



State of the Park Report 2015

Timucuan Ecological and Historic Preserve and Fort Caroline National Memorial Florida



2016

On the cover: Sunrise at Kingsley Plantation as seen from the banks of the Fort George River. Photo courtesy of T.K. Reynolds

Disclaimer. This State of the Park report summarizes the current condition of park resources, visitor experience, and park infrastructure as assessed by a combination of available factual information and the expert opinion and professional judgment of park staff and subject matter experts. The [internet version](#) of this report provides the associated workshop summary report and additional details and sources of information about the findings summarized in the report, including references, accounts on the origin and quality of the data, and the methods and analytic approaches used in data collection and assessments of condition. This report provides evaluations of status and trends based on interpretation by NPS scientists and managers of both quantitative and non-quantitative assessments and observations. Future condition ratings may differ from findings in this report as new data and knowledge become available. The park superintendent approved the publication of this report.

Executive Summary

The mission of the National Park Service is to preserve unimpaired the natural and cultural resources and values of national parks for the enjoyment, education, and inspiration of this and future generations. NPS Management Policies (2006) state that “The Service will also strive to ensure that park resources and values are passed on to future generations in a condition that is as good as, or better than, the conditions that exist today.” As part of the stewardship of national parks for the American people, the NPS has begun to develop State of the Park reports to assess the overall status and trends of each park’s resources. The NPS will use this information to improve park priority setting and to synthesize and communicate complex park condition information to the public in a clear and simple way.

The purpose of this State of the Park report is to:

- Provide to visitors and the American public a snapshot of the status and trend in the condition of a park’s priority resources and values;
- Summarize and communicate complex scientific, scholarly, and park operations factual information and expert opinion using non-technical language and a visual format;
- Highlight park stewardship activities and accomplishments to maintain or improve the State of the Park;
- Identify key issues and challenges facing the park to help inform park management planning.

The Purpose of Timucuan Ecological and Historic Preserve (TIMU, “the preserve”) is to protect the natural ecology of over 46,000 acres of lands and waters and over 6,000 years of human history along the St. Johns and Nassau rivers in northeast Florida.










Significance statements express why the park unit’s resources and values are important enough to warrant national park unit designation. TIMU is significant because:

- TIMU protects the areas where the St. Johns and Nassau rivers meet the Atlantic Ocean and form one of the largest remaining salt marsh estuaries on the Southeast Coast.
- Fort Caroline memorializes the French colonists who came to North America during the 16th century seeking religious freedom, wealth, and territorial expansion.
- TIMU is home to Kingsley Plantation, the oldest surviving example of an antebellum Spanish Colonial plantation. The associated cabins are the largest concentration of existing slave quarters constructed of tabby found in the United States.
- TIMU contains over 200 archeological sites representing more than 6,000 years of continuous human history, including Archaic shell ring sites and the first site where investigations focused on the archeology of slavery and plantation life.
- TIMU is named after the indigenous people who once lived in this area. The Timucua chieftainships were the geographically largest population of American Indians in the territory, now the state of Florida. They were a gateway community where ideas, customs, and commerce flowed between the cultures of the Southeast and Caribbean. However, the Timucua Indians could not sustain themselves against the epidemic diseases brought to them and were extinct as a people by 1752.
- American Beach was the largest and most popular beach resort established by and for African Americans during the divisive Jim Crow era of racial segregation.
- The strategic military importance of the St. Johns River is exemplified by the presence of numerous installations within the preserve for over 450 years, from Fort Caroline in 1564 to Naval Station Mayport today.





Fort Caroline National Memorial (FOCA) is located at Timucuan Ecological and Historic Preserve. Fort Caroline memorializes the short-lived French presence in sixteenth-century Florida.










The summary table, below, and the supporting information that follows, provide an overall assessment of the condition of priority resources and values at Timucuan Ecological and Historic Preserve based on scientific and scholarly studies and expert opinion. The internet version of this report, available at <http://www.nps.gov/stateoftheparks/timu/>, provides additional detail and sources of information about the resources summarized in this report, including references, accounts on the origin and quality of the data, and the methods and analytical approaches used in the assessments. Reference conditions that represent “healthy” ecosystem parameters, and regulatory standards (such as those related to air or water quality) provide the rationale to describe current resource status. In coming years, rapidly evolving information regarding climate change and associated effects will inform our goals for managing park resources, and may alter how we measure the trend in condition of park resources. Thus, reference conditions, regulatory standards, and/or our judgment about resource status or trend may evolve as the rate of climate change accelerates and we respond to novel conditions. In this context, the status and trends documented here provide a useful point-in-time baseline to inform our understanding of emerging change, as well as a synthesis to share as we build broader climate change response strategies with partners.








The Status and Trend symbols used in the summary table below and throughout this report are summarized in the following key. The background color represents the current condition status, the direction of the arrow summarizes the trend in condition, and the thickness of the outside line represents the degree of confidence in the assessment. In some cases, the arrow is omitted because data are not sufficient for calculating a trend (e.g., data from a one-time inventory or insufficient sample size).

Condition Status		Trend in Condition		Confidence in Assessment	
	Warrants Significant Concern		Condition is Improving		High
	Warrants Moderate Concern		Condition is Unchanging		Medium
	Resource is in Good Condition		Condition is Deteriorating		Low

State of the Park Summary Table

Priority Resource or Value	Condition Status/Trend	Rationale
Natural Resources web ▶		
Air Quality		For 2008–2012: ozone condition warrants moderate concern; sulfur wet deposition condition warrants significant concern; nitrogen wet deposition condition warrants moderate concern; mercury/toxics deposition condition warrants moderate concern; and visibility condition warrants significant concern. Condition levels are based on NPS Air Resource Division benchmarks.
Geologic Features and Processes		Water levels in the Floridan Aquifer near TIMU have significantly increased from 1977 to 2011. The Fort George River experienced rapid shoaling progressing up-river from 1998 to 2004, which may be restricting the flow and exchange of salt water within the river and marsh. Shoreline erosion, already a concern at Fort Caroline and the Ribault Column along the St. Johns River, may increase in the future due to the planned deepening of the river channel, which may also impact sediment and water flows, salinity, and water quality in the adjacent tributaries and salt marsh. Overall, the condition warrants significant concern, but the trend is neutral because of both improving and deteriorating measures.
Water Quality		Four out of six measures of water quality were rated as fair based on EPA's National Coastal Assessment standards. Total phosphorus concentrations have been decreasing at stations, denoting an improvement in conditions (no trends present for any other measures). Measures of estuarine sediment contaminants were either <i>good</i> or <i>fair</i> based on EPA's National Coastal Assessment standards.
Plant and Wildlife Communities		Measures of plant and wildlife communities overall rated in good condition, but measures of specific species of management interest such as gopher tortoises, oysters, and invasive/ nuisance species warrant moderate to significant concern.

Priority Resource or Value	Condition Status/Trend	Rationale
Dark Night Sky		The modeled Anthropogenic Light Ratio (ALR), a measure of light pollution calculated as the ratio of Average Anthropogenic Sky Glow to Average Natural Sky Luminance, was 5.70, which is considered a moderate condition. Trend is neutral based on existing regional lighting conditions and moderate growth rate of nearby population centers.
Acoustic Environment		The mean L ₅₀ Impact (L ₅₀ dBA), a measure of noise contributed to the existing acoustical environment by anthropogenic sources, is 8.6 dBA. Nationwide increases in ground-based and aircraft traffic indicate a downward trend in the quality of acoustic resources.
Cultural Resources web ▶		
Archeological Resources		The preserve is 46,000 acres in size with only 8,600 acres owned by the NPS. There are 204 known sites within the preserve boundary; however, only 45 are under NPS ownership. Of the 45 sites, 40 have been assessed as being in good condition. Only 10% of the NPS acreage has been inventoried and documented.
Cultural Anthropology		One Ethnohistorical study has been completed for Kingsley Plantation. However, an Ethnographic Overview and Assessment is needed for the entire preserve. There is ongoing and active outreach with local communities through engagement with local groups.
Cultural Landscapes		One site-specific Cultural Landscape Plan has been completed for Kingsley Plantation (2006), but needs to be updated based on recent discoveries. A Cultural Landscape Inventory (CLI) for Kingsley Plantation was completed in 2004. However, the rest of the preserve is still in need of a study.
Historic Structures		All of the NPS-owned historic structures have been recorded. Of the total NPS-owned historic building, 4 are in good condition. The remaining 28 are managed as ruins and in fair to poor condition.
History		One hundred percent of the historic properties and cultural resource sites on NPS-owned lands have been assessed. All cultural resource sites have been assessed according to the criteria established for inclusion in the National Register of Historic Places.
Museum Collections		The preserve has an excellent storage facility for the museum collections. Over 82% of the preserve's museum collections have been cataloged. The majority of the required museum plans are up to date.
Visitor Experience web ▶		
Number of Visitors		Visitation to the preserve in 2013 (1,384,345) was slightly higher than the 10-year average (980,929) of visitors for 2003–2012. The low confidence level in the total visitation counts for the preserve come from several unrelated causes. Visitor counts at both the Jim King Park and Boat Ramp at Sisters Creek and the Joe Carlucci Sisters Creek Park and Boat Ramp are estimates as they are owned by the City of Jacksonville and they do not have actual traffic counters. While we use actual traffic counts received from the St. Johns River Ferry, it is questionable as to whether the ferry riders know they are in the preserve.

