collection still remains on the island for a variety of reasons. For one, space limitations on the mainland mean that some materials must be stored on the second floor of the Dungeness carriage house. The park is seeking funds to rehabilitate that space and bring it up to more acceptable standards. Staff members are also in the process of organizing pieces so that more stable items, such as bottles, are housed in these mediocre conditions. Other pieces still on the island are part of the furnishings and displays at Plum Orchard, the Ice House Museum, and other locations. Other items, such as Carpenter Shop machinery, cannot physically be moved and remain in their original context.

Independent surveys have indicated that a large percentage of the park's in-house collection is in need of some kind of conservation treatment. The park has been successful in

obtaining assistance and funds to treat some items, most notably three of the horse-drawn carriages. The curator has also been able to work on other, smaller pieces, particularly during the move to the mainland and as items are put on display. However, the majority of items have received little or no attention.

About 80,000 items have not yet been cataloged. This problem is being resolved for the archival collection through three years of funding and assistance from an interdisciplinary team of curators from within the National Park Service. However, the backlog for other objects remains unresolved.

The park has a museum curator on staff who has excellent knowledge in various historical and preservation subjects. Hiring a museum or archival technician would allow the park to overcome the heavy backlog in both cataloging and the conservation treatment of collection pieces.

ETHNOGRAPHY—RICH HUMAN HISTORY ON THE ISLAND REMAINS UNEXPLORED

Cumberland Island has a rich tradition of human use dating back more than 4,000 years to some of the island's first known visitors and occupants, the Timucuan peoples. Now that the Park Service manages the island, the park has an obligation to explore and understand this span of human history so that significant resources can be preserved and interpreted for visitors. The park has identified a number of groups of people who have traditional associations with Cumberland Island. These include 11 American Indian groups (Cherokee Nation, Catawba Indian Nation, Chickasaw Nation, Eastern Band of Cherokee Indians, Muscogee (Creek) Nation, Poarch Creek Indians, Kialegee Tribal Town, Seminole Nation of Oklahoma, Seminole Tribe of Florida, Thlopthlocco Tribal Town, United Keetoowah Band of Cherokee Indians); descendants of enslaved African Americans who lived and worked on the island; and descendants of island landowners.

While the park has identified these associ-

ated groups, no formal ethnographic inventory has been conducted. Limited ethnographic work includes oral histories, which were collected from former and current island residents and workers in 1995 and 1996. The first step in establishing an ethnography program at the park is to complete an ethnographic overview and assessment.

The park is working to include more interpretation of American Indian groups, Spanish missionaries, and African-American slaves and freedmen who occupied the island. Park staff hope that funding will be allocated to the park in fiscal year 2009 to prepare an exhibit at the Black Barracks, which is where African Americans lived while working at Dungeness. Another important African-American history site is the Stafford Chimneys. These remnants of a slave village are currently inaccessible to the public because they are located on a lifetime-reserved estate. The park has been working toward stabilization of some of the chimneys and those actions are scheduled for implementation in fiscal year 2009.

MOLLI SONGCO



The remains of the Stafford slave cabin chimneys are a valuable resource to understanding the African-American experience on Cumberland Island. These chimneys are currently not accessible to visitors to the island because they are located on property regulated by a reserved estate agreement.

ARCHAEOLOGICAL RESOURCES PROVIDE CLUES TO THE PAST

Cumberland Island National Seashore includes two archaeological districts and four established historic districts that contain both historic structures and archaeological resources. All are listed in the National Register of Historic Places. Portions of all four historic districts are in reserved estates: Dungeness, Stafford, Plum Orchard, and High Point–Half Moon Bluff. This limits the Park Service’s ability to fully manage some of those areas. There are archeological resources within High Point–Half Moon Bluff, Plum Orchard, and Stafford that are located on reserved estate properties.

The **Stafford Historic District** features one of the foremost archaeological resources on Cumberland Island, the Stafford Chimneys. The Stafford Chimneys are the remnants of a large slave community. This site is located on a reserved estate parcel and is not accessible to the general public on a regular basis. Currently, the park is concerned about deterioration of the 25 chimneys, which vary in condition from good to complete ruin. Stabilization work on several chimneys has been performed in the past and additional temporary reinforcement is needed to prevent further deterioration until more permanent preservation and stabilization techniques can be implemented. For now the proposed work includes structural stabilization; mortar, wood, and brick patching; and vegetation removal. Hopefully, once the park is able to stabilize the chimneys, interpretation at the site can be implemented with the support of the reserved estate holder.

The **Dungeness Historic District** contains important archaeological resources that include a group of prehistoric shell middens and an area believed to be the location of the Spanish mission San Pedro

de Mocama and a Timucuan village. Unfortunately, the suspected mission and village site is particularly susceptible to damage and loss from erosion along the shoreline of Cumberland Sound. This area was most recently surveyed in 2005. While materials were recovered that support the documentation of a major Timucuan village and a Spanish mission, no features were uncovered that could establish the definitive locations. The primary components could have been already lost to erosion or the village and mission could have been located elsewhere.

Additional investigations in the Dungeness area have identified slave communities from the Greene-Miller Plantation era. Suspected sites that remain undiscovered within the district include other significant remnants of the Greene-Miller mansion and outbuildings as well as the 18th-century hunting lodge of General James Oglethorpe.

Archaeological resources in the **High Point–Half Moon Bluff Historic District** include three prehistoric Timucuan midden complexes, as well as two historical sites that date back to English settlement of the island by General James Oglethorpe. Pothunters and erosion threaten all of these sites. The English built two forts on Cumberland Island during the 18th century—Fort St. Andrew on the north end of the island and Fort Prince William on the southern end. It was believed that most of Fort St. Andrews had eroded away into the Cumberland River, but archaeological investigations in 2005 and 2007 revealed that some features remain. The park is seeking additional funds to complete a thorough investigation and recovery before the site is lost completely. A settlement associated with the fort is also

believed to be located within the historic district, but evidence has yet to be uncovered and its location is unclear. On the south end of the island, the site of Fort Prince William is believed to be under the waters of Cumberland Sound.

The **Rayfield Archaeological District** consists of the remains of slave quarters associated with the Rayfield plantation. Rayfield was originally owned by the Greene-Miller family, but was eventually obtained by Robert Stafford Jr. Although it is uncertain under whose ownership the slave cabins were built, the Rayfield plantation reached its greatest potential for cotton cultivation under Stafford. Today, one chimney is still standing and several other chimney bases and/or rubble are visible in the landscape. In total, 18 cabin sites have been identified through archaeological investigations, and thorough investigations have been done on five cabins.

The **Table Point Archaeological District** is located approximately 2 miles north of Plum Orchard, on a peninsula on the west side of the island. It is one of the largest prehistoric sites on the island and has the potential to reveal a wealth of information through further research. The park has two funding proposals in place for Table Point, but the projects remain unfunded. The site is relatively undisturbed, and although some bank erosion is occurring, it is somewhat protected by the surrounding salt marsh.

The archaeological sites within the **Plum Orchard Historic District** include a prehistoric midden complex, remains of an early 19th-century tabby house, the gravesite of plantation owner Peter Bernardy, and the Plum Orchard Sand Mound. There is some speculation that this mound was a burial site for slaves who died of yellow fever during a 19th-century epidemic.



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This chimney is the only remaining standing piece of the 18 slave quarters that once stood at the former Rayfield Plantation.



Volunteer turtle technicians work to protect the park's population of loggerhead sea turtles by covering their nests with fencing, monitoring the nests, and collecting data once the turtles have hatched and crawled to the ocean.