Priority Resource or Value	Condition Status/Trend	Rationale
Visitor Satisfaction		The percentage of visitors satisfied in FY13 was 98.0% of those surveyed, which is higher than the average for the previous five years (97.0%). The percentage of overall visitors surveyed is low.
Interpretive and Education Programs – Talks, Tours, and Special Events		Program quality has remained high; number of participants and visitors has been relatively constant. There has been an increase in informal interpretative programs versus formal interpretative programs because they are easier to conduct with fewer staff.
Interpretive Media – Brochures, Exhibits, Signs, and Website		Since 2009, TIMU has made great strides in improving its interpretive media. Staff has been instrumental in engaging community via website and social media. 88% of interpretive exhibits have been replaced or newly created in the past few years.
Accessibility		<p>Based on the 2006 Accessibility Assessment, 90% of the findings have been corrected and are now compliant. The remaining 10% have been identified and are awaiting funding.</p> <p>TIMU was a recipient of the National Park Service Programmatic Accessibility Achievement Award for creating an accessible interpretive experience that won first place in the Digital Media category for the 2013 National Association for Interpretation Interpretive Media Awards Competition. Using GPS and wireless internet, this immersive experience uses technology that allows visitors with visual disabilities to move freely and explore TIMU in any order or direction while receiving an audio description tied to their location. This innovation lets the user remain focused on the content rather than the technology. This project will serve as a model for others to follow in the future. This award congratulated the park on their efforts to ensure that visitors with disabilities have improved access to the park.</p>
Safety		The safety of visitors and employees is a preserve priority. The preserve works to quickly identify and mitigate potential hazards, and the number of accidents is very low.
Partnerships		The preserve engages in a wide array of formal and informal partnerships to support preserve stewardship.
Park Infrastructure web ▶		
Overall Facility Condition Index		Data accuracy is improving. PMIS projects are receiving funding and preserve staff is developing alternative methods to accomplish preserve projects. Improved data accuracy is enabling management to effectively schedule maintenance where and when it is most needed. This has moved the past “reactionary” trends of the preserve’s maintenance program to one based on effective planning and the establishment of accurate maintenance cycles.

Summary of Stewardship Activities and Key Accomplishments to Maintain or Improve Priority Resource Condition

The list below provides examples of stewardship activities and accomplishments by preserve staff and partners to maintain or improve the condition of priority preserve resources and values for this and future generations:

Resource Stewardship and Planning

- Science and History Committee formed in 2012 with academic partners to coordinate research and science activities within the preserve.
- Initiation of the annual Science and History Symposium beginning in 2012.
- Through partnership with Timucuan Trail Parks Foundation (TTPF) we have awarded 6 student-led research grants for research within the preserve.
- Completed Planning and Compliance for Replacement of Ribault Monument Seawall in 2010.
- Completed Planning and Compliance for Kingsley Plantation Interpretive Tram Tour in 2013.
- Completed the TIMU Foundation Document in 2012.

Natural Resources

- Completion of baseline inventories and initiation of Vital Signs Monitoring.
- Installation of Science, Technology, Engineering and Mathematics (STEM) station at Fort Caroline NM.
- Ongoing water quality monitoring partnership with the City of Jacksonville.
- Establishment of permanent full time biological technician position in 2011.
- Initiated use of controlled burning to manage fire fuels and encourage restoration of Flatwoods pine habitat at Cedar Point in 2009.

Cultural Resources

- Archeological excavations of Kingsley Plantation grounds and cabins and burials by University of Florida archeology field school (2006–2012).
- Discovery of Spanish mission sites by University of North Florida archeology field schools (2002–2007, 2009–2013).
- Hosted University of North Florida Public Archaeology Field Schools at Cedar Point (2011–2012).
- Stabilization of historic buildings at Kingsley Plantation.
- Constructed Curatorial Storage Building that meets NPS and museum standards.
- Completed Ethnohistorical Study of Kingsley Plantation (2006) (connecting with descendent communities).
- In 2009, staff and volunteers cataloged and organized over 11,000 images into the TIMU photograph and slide collection.

Visitor Experience

- 36 out of 41 preserve wayside exhibits are new as of 2009.
- 450th anniversary celebrations at Fort Caroline (i.e., the exploration of the St. Johns River by the French in 1562 and the subsequent founding of la Caroline colony two years later).
- Kingsley Plantation’s audio tour, “The Lion’s Storyteller” is an immersive experience that tells the story of the plantation from the perspective of the enslaved people who lived and toiled on Fort George Island.
- Kingsley Plantation hosted 5 Project Archeology teacher workshops sponsored by the Florida Public Archaeology Network. This effort trains teachers on how to effectively use the shelter curriculum in their classrooms.
- Applied for and received a grant from the National Park Foundation, which funded student transportation to Fort Caroline to attend the Healthy History Program. This program gave students access to their local park and provided an interactive learning experience which included physical activity such as running, trail-walking, and “hunting and gathering” while gaining cultural and historical knowledge.
- The Kingsley Plantation has presented the Kingsley Heritage Celebration for the past 17 years. Begun as an event for the Kingsley descendants, it has since transformed into a community-wide cultural celebration.
- Fort Caroline debuted a new 450th-anniversary edition of the Junior Ranger Program, which includes information from the new 2012 waysides.

Park Infrastructure

- The preserve has consolidated its fleet to include E85 & Hybrid vehicles as well as reducing number of vehicles.
- The preserve has rehabilitated the Johnson Barn, utilizing green products to include: solar tube lighting, recycled roofing and siding materials and some reclaimed materials from the “old” structure.
- Upgrades to the FOCA irrigation system include rain/rainfall sensors to minimize unnecessary consumption.
- As standard water heaters require replacement, the preserve has replaced them with tankless, on-demand water heaters.

- The septic system serving the Kingsley Plantation Army/Navy lodge was determined to have exceeded its useful life. Due to the limited space available for a new system (historic landscape & proximity to water) an ingenious new design called Enviro-Chamber was identified and constructed at the old site.
- Rebuilt the Cedar Point Boat ramp with the addition of a finger pier and comfort station.
- Stabilized and preserved the historic Fitzpatrick Ruins on Black Hammock Island.

Key Issues and Challenges for Consideration in Management Planning

Preserve Jurisdiction

The preserve was established to protect the natural ecology of over 46,000 acres of lands and waters along the St. Johns and Nassau Rivers in northeast Florida. Under 36 CFR §1.2(a)(3) the NPS has the authority to regulate activities occurring within the waters of the national park. However, we have not exercised this authority. We do provide comments on U.S. Army Corps of Engineers (USACE) and Florida Department of Environmental Protection permits for dock construction and navigation projects. Additional coordination with the permitting agencies is needed to further our interests in regulating water-based uses within the preserve.

Visitor and Resource Protection

The preserve currently has one commissioned law enforcement ranger; in 1997 the preserve had four. We have areas of concern due to the limited law enforcement including regular patrol of isolated parcels with administrative access, no NPS backup, limited late night surveillance, security alarm and fire alarm response, emergency assistance to visitor injuries, and resource damage. An existing Memorandum of Understanding with the Jacksonville Sheriff's Office provides additional support on waterways and roads within the preserve. The Florida Fish and Wildlife Conservation Commission (FWCC) and other state and federal law enforcement personnel have also provided assistance. These cooperative relationships are particularly important in light of newly stated jurisdictions.

Climate Change Concerns

As a result of the foundation document workshop, the preserve identified several areas of concern at risk as the result of sea level rise and climate change.

Estuarine wetlands and waterways encompass over 75% of the 46,000 acre preserve. These important areas perform a variety of ecological functions and are among the most productive ecosystems on the planet. A number of entities are exploring salt marsh restoration and management options to increase salt marsh elevation in advance of sea level rise.

A fundamental resource and value, Fort Caroline National Memorial commemorates the French Colony of la Caroline. Located on the St. Johns River, the scaled exhibit of the fort is threatened by subsidence and shoreline erosion along St. Johns Bluff. The Ribault Monument is also threatened by shoreline erosion and slope instability. The preserve is faced with the need to determine the feasibility of future investments in maintaining the scaled exhibit and visitor facilities at Fort Caroline with the threat of sea level rise inundating the exhibit.

Kingsley Plantation, a fundamental resource and value, is the oldest surviving example of an antebellum Spanish Colonial plantation in the United States. The site is located along the Fort George River on Fort George Island, once a barrier island along the Atlantic Coast. Due to engineering structures to stabilize the mouth of the St. Johns River for JaxPort, sediment is transported into the Fort George River where it has settled to create sand islands and salt marsh habitat. Options to maintain the historic structures of Kingsley Plantation and the cultural landscape and mitigate for sea level rise impacts to the historic structures must be identified and evaluated to determine future investments.

Land Protection Planning

The last update to the preserve's land protection plan was in 2004. Since that time the preserve boundary was expanded with a donation of the Dune at American Beach and we also acquired additional properties on Black Hammock Island. Lands issues include property boundary disputes between upland owners bordering NPS-owned wetlands, unknown and known historic resources at risk from private development, encroachment onto NPS lands, and economy-driven development within and adjacent to the preserve that threatens sensitive resources.

Visitor Experience – Issues and Challenges

NPS Identity Crisis – Fort Caroline National Memorial, authorized in 1950, has been a field-trip destination for generations of local students. This is an awesome memory that has been indelibly etched in people's mind; what is not remembered is that Fort Caroline is a National Park. While the recognition of TIMU/FOCA by the community has progressed; the identity problem has carried through the creation of the Timucuan Preserve in 1988 and continues to this day. The lack of a traditional National Park entrance with the

ubiquitous Park Service entrance sign has been identified as a contributing factor along with the countless entrances to the sprawling 46,000-acre preserve.

Partnerships and Volunteers – Volunteers are a valuable partnership that the preserve is not fully leveraging. The preserve has a long history of long-term volunteers, who live in the lodge at Kingsley Plantation or at the Recreational Vehicle (RV) pads at Fort Caroline. Efforts to add RV pads to Kingsley Plantation and Cedar Point were stymied by the rich archeological resources found at both sites. During 2013, volunteers selflessly donated 6,312 hours of their time to the preserve. This is approximately 3.1 FTE and represents an economic donation equivalent to \$139,747.

Reduced Educational and Community Outreach Programming – Due to erosion of budgets over time, the preserve average of 7,000 school children each year has fallen to just over 3,500 between FY12 and FY14, a 47% reduction in contacts at Fort Caroline and Kingsley Plantation. The reduced staffing has affected our ranger-led school programs and halted our off-site classroom programming. This affects our outreach and response to requests for school visits and our interaction with underserved schools in the Jacksonville area.

Housing

A Housing Management Plan documenting the need for five separate housing units (four houses and one dormitory) was completed in March of 2013 and is awaiting central office approval. A Housing Needs Assessment was written and received central office approval in July of 2014. These documents show there is a need for housing in the preserve and any available bedrooms could be utilized by volunteer help. Even though there are two pads in existence for Recreational Vehicle hook-up, a need for additional RV pads exists throughout the preserve.

New Visitor Opportunities via Commercial Services

Preserve staff seriously began planning for commercial services in 2002 and has been seeking appropriate guidance and funding to enable interpretive boat tours and other commercial ventures to occur in the preserve.

Administrative Background for Managing Two Parks

Congress authorized the establishment of the Fort Caroline National Memorial on September 21, 1950 and the Timucuan Ecological and Historic Preserve on February 16, 1988. The legislation mandated that Fort Caroline administer the Timucuan Preserve, which has created challenges in managing the two parks. As the 130-acre Fort Caroline is a very small part within the approximately 46,000-acre Timucuan Preserve, visitors and the agency has difficulties realizing it is managed as one large area. The organization code 5310 is for Fort Caroline and 5308 is for the Timucuan Preserve. The preserve is mostly known as the Timucuan Preserve but is listed as “Fort Caroline/Timucuan” in Washington’s Green Book.

Staffing

The superintendent of TIMU oversees and supervises all activities within the two areas including four divisions, located in the preserve headquarters in the Theodore Roosevelt Area and visitor contact stations at Kingsley Plantation and Fort Caroline. The preserve has expanded its boundaries, acquired more properties, and rehabilitated other buildings, increasing the gap. Partnering is key to protecting the area within the boundaries.

Chapter 1. Introduction

The purpose of this State of the Park report for Timucuan Ecological and Historic Preserve (TIMU) is to assess the overall condition of the preserve's priority resources and values, to communicate complex preserve condition information to visitors and the American public in a clear and simple way, and to inform visitors and other stakeholders about stewardship actions being taken by preserve staff to maintain or improve the condition of priority preserve resources for future generations. The State of the Park report uses a standardized approach to focus attention on the priority resources and values of the preserve based on the preserve's purpose and significance, as described in the preserve's Foundation Document or General Management Plan. The report:

- Provides to visitors and the American public a snapshot of the status and trend in the condition of a preserve's priority resources and values.
- Summarizes and communicates complex scientific, scholarly, and preserve operations factual information and expert opinion using non-technical language and a visual format.
- Highlights preserve stewardship activities and accomplishments to maintain or improve the state of the preserve.
- Identifies key issues and challenges facing the preserve to inform preserve management planning.

The process of identifying priority preserve resources by preserve staff and partners, tracking their condition, organizing and synthesizing data and information, and communicating the results will be closely coordinated with the preserve planning process, including natural and cultural resource condition assessments and Resource Stewardship Strategy development. The term "priority resources" is used to identify the fundamental and other important resources and values for the preserve, based on a preserve's purpose and significance within the National Park System, as documented in the preserve's foundation document and other planning documents. This report summarizes and communicates the overall condition of priority preserve resources and values based on the available scientific and scholarly information and expert opinion, irrespective of the ability of the preserve superintendent or the National Park Service to influence it.

Congress authorized the establishment of the Fort Caroline National Memorial (FOCA) on September 21, 1950 and the Timucuan Ecological and Historic Preserve on February 16, 1988. The first act was passed to commemorate the 16th-century Fort Caroline settlement at St. Johns Bluff, Florida. The second act preserved a greater portion of the St. Johns River valley ecological area and protected significant historic assets. TIMU was named in honor of the Timucua who inhabited the St. Johns River valley for thousands of years and were settled in the area at the time of first contact with Europeans. Congressman Charles Bennett specifically stated the Timucuan Preserve would be established where Timucuan Indians lived in prehistoric and historic times. The enabling legislation mandated that Fort Caroline administer the Timucuan Preserve, which has created challenges in managing the two parks.

Today, the preserve encompasses 46,000 acres of diverse biological systems largely within the city limits of Jacksonville. These biological systems consist primarily of estuarine ecosystems, including salt marshes, coastal dunes, and upland hardwood hammocks, and salt, fresh, and brackish water, and serve as habitat for pods of dolphins, flocks of migratory birds, and a number of rare or sensitive species such as the Atlantic loggerhead sea turtle, the West Indian manatee, the wood stork, and the bald eagle.

Inhabited for over 6,000 years, the area contains archeological sites that illustrate one of the oldest and longest periods of human habitation in the Southeast region of the United States. Shell middens and ceremonial shell rings serve as archeological evidence of early American Indian occupation of the region. The history of French, Spanish, English, and American control of the area has also been documented and interpreted for visitors.

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- The strategic military importance of the St. Johns River is exemplified by the presence of numerous installations within the preserve for over 450 years, from Fort Caroline in 1564 to Naval Station Mayport today.



Map of the Park



Location of the Park in Florida



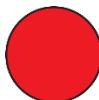
Chapter 2. State of the Park

The State of the Park is summarized below for four categories—Natural Resources, Cultural Resources, Visitor Experience, and Park Infrastructure—based on a synthesis of the preserve’s monitoring, evaluation, management, and information programs, and expert opinion. Brief resource summaries are provided below for a selection of the priority resources and values of the preserve. Clicking on the [web](#) ► symbol found in the tables and resource briefs below will take you to the internet site that contains content associated with specific topics in the report.

The scientific and scholarly reports, publications, datasets, methodologies, and other information that were used as the basis for the assessments of resource condition are referenced and linked throughout the report and through the [internet version of this report](#) that is linked to the NPS [IRMA data system](#) (Integrated Resource Management Applications). The internet version of each report provides additional detail and sources of information about the findings summarized in the report, including references, accounts on the origin and quality of the data, and the methods and analytical approaches used in data collection and the assessments of condition. Resource condition assessments reported in this State of the Park report involve expert opinion and the professional judgment of preserve staff and subject matter experts involved in developing the report. This expert opinion and professional judgment derive from the in-depth knowledge and expertise of preserve and regional staff gained from their being involved in the day-to-day practice of all aspects of preserve stewardship and from the professional experience of the participating subject matter experts. This expert opinion and professional judgment utilized available factual information for the analyses and conclusions presented in this report. This State of the Park report was developed in a preserve-convened workshop.




The status and trends documented in Chapter 2 provide a useful point-in-time baseline measured against reference conditions that represent “healthy” ecosystem parameters, or regulatory standards (such as those related to air or water quality). We also note that climate change adaptation requires us to continue to learn from the past, but attempting to manage for conditions based on our understanding of the historical “natural” range of variation will be increasingly futile in many locations. Thus, these reference conditions, and/or our judgment about resource condition or trend may evolve as the rate of climate change accelerates and we respond to novel conditions. Our management must be even more “forward looking,” to anticipate plausible but unprecedented conditions, also recognizing there will be surprises. In this context, we will incorporate climate considerations in our decision processes and management planning as we consider adaptation options that may deviate from traditional practices.

2.1. Natural Resources

Air Quality				web ►
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale	
Ozone	Annual 4th-Highest 8-Hour Concentration		Ozone warrants moderate concern. This condition is based on NPS Air Resources Division benchmarks and the 2008–2012 estimated ozone of 64.2 parts per billion (ppb) (NPS-ARD 2015). For 2003–2012, the trend in ozone concentration improved. List of ozone-sensitive plant species .	
Deposition	Sulfur Wet Deposition		Wet sulfur deposition warrants significant concern. This condition is based on NPS Air Resources Division benchmarks and the 2008–2012 estimated wet sulfur deposition of 3.1 kilograms per hectare per year (kg/ha/yr) (NPS-ARD 2015). Although TIMU receives high levels of sulfur deposition, ecosystems in the preserve are not typical of sulfur-sensitive systems and were rated as having low sensitivity to acidification effects relative to all Inventory & Monitoring preserves (Sullivan et al. 2011a ; Sullivan et al. 2011b). No trend information is available.	

Air Quality (continued)




[web](#) ▶

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
	Nitrogen Wet Deposition		Wet nitrogen deposition warrants moderate concern. This condition is based on NPS Air Resource Division benchmarks and the 2008–2012 estimated wet nitrogen deposition of 2.8 kilograms per hectare per year (kg/ha/yr) (NPS-ARD 2015). Ecosystems in the preserve were rated as having high sensitivity to nutrient-enrichment effects relative to all Inventory & Monitoring preserves (Sullivan et al. 2011c ; Sullivan et al. 2011d). No trend information is available.
	Mercury/Toxics Deposition		The U.S. Environmental Protection Agency issued a statewide and statewide coastal fish advisory in Florida for various freshwater and marine species of different lengths (EPA NLFA 2014). Given the consumption guidelines, mercury is rated as a moderate concern at the preserve.
Visibility	Haze Index		Average visibility warrants significant concern. This condition is based on available data and the 2008–2012 estimated average visibility of 10.2 deciviews (dv) above estimated natural conditions (NPS-ARD 2015). For 2003–2012, the trend in visibility improved on the 20% clearest and haziest days.