STEWARDSHIP CAPACITY

FUNDING AND STAFFING—LACK OF STAFFING LINKED TO VACANT SUPERINTENDENT POSITION

Stewardship capacity details how well equipped the Park Service is to protect the parks. The most significant factor affecting a park's ability to protect its resources is the funding a park receives from Congress. Cumberland Island National Seashore's operational budget was \$2.35 million in fiscal year 2008, an increase of \$1.05 million from 1998. Increases during this period have helped to cover inflation and mandated salary increases. The park is currently

operating with several key positions vacant, including the superintendent, fire management officer, purchasing agent, and maintenance mechanic. As a result of these vacancies, there has been a suspension of prescribed fires; work contracts must go through the regional office, a process that is often slow; and the park's capacity to address routine and backlogged maintenance has been reduced. Without a superintendent, the park is unable to fill the vacated positions or hire additional staff to meet resource management and park operational needs.

The park is unable to accomplish a host of natural and cultural resource management activities due to staffing and funding shortfalls.

These include management of the feral horse population; monitoring, protection, and restoration of critical bird habitat; monitoring and management of coastal dynamics; cultural landscape management; monitoring, protection, and research of threatened archaeological resources; preservation of historic museum collections and furnishings; and maintenance of historic structures. To accomplish this work, the park needs a biologist, biological technicians, protection rangers, a geologist, a cultural resource specialist, an archaeologist, a museum or archival technician, and skilled trades personnel.

PLANNING—ADDITIONAL PLANS AND RESEARCH NEEDED

To guide management of diverse resources, parks depend on a variety of plans. The primary, overarching management document at most parks is the general management plan. Cumberland Island's general management plan was written in 1984, revised in 1994, and despite its age is still used to steer broad management decisions and actions. The park's resource management plan, written in 1994, is rarely used and needs to be replaced with a resource stewardship strategy, as funds and Park Service-wide prioritization allow.

Cumberland Island staff have identified additional plans and research that are needed to address resource management issues, including a horse management plan, a fire management plan that incorporates fire use and prescribed fire (current plan is for full suppression), a wilderness plan, a non-native plant management plan, a south end management plan, a Plum Orchard management plan (covering maintenance, visitation, and interpretation), inventories and reports for Stafford and High Point-Half Moon Bluff historic districts, and a scope of collections statement. These plans and studies are undone as a result of funding and staffing shortfalls, the complexity of Cumberland Island's management issues, and

required work on congressionally mandated projects such as the transportation management plan currently under way.

Cumberland Island National Seashore has several plans and reports that are scheduled to be completed in the near future: The transportation management plan is in the completion phase; the fire management plan is scheduled to be updated by the Southeast Regional Office; funds have been committed to a visitor use and capacity study; and a cultural landscape report for Plum Orchard will be funded in 2009.

RESOURCE EDUCATION—VISITORS LEARN ABOUT PARK'S NATURAL AND CULTURAL HISTORY

Cumberland Island National Seashore provides a host of resource education programs and outreach opportunities that present both cultural and natural resource information to visitors and the local community. The park's interpretive program consists of two interpreters and four visitor use assis-

The southern end of Cumberland Island provides nesting habitat for the state-listed American oystercatcher. The island has the potential to support even larger populations of these rare shorebirds, but a lack of funding and staff prevents the park from fully protecting critical bird habitat.



NATIONAL PARK SERVICE

Cumberland Island National Seashore recently renovated a space on the mainland in St. Marys to house a large portion of the park's museum collection. The museum protects and displays items from the island's past, including carriages and elegant housewares.



NATIONAL PARK SERVICE

tants. The staff who presented 1,390 formal programs to 25,000 people in 2007. Interpretive services could be boosted with the addition of more interpretive staff.

A recent highlight for the park's interpretive program was the opening of the Cumberland Island National Seashore Museum located in St. Marys, Georgia. The museum provides an interpretive history of the island, focusing mainly on cultural resources using artifacts donated by the Carnegie family. The museum also features exhibits on the park's natural resources.

In addition to this mainland museum, Cumberland Island's interpretive program includes a museum on the island, waysides placed throughout the park, interpretive exhibits, and formal and informal ranger-led programs. Park staff consider the visitor center on the island too small to serve visitors, and feel

that the exhibits need to be updated.