Geologic Features and Processes



[web](#) ▶

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Groundwater	Water Level		<p>Well water is the source of water for the preserve. Water levels have shown a significant rise from 1977 to 2011 in the Floridan Aquifer near TIMU (Rasmussen et al. 2009, Wright 2012). The latest data on groundwater levels are available from USGS).</p>
Landform Alteration	Shoreline Change		<p>Fort George River has undergone extensive sediment accumulation and northward inlet migration due to hardened jetties located to the south. Gayes et al. (2005) surveyed the channel, channel margin, and shoals and compared their data with two previous surveys of the lower river section. The studies showed that rapid expansion of sand shoals occurred in the southernmost section of the river near the inlet between 1998 and 2001, and that shoaling and changes in the channel system may have shifted up-river to the central reach of the Fort George River from 2001–2004. In 2004, confluences of tidal creeks flowing into the river were becoming inundated with sand, with drainage in some actually blocked at low tides. Continuing shoaling and infilling within the river may be restricting the flow and exchange of salt water within the river and marsh.</p> <p>Shoreline erosion is also of concern at Fort Caroline and the Ribault Column due to the proximity of preserve structures to areas with active erosion along the St. Johns River.</p>
	Shipping Channel Modifications & Maintenance		<p>Past deepening and ongoing maintenance dredging of the St. Johns River channel within TIMU has led to changes in salinity, rate of salt water movement upstream, sediment budgets and other alterations within the estuary. Planned deepening of the channel by the United States Army Corps of Engineers (USACE) and JaxPort from 40 to 47 feet may potentially lead to increased erosion along the river shoreline, impacts to sediment and water flows and impacts to water quality within the salt marsh and adjacent tributaries, as well as further shifts in the salinity regime and related ecological changes.</p>

Resource Brief: Sedimentation Changes

Fort George Inlet, located just north of the St. Johns River entrance, is unstable and has undergone extensive migration and sedimentation over the last 80 years. Most of the changes are connected to jetties at the entrance to the St. Johns River, constructed beginning in 1881. At first, the jetties were low and permeable, but in 1934, the north jetty was capped to limit the southerly transport of sand into the St. Johns Inlet. Since the mid-1930s, sand has accumulated on the north side of the capped jetty, causing northern migration of Fort George Inlet and the erosion of the southern end of Little Talbot Island just to the north. The changes in the lower river system also include the accretion of large sand shoals, particularly in the vicinity of the Highway A1A bridge.



NPS photo showing large sand shoal welded to the eastern shore of the Fort George River just north of the Highway A1A bridge. A rather extensive vegetative cover (marsh grass) can be seen. This large shoal in this October 2012 photo has been present in this location since at least 2004.

A 2004 survey by Gayes et al. (2005) of the Fort George River channel, shoals and channel margin, and a comparison of their data set with two previous surveys (1998 and 2001) of the lower river section, indicated that between 1998 and 2004, a dramatic change in the channel occurred within the 1 km section north of the A1A Bridge. The mean high water channel area was reduced between 23 and 38 percent between 1998 and 2004. A large sand shoal which split the river into an eastern and western channel in 1998, had expanded and largely welded to the eastern shore by 2004, while the western channel had deepened and widened. The shoal had also extended northward up the Fort George River. Comparison with the 1998 and 2001 surveys indicated that much of the change observed probably occurred between 1998 and 2001 with the rate of change in cross-sectional area of the lower Fort George River slowing considerably after 2001. Observations during the 2004 survey indicated that shoaling and changes in the channel system may have shifted up-river to the central reach of the Fort George River. Sediment moving onto the northern edge of the channel was forming an elevated berm of much sandier material. Confluences of

tidal creeks flowing into the river in this stretch were inundated with sand and some were physically blocked from drainage at mid-low tide. The preserve is concerned that continued shoaling and infilling may be restricting the flow and exchange of clean salt water into the river and marsh within TIMU.

At Fort Caroline National Memorial located along the south shore of the St. Johns River, erosion of the river shoreline has been occurring. Hardened seawall and rip rap structures have deteriorated and failed. Boat wakes, waves, and currents, along with the 5 foot (1.5 m) tidal range have caused erosion and slumping of the steep bank. Because of the deterioration of the seawall at Fort Caroline, shoreline erosion has resulted in the abandonment of hiking trails and threatened to possibly damage the fort exhibit adjacent to the river. The Ribault Monument is located nearby on the highest point along the St. Johns River. The St. Johns Creek, which flows into the river adjacent to this site, is eroding the bank at the base of the Ribault Column. The St. Johns River within TIMU undergoes regular maintenance dredging, and has been deepened several times through its history. This has led to changes in salinity, rate of salt water movement upstream, sediment budgets and other alterations to the estuary. A current USACE study recommends deepening the channel, from 40 feet to 47 feet within TIMU to accommodate larger commercial vessels. TIMU is concerned that further impacts to the shoreline, marsh habitat, and adjacent tributaries from the proposed deepening and larger vessels may include shoreline erosion, increased marsh erosion, declines in water quality, further shifts in the salinity regime and related ecological changes.

Water Quality






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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Water Chemistry	Water Quality Index		Based on 2013 monitoring the preserve-wide water quality rating for the area in and around TIMU was <i>fair</i> , with less than 10% of the sites rating <i>poor</i> and 70% of the sites rating as either <i>fair</i> or <i>poor</i> (Wright et al. 2013). The water quality index was also rated as <i>fair</i> when monitored in 2008 (Gregory et al. 2011a).
	Water Clarity		24/25 sites sampled in 2013 rated as <i>good</i> based on EPA National Coastal Assessment criteria (Water Clarity index scores < 2.3) (Wright et al. 2013). No trends in turbidity observed based on continuous data collected 2010–2012 (Gregory et al. 2011b , Wright et al. 2012 , Rinehart et al. 2013).
	Chlorophyll a		Based on 2013 monitoring chlorophyll <i>a</i> levels were rated as <i>good</i> at 30% of sites in the assessed area with 60% rated as <i>fair</i> . Chlorophyll <i>a</i> levels at 10% of sites were rated as <i>poor</i> . No trends in chlorophyll concentrations were observed at any bimonthly monitoring stations from 2000–2013, and the majority of recent samples (2010–2013) rated as <i>fair</i> (Gregory et al. 2011b , Wright et al. 2012 , Rinehart et al. 2013).
	Nitrogen		Dissolved inorganic nitrogen (DIN) levels were <i>good</i> at 57% and <i>fair</i> at 43% of the sites assessed in 2013. An upward trend in Total Nitrogen (TN) has only been observed at 1/12 sites observed based on monthly sampling from 2000–2013, with roughly half of samples collected during the past year ranking as <i>fair</i> (Gregory et al. 2011b , Wright et al. 2012 , Rinehart et al. 2013 , Wright, unpublished data).
	Total Phosphorus		Dissolved inorganic phosphorus (DIP) levels were rated as <i>good</i> at 30%, <i>fair</i> at 37%, and <i>poor</i> at 33% of the sites. However, total phosphorus concentrations have decreased significantly from 2000 to 2013 at eight stations based on monthly sampling (Gregory et al. 2011b , Wright et al. 2012 , Rinehart et al. 2013 , Wright et al. 2014).
	Dissolved Oxygen		Dissolved oxygen levels rated good at 24 (80%) sites and fair at six sites (20%). No significant trends based on continuous data collected 2010–2012 (Gregory et al. 2011b , Wright et al. 2012 , Rinehart et al. 2013).

Water Quality (continued)

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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Sediment Chemistry	Sediment Quality Index		Although the Sediment Quality Index rated as <i>good</i> for 24/29 sites sampled in 2008; three sites rated as <i>fair</i> and two sites rated as <i>poor</i> (Gregory et al. 2011a). Trend information is not known based on one year of data.
	Sediment Contaminant Rating		Sediment Contaminant Rating scored as <i>good</i> for all 29 sites sampled in 2008 (Gregory et al. 2011a). Trend information is not known based on one year of data.
	Total Organic Carbon		Although 24/29 sites sampled in 2008 had TOC levels rated as <i>good</i> based on EPA National Coastal Assessment criteria (TOC < 2%), three sites rated as <i>fair</i> and two sites rated as <i>poor</i> (Gregory et al. 2011a). Trend information is not known based on one year of data.

Resource Brief: Continuous Water Quality Monitoring

In 2003 the Northeast Florida Water Quality Preservation Group—a coalition composed of the Florida Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas (CAMA), the National Park Service (NPS), and the Nature Conservancy—was formed by official Memorandum of Understanding to “collaborate to preserve, protect, and enhance water quality” of Timucuan Ecological and Historic Preserve (TIMU) in northern Florida. In 2006, the National Park Service Southeast Coast Network (SECN) in cooperation with the City of Jacksonville, Florida and CAMA established a jointly-operated water quality monitoring network within the preserve’s boundaries to provide relevant water quality information to resource managers. This monitoring effort was designed to collect data so that managers are able to make better-informed decisions by understanding trends and variability of water quality conditions in preserve waters.



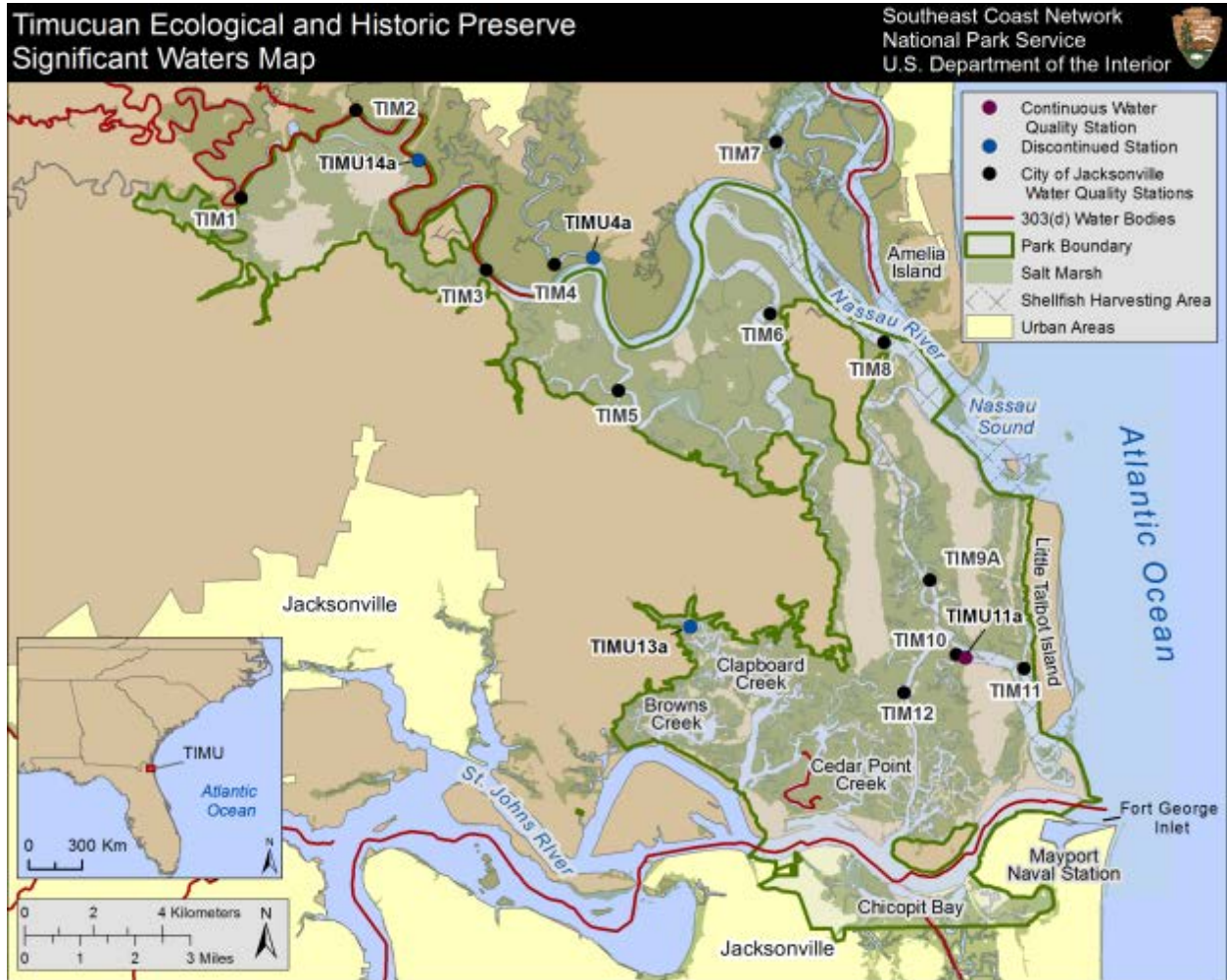
Partners from City of Jacksonville and TIMU conducting water quality monitoring at Sister’s Creek in 2013. NPS Photo.

In 2012, this network included 13 sites—12 of which are monitored every other month by the City of Jacksonville for nutrients and chlorophyll *a* with one additional site monitored continuously by the SECN for pH, dissolved oxygen, temperature, salinity, specific conductance (to compute salinity), turbidity and water level. The continuous monitoring station, located at Kingsley Plantation, collected pH, dissolved oxygen, water temperature, salinity, turbidity and water-level data at 30-minute intervals in addition to monthly data collected by SECN staff, such as water-clarity conditions, nutrients, and chlorophyll *a* levels.

Three Rivers Conservation Coalition was established in 2007 by the National Park Service, State of Florida and The Nature Conservancy to work collaboratively to preserve, protect and enhance the water quality in the watersheds of the Timucuan Ecological and Historic Preserve and the Nassau River-St. Johns River Marshes Aquatic Preserves. The parties “Recognize the ecological importance of this estuary and its proximity to expanding urban and residential areas” and “Agree to collaborate to preserve, protect, and enhance water quality in the preserve.” Through this partnership continuous water quality monitoring

stations were operated, the City of Jacksonville was brought on board with their ongoing bi-monthly sampling program and all parties contributed in staff, volunteers, and boats. However, in 2010 the State of Florida closed the CAMA office and removed the four

continuous water quality monitoring stations from the preserve and The Nature Conservancy closed their Duval County office. The NPS entered into negotiations with the State of Florida to transfer equipment to restore one continuous water quality monitoring station at Kingsley Plantation which would be maintained by the I&M network. The other stations have not been reestablished at the time of this report. The USACE has committed to replacing the Clapboard Creek station as part of the Jacksonville Harbor Deepening project approved in the Water Resources Reform and Development Act of 2014 (WRRDA). All of the stations would continuously collect surface and bottom salinity and dissolved oxygen data. Tidal water level and flow gauges would also be installed within tributaries. Data would be electronically sent to a central location where it would be placed on a website for public viewing.



Locations of Southeast Coast Network and City of Jacksonville water quality monitoring stations in Timucuan Ecological and Historic Preserve during 2012. Depicted are areas of salt marsh (U.S. Fish and Wildlife Service 2011), urban areas (U.S. Census Bureau 2000), 303(d) listed areas (USEPA 2011), and shell fish harvesting area (Florida Department of Environmental Protection 2011).

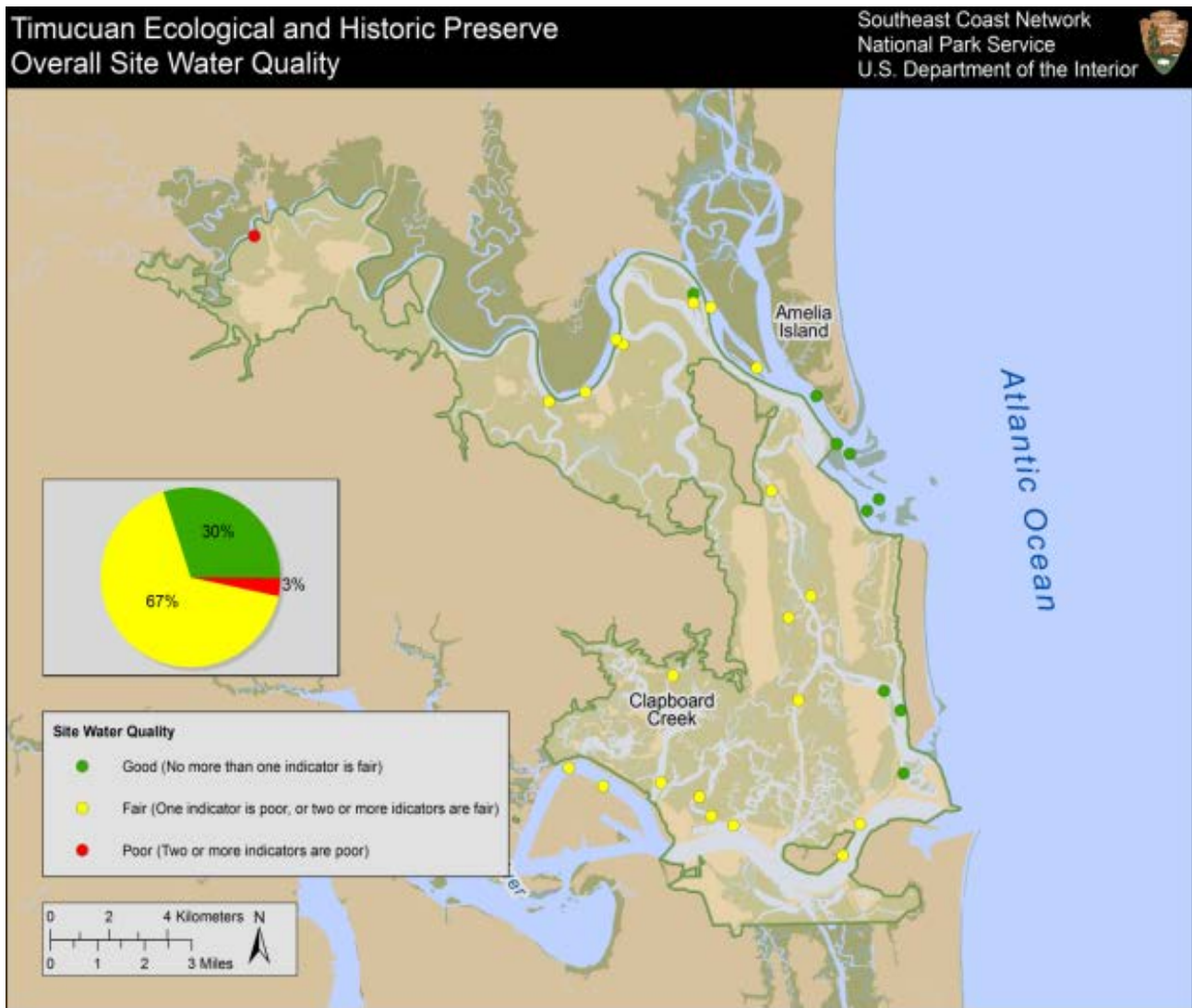
Resource Brief: Coastal Water Quality Assessment

Water resources are an integral part of TIMU with approximately 75% of the protected area composed of wetlands and open water. These resources include numerous tidal creeks, portions of the Nassau and St. Johns Rivers, Sisters Creek/Intracoastal Waterway (ICWW), and the Fort George River. TIMU’s estuarine setting serves as a vital ecological link between freshwater habitats and the ocean. The waters of TIMU have been impacted by land use in the surrounding watersheds. Examples of water quality impacts applicable to TIMU include nonpoint source pollution from urban and agricultural areas, elevated metal concentrations in the sediments of the St. Johns River, impacts of several Superfund sites and landfills, and water pollution from malfunctioning septic systems within and adjacent to TIMU.