Signage placed at the waiting area for the ferry to the island informs visitors of what to expect at the park, and a park video presents a brief history of the island and an overview of the cultural and natural resources the visitor will likely encounter. Upon reaching the docks at both Dungeness and Sea Camp, visitors are met by park personnel who provide information on the various opportunities Cumberland Island National Seashore offers. During the summer months, interns from the nonprofit Student Conservation Association present educational sea turtle talks at the Sea Camp campground and at the Greyfield Inn.

The park may have the opportunity to interpret the Stafford Chimneys in the future, which would be an opportunity for the park to diversify its interpretive programming. Currently, the

chimneys are part of a private residence and visitors cannot view these structures. The Park Service may be able to provide interpretation in the future with the support of the reserved estate holder. The chimneys would provide concrete examples of, and expose the visitors to, the African-American experience on the island.

Another excellent opportunity for broadening the park's interpretation program exists at the Black Barracks, the site where African Americans lived while working at Dungeness. Currently, the building is used for storage of various museum collection objects, but a plan has been approved to relocate these objects to the museum building in St. Marys. Once these items are moved, the Park Service can determine how the Black Barracks will be used and interpreted in the future.

EXTERNAL SUPPORT—VOLUNTEERS PROVIDE CRITICAL ASSISTANCE

Park staff rely on volunteers to provide necessary services and complete a host of projects at Cumberland Island National Seashore. In 2007, 350 volunteers provided 20,000 hours of service to the park; volunteerism has increased over the last five years. Volunteers have helped the park by providing interpretive tours, assisting with teacher workshops, cleaning Plum Orchard Mansion, clearing trails, cleaning up beaches, scheduling other volunteers, and accomplishing a long list of other routine tasks and special projects. The park would benefit from a full-time staff member to coordinate and oversee volunteers. In addition to receiving volunteers from the community, the park has received support from group called the Cumberland Island Conservancy, Inc., which provided a \$9,000 donation in 2008. The park used this money to purchase state-of-the art audiovisual equipment to develop and edit interpretive and educational programming.

WHAT YOU CAN DO TO HELP:

- **Participate in park planning efforts.** The public is invited to provide input on all park plans and studies. Check Cumberland Island National Seashore's website for information on park planning work and ways to participate: www.nps.gov/cuis.
- **Support or become a member of groups helping to protect the park,** such as NPCA: www.npca.org/support_npca.
- **Volunteer.** Cumberland Island National Seashore is looking for dedicated people who can lend a helping hand. To learn about opportunities, contact the park at 912.882.4336.
- **Become an NPCA activist and learn about legislative initiatives and protection projects affecting parks.** When you join our activist network, you will receive *Park Lines*, a monthly electronic newsletter with the latest park news and ways you can help. Join by visiting www.npca.org/takeaction.



ELIZABETH MEYERS

Structures on Cumberland Island get battered by the harsh environment, and the park relies on Youth Conservation Corps crews and volunteers to help maintain them.



APPENDIX: METHODOLOGY

To determine the condition of known natural and cultural resources at Harpers Ferry National Historical Park and other national parks, the National Parks Conservation Association developed a resource assessment and ratings process. The assessment methodology can be found online at NPCA's Center for State of the Parks website: www.npca.org/state-oftheparks.

Researchers gather available information from a variety of research, monitoring, and background sources in a number of critical categories. The natural resources rating reflects the assessment of more than 120 discrete elements associated with environmental quality, biotic health, and ecosystem integrity. Environmental quality and biotic health measures address air, water, soil, and climatic change conditions, as well as their influences and human-related influences on plants and animals. Ecosystems measures address the extent, species composition, and interrelationships of organisms with each other and the physical environment.

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 Park Service resource management policies.

Stewardship capacity refers to the Park Service's ability to protect park resources, and includes discussion of funding and staffing levels, park planning documents, resource education, and external support.

For this report, researchers collected data and



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Lush, verdant vegetation surrounds a section of one of Cumberland Island National Seashore's meandering hiking trails.

prepared technical documents that summarized the results. The technical documents were used to construct this report, which was reviewed by staff at Cumberland Island National Seashore prior to publication.

NPCA's Center for State of the Parks 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.

ACKNOWLEDGMENTS

For more information about the
Center for State of the Parks®
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