The condition of sediment and water quality was assessed at TIMU by the National Park Service Inventory and Monitoring Program in the late summer 2008. Results from this snapshot of conditions were compared to water quality criteria used by the U. S. Environmental Protection Agency (USEPA), and indicated that general water quality conditions were *fair* at most (93%) of the sites sampled. *Poor* water quality ratings were most commonly due to elevated levels of total dissolved phosphorus and nitrogen observed

in the more upstream reaches of the Nassau and St. Johns River as well as inland areas along Clapboard Creek (Gregory et al. 2011a). Sediment quality was shown to be generally in *good* condition preserve-wide; however, elevated total organic carbon levels—which tend to make sediment contaminants more available to benthic communities—were noted in several inland and riverine sites in TIMU. Low levels of metal and organic contaminants were common in sediments throughout preserve waters. Moderately elevated levels of arsenic, cadmium, silver and DDT were also noted at six sites along the Nassau River on the northern boundary of the preserve (Gregory et al. 2011a).

Water quality was again assessed in 2013. The water quality index indicated *fair* water quality conditions at 67% of the sites sampled with water quality conditions at 30% of sites rated as *good* and one site (3%) rated as *poor*. Individual site ratings indicated better water quality conditions in the waters closest to the coast, with six of the *good* sites being located in an inlet or sound, and the other three *good* sites close to open water. Sites rated as *fair* or *poor* were generally located in salt marsh areas.



Summary assessment of water quality conditions at Timucuan Ecological and Historic Preserve in August, 2013. Assessment based on numbers of categorical ratings at each site for using the water-clarity index (WCI), chlorophyll a, total dissolved nitrogen, total dissolved phosphorus and dissolved oxygen measurements. Graph shows percentage of sites in each condition category (from Wright et al. 2013).

Plant and Wildlife Communities





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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Plant Diversity	Species richness		TIMU has 638 known vascular-plant species, subspecies, and varieties (NPSpecies database). Based on 2009 monitoring efforts, live oak had the largest average diameter-at-breast-height of any canopy species at the preserve. Saw palmetto was the most frequently occurring species in the shrub stratum; gallberry, bracken fern, poison ivy, and muscadine were the most frequently occurring species in the groundcover stratum (Byrne et al. 2012). Trend information is not known based on one year of data.
Wetlands	Acres of NPS defined wetlands		12% of the marsh area was converted to open water between 1943 and 1999. All areas sampled experienced some loss, ranging from 6% to 25% (Fox 2003).
Amphibians	Species richness Disease incidence		23 species of amphibians have been documented at TIMU (NPSpecies database), including 18 species of frogs and toads. Southern leopard frog was the most widely distributed amphibians during sampling events in 2009 (Byrne et al. 2010). Chytrid fungus (a pathogen linked to amphibian population declines around the world) was not found in any species during a 2010 study (Byrne and Moore 2011). Trend information is not known based on one year of data.
Gopher Tortoises	Number of Burrows		Surveys in 2003 found 82 burrows in five areas of the preserve (Hoover 2004). Since 2003, TIMU has implemented recommended conservation actions and new burrow surveys were initiated in Summer 2014 to determine effectiveness of conservation measures.
Fish	Diversity		In estuaries the subtidal habitats have the greatest species richness thus may be sensitive to hydrologic alteration. Eighty-five taxa were taken by the trawl in 624 samples collected in 2001. Cedar Point Creek had the greatest fish abundance (due to bay anchovy <i>Anchoa mitchilli</i>) and greatest species richness (57 taxa). Results showed little measurable impact of urbanization (Dennis et al. 2001).
Oysters	Contaminants		The Duval County Shellfish Harvesting Area has been closed to harvesting since 1996 due to elevated fecal coliform levels. The City of Jacksonville is currently conducting a study to determine whether conditions have improved sufficiently to reopen the area to harvesting.
Birds	Species richness Relative Abundance		653 birds representing 50 species were detected at TIMU during surveys in 2010 (Byrne et al. 2011). Carolina wren, northern cardinal, and tufted titmouse were the most widely-distributed species at the preserve, detected at 92% or more sampling locations. House finch was the only non-native species detected.

Plant and Wildlife Communities (continued)

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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Invasive and Nuisance Species	Feral Hogs		Feral hog populations are increasing within the preserve and moving into marginal areas such as salt marshes for foraging/ browsing (USDA 2013). Disease sampling conducted in 2008–2009 by USDA/APHIS/Wildlife Services on a total of 27 hogs was negative for brucellosis, classic swine fever, or pseudo rabies.
	Exotic Plants		Ten species within roughly 43 acres were treated in 2013. Additional suggested projects identified for treatment in 2014 include removal of Chinese tallow, camphor, Chinese box orange, asparagus fern, sword fern, and climbing fig in the Fort Caroline area, Ribault Monument, Broward House, and Cedar Point. Although the condition is currently rated as “of moderate concern” management is highly sensitive to development pressures within and adjacent to the preserve.

Resource Brief: Amphibians

Amphibian communities in the southeastern U.S. are widely considered to be among the most diverse in the world, and they are a valued resource in SECN preserves ([Byrne et al. 2010](#)). TIMU contains 23 known amphibian species including 18 in Anura (frogs and toads) and five species in Caudata (e.g., salamanders, newts, amphiumas, and sirens) ([Tuberville et al. 2005](#)). Because of their complex life histories, habitat requirements, anatomy, and physiology, amphibians are considered to be good indicators of changes in ecosystem conditions as they are affected by climate change, land use development and conversion, contaminants, and changes in hydrology.

Vocal anuran communities were monitored using automated recording devices at 30 locations in the summer of 2009, during which 16 native amphibian species were observed. One non-native amphibian, greenhouse frog, and one non-native reptile, brown anole, were also detected. Two of the amphibians detected were the first recorded occurrences at the preserve and additions to the species list (oak toad and bronze frog). Several amphibian species were widely distributed across the preserve, but Southern leopard frog was the most widely distributed amphibian. The SECN also conducted surveys for chytrid fungus (a pathogen linked to amphibian population declines around the world) and did not find evidence of its presence in any species ([Byrne and Moore 2011](#)). This data will serve as a baseline for future monitoring efforts of vocal anurans at the preserve.



Squirrel Treefrog (*Hyla squirella*) found during monitoring efforts at TIMU, 2009. Photo by SECN staff.

Resource Brief: Birds

Birds are an important component of preserve ecosystems, and their high body temperature, rapid metabolism, and high ecological position in most food webs make them a good indicator of the effects of local and regional changes in ecosystems. Long-term trends in the community composition, relative abundance, distribution, and occurrences of breeding-bird populations provide a measure for assessing the ecological integrity and sustainability in southeastern systems. Further, long-term patterns of these attributes in relation to changes in the structural diversity of vegetation resulting from fire and other management practices will improve our understanding of the effects of various management actions. More than 311 species of birds have been reported at TIMU (NPSpecies 2014).



Pair of tricolored herons nesting. NPS Photo.

The SECN conducted a survey of landbirds in 2010 finding a high diversity of birds at TIMU. A total of 653 birds representing 53 species was detected (Byrne et al. 2011). Carolina wren, Northern cardinal, and tufted titmouse were the most widely-distributed species at the preserve, detected at 92% or more sampling locations. Eastern towhee, Northern parula, white-eyed vireo, yellow-throated warbler, blue-gray gnatcatcher, common yellowthroat, and red-bellied woodpecker were detected at approximately half of the sampling locations. House finch was the only non-native species detected.

Several priority species were detected during the sampling effort, including American oystercatcher, black-bellied plover, black-crowned night-heron, brown-headed nuthatch, bobolink, brown pelican, brown thrasher, clapper rail, common loon, common tern, Eastern kingbird, Eastern meadowlark, Eastern towhee, Eastern wood-pewee, field sparrow, gull-billed tern, glossy ibis, great egret, greater yellowlegs, indigo bunting, king rail, little blue heron, least bittern, least tern, lesser yellowlegs, mallard, Northern bobwhite, Northern gannet, Northern harrier, painted bunting, pied-billed grebe, peregrine falcon, piping plover, pine warbler, prairie warbler, prothonotary warbler, red-bellied woodpecker, royal tern, ruddy turnstone, sanderling, sandwich tern, semipalmated sandpiper, seaside sparrow, sedge wren, snowy egret, summer tanager, and tricolored heron.

Resource Brief: Painted Buntings

A cooperative multi-state monitoring effort was initiated for *Passerina ciris* (Painted Bunting) in 2008 because of a suspected decline in its eastern population. The Florida component of this range-wide study was conducted during three consecutive breeding seasons to obtain a better understanding of abundance and habitat use (vegetation associations) than could be obtained from existing indices, to examine factors affecting detectability, and to determine whether short-term trends could be assessed. Sample units (three hundred two 0.01–27-km² blocks) were allocated for Florida from which 22 were randomly selected, within which 101 point-count survey stations were established. Point-count surveys (n = 906) were conducted annually from 2008 to 2010, and vegetation characteristics were quantified for each location. Abundances were estimated from the counts by an N-mixture model for open populations. Estimated mean breeding density of male Painted Buntings in Florida decreased from 12.4 males/km² in 2008 to 9.8 males/km² in 2010; these densities are at the low end of the range previously reported for the eastern population. In combination with an estimate of available habitat (1,558 km²), the mean estimate of the total number of males (maximum potential abundance) decreased from 19,319 in 2008 to 15,268 in 2010. Painted Bunting abundance in Florida was greater toward the northern end of its range. Abundance was positively associated with the amount of maritime forest and hammock at count points and negatively associated with the amount of planted pine. Conservation of remaining maritime forest and hammock will be fundamental in maintaining breeding populations of the Painted Bunting in Florida (Abstract from Delaney et al. 2013).



Painted bunting at Timucuan Ecological and Historic Preserve. NPS Photo.

Resource Brief: Exotic Plant Management



Herbicide trial at Thomas Creek area, Timucuan EHP. NPS Photo.

In 2013, three exotic plant control projects were conducted in the preserve at Kingsley Plantation, Thomas Creek and the Theodore Roosevelt/ Fort Caroline Areas. Crews treated the Kingsley Plantation for Boston fern, Chinese wisteria, English ivy, Japanese honeysuckle, air potato, catsclaw vine, and blue fern. The east side of Thomas Creek was inventoried for Chinese tallow and camphor to determine areas for future contractor work sites. Suggested future seasonal crew projects in this area are to: (a) Set-up herbicide efficacy plots for future contract work; (b) check herbicide (Clearcast) trial site in Thomas Creek West that was performed in March 2012; (c) perform treatments in outlying areas of Thomas Creek where contract efforts may not be concentrated.

Exotics at the Theodore Roosevelt and Fort Caroline Areas were also checked and spot-treated. The crew searched the area around Willie Browne Cabin where a local group had previously pulled air-potato and found some evidence of residual potatoes. Alligator Pond was circumnavigated by the team and they treated the Chinese tallow. Invasive species were treated around the Broward House.

Additional suggested projects for the seasonal crew in 2014 are to treat exotics (Chinese tallow, camphor, Chinese box orange, asparagus fern, sword fern, and climbing fig) in the Fort Caroline area, Ribault Monument, Broward House, and Cedar Point.

Resource Brief: Changes in Salt Marsh Extent

In 2003, researchers from University of Florida examined changes in salt marsh extent within a 10,000-acre area of the St. Johns River watershed to investigate the ecological effects of causeways built in the 1920s to create Heckscher Drive. Substantial change to the system (specifically a loss of marsh area) is evident from aerial photography; however, certain areas appeared to have changed more dramatically than others. Quantitative analysis of aerial photographs from 1943 and 1999 using GIS and digital image analysis techniques revealed that all parts of the 10,000-acre area of the Timucuan Preserve studied, including the area around Heckscher Drive, experienced some conversion of marsh to open water. Overall, 12% of the marsh area was converted to open water between 1943 and 1999. All areas sampled experienced some loss, ranging from 6% to 25% (Fox 2003). The causeways along Heckscher Drive appear to have buffered the loss of marsh.

In 2013, a project was initiated with the NPS Water Resource Division to classify and quantify the two dominant genera of salt marsh grasses (*Juncus* and *Spartina*) found within the preserve. These data can be used to calculate community changes from years past and into the future. Other classes such as water, trees, other upland vegetative communities, and salt flats were also quantified. Color infrared orthoimagery (2012), LiDAR data (2007), and Trimble eCognition software were used for this project to accomplish this object-based image analysis. This object-based technique groups neighboring homogeneous pixels and then uses contextual properties to enable the analyst to accurately classify a landscape.

The color infrared orthoimagery was produced by the U.S. Geological Survey (USGS) and collected in May of 2012. It contains three bands: red, green, and near-infrared. The imagery has a very fine spatial resolution of 30 cm. In conjunction with the orthoimagery, LiDAR from the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center (CSC) produced in March of 2007 was used. Using the first return and bare earth elevations,



View of saltmarsh from Theodore Roosevelt Area showing carpet of *Spartina* and *Juncus* alternating as a function of elevation and flooding. *Spartina* is the soft textured bright green, while *Juncus* appears to be dark green and grey with rougher texture. NPS Photo.

the height of vegetation could be determined. Since *Juncus* and *Spartina* grow to significantly different heights, this information was extremely useful in classifying the marsh. The other primary methodology used to distinguish the two species focused on the surface texture from the orthophoto. From the air, *Spartina* appears as a fairly smooth, continuous surface. *Juncus*, on the other hand, appears much rougher and textured. Trimble eCognition provides tools that allow the analyst to quantify these differences and accurately classify the landscape.

Out of the 45,661 total acres included in Timucuan Ecological and Historic Preserve, approximately 29,169 acres are classified as salt marsh habitat in the 2012 imagery. This habitat includes the two primary genera of salt marsh grass, *Juncus* and *Spartina*, as well as tidally-influenced water bodies, salt flats, sandy areas, and areas of bare ground or mud.

There is estimated to be 10,492 acres of *Spartina* found within the preserve in 2012. *Spartina*, a relatively salt-tolerant genus, dominates locations found closer to the Atlantic Ocean. These areas include, but are not limited to, Sisters Creek, Fort George River, Simpson Creek, Gunnison Cut, Sawpit Creek, Pumpkin Hill Creek, Edwards Creek, and the Nassau River from its mouth upstream to the confluence with Edwards Creek. Outside of these areas, *Spartina* is often found in bands lining water bodies with adjacent *Juncus* or other inland vegetative communities.

Approximately 6,532 acres of *Juncus*, a less salt-tolerant genus of salt marsh grass, were calculated to be within the preserve in 2012. *Juncus* is predominantly found in areas away from where salt water from the Atlantic Ocean floods in during high tide. These areas include, but are not limited to, Browns Creek, Clapboard Creek, Cedar Point Creek, Hannah Mills Creek, the upper reaches of Pumpkin Hill Creek, and the Nassau River upstream of the confluence with Edwards Creek. Even in more tidally-influenced areas, *Juncus* can be found but is typically found in areas where sediment has built up to increase ground elevations and lower soil salinity levels.

Other features mapped and classified include water bodies, salt flats, sandy areas, bare ground, freshwater wetlands, upland vegetation, and trees, houses, roads, or other anthropogenic features. Water bodies including rivers, lakes, and creeks amounted to 10,570 acres. Salt flats, “communities developing on sandy, hypersaline soils upland from the *Spartina* or *Juncus* zone,” totaled 1,190 acres (SJRWMD 2002). Sandy areas and bare ground were sparse at 123 and 263 acres respectively. There were 295 acres of freshwater wetlands, 280 acres of upland vegetation, and 7,448 acres of trees, houses, roads, or other anthropogenic features. Models predict that sea level will increase by less than 20 cm to over 100 cm by the year 2100. Historically, salt marshes are thought to keep up with sea level rise by the processes of re-suspension, redistribution, and accretion of sediments.

Resource Brief: Prototype STEM (Science, Technology, Engineering, and Math) Observatory at Fort Caroline National Memorial

During summer 2013, an interdisciplinary team from the University of North Florida’s Environmental Monitoring, Mapping, Analysis, & Planning Systems Lab (EMMAPS) designed and built a weather station on the dock at Fort Caroline National Memorial to support the preserve’s scientific studies related to the nutrient enrichment effects from atmospheric nitrogen deposition on the preserve. The station now provides real-time weather data to the NPS and the public via a cellular modem and the Internet.



In fall 2013, the EMMAPS team began a close collaboration with NPS staff to develop a Wi-Fi system that would provide interpretative information via a smart phone or tablet to visitors only while on the dock at Fort Caroline (the Wi-Fi connection does not connect to the Internet). The primary target audience for the interpretive information is youth, and the primary objective is STEM (Science, Technology, Engineering, and Math) education. The STEM Observatory will become another tool that Rangers can integrate into tours, or visitors can interact with using their own devices. The project also provides a platform and a program for UNF engineering, computing, biology, chemistry, and education students to participate in an interdisciplinary community-based project.

2014 Timucuan Adventure Day at the Fort Caroline NM weather station. NPS Photo.

Resource Brief: Timucuan Preserve Student Research Grant Program

The National Park Service and its official Friends Group, the Timucuan Trail Parks Foundation, awarded the first two recipients of \$500 research grants from the Timucuan Preserve Student Research Grant Program, which was newly established through sponsorships at the 2nd annual Timucuan Science & History Symposium held in January 2013. The purpose of the grant is to provide the student with financial support while conducting research. The final reports will be used by preserve staff to help manage preserve resources, while the students gained hands-on research experience and developed their academic skills within the boundaries of a national preserve.

“We are very excited to be able to offer this grant program to support students so they can conduct research in the Timucuan Preserve. There is so much to learn about this complex eco-system, ranging from the biological diversity to the vast historical significance this area holds,” says Maria Mark, executive director of TTPF. “It is important that we, as the official Friends Group for our National Park, are a part of this program and to support this needed research. We are grateful to our 2013 sponsors, Jacksonville University’s Marine Science Research Institute; the University of North Florida President John Delaney; and the University of North Florida’s Office of Research and Sponsored Programs.”

An additional four grants were awarded in 2014.



Pictured from left to right: Maria Mark, Executive Director of Timucuan Trail Parks Foundation; Barbara Goodman, Superintendent of Timucuan Ecological and Historic Preserve; Dr. John Enz, Jacksonville University; Grantee Katherine Kara, Jacksonville University; Dr. Anthony Rossi, University of North Florida; Grantee Lisa Rowan, University of North Florida and Shauna Allen, Chief of Resource Stewardship at Timucuan Preserve. NPS Photo.

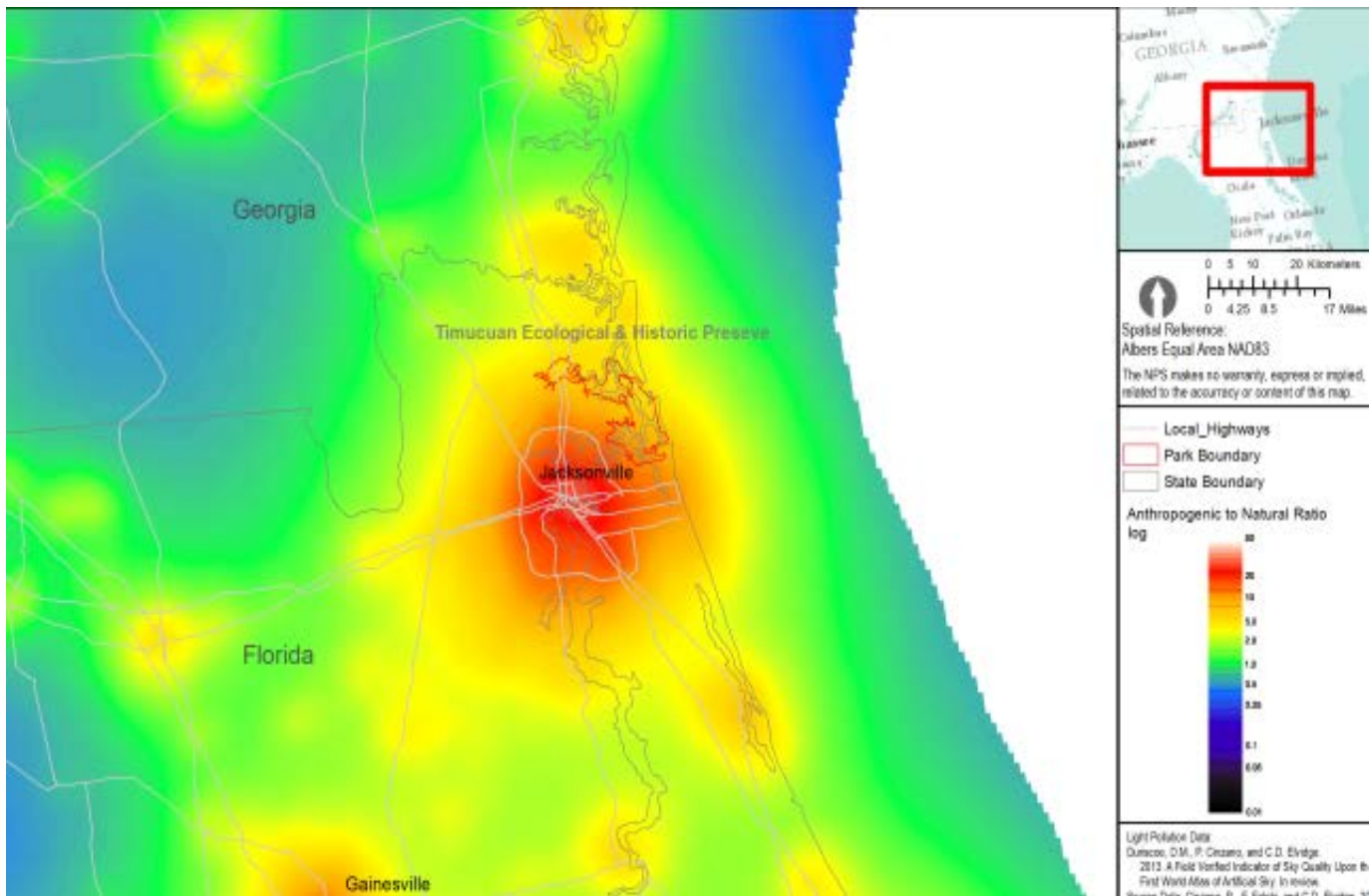
Dark Night Sky



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The night sky has been a source of wonder, inspiration, and knowledge for thousands of years. Unfettered night skies with naturally occurring cycles of light and dark are integral to ecosystem function as evidenced by the fact that nearly half the species on earth are nocturnal. The quality of the nighttime environment is relevant to nearly every unit of the NPS system as the nighttime photic environment and its perception of it by humans (the lightscape) are both a natural and a cultural resource and are critical aspects of scenery, visitor enjoyment, and wilderness character. Based on these considerations and the urban character of the preserve, it is recommended that TIMU be categorized as Level 2. Learn more in the document [Recommended Indicators of Night Sky Quality](#), and the NPS Natural Sounds & Night Skies Division [website](#).

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Anthropogenic Light	Anthropogenic Light Ratio (ALR) — Average Anthropogenic Sky Glow: Average Natural Sky Luminance		The modeled Anthropogenic Light Ratio (ALR), a measure of light pollution, was 5.71, which is considered a moderate condition. The preserve is located within the Jacksonville, FL metropolitan area whose growth rate over the last five years has been moderate, resulting in stable trend (U.S. Census Bureau).



Regional ALR near Timucuan Ecological and Historic Preserve

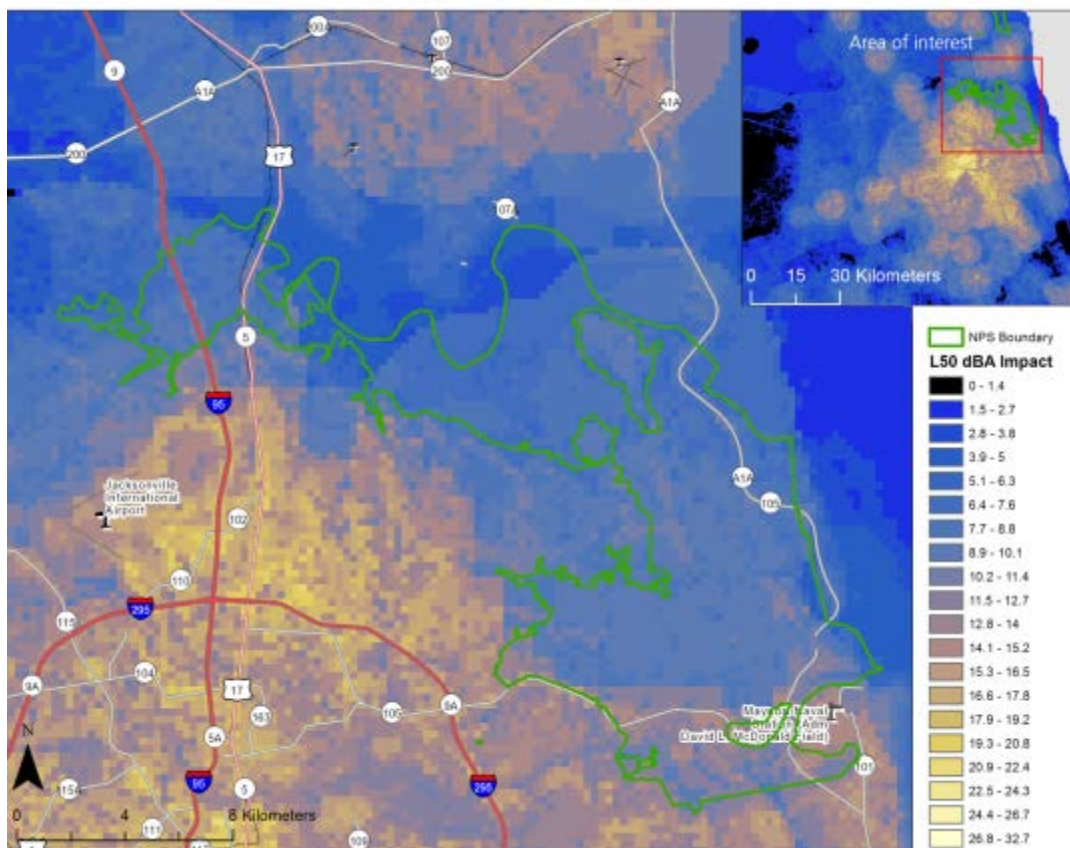
Acoustic Environment



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Every unit in the national park system has a unique acoustic environment, and every unit should understand what its desired acoustic environment would be. The quality of the acoustic environment affects visitor experience and ecological function. Acoustic resource condition, both natural and cultural, should be evaluated in relation to visitor enjoyment, wilderness character, ecosystem health, and wildlife interactions. Based on these considerations and the character of the preserve, the acoustic resource condition at TIMU warrants moderate concern under urban criteria. Learn more in the document [Recommended Indicators for Acoustic Resource Quality](#), the NPS Natural Sounds and Night Skies Division [website](#), and the figure below.

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
L ₅₀ Impact	L ₅₀ dBA – a measure of noise contributed to existing acoustical environment by anthropogenic sources.		The mean L ₅₀ Impact (L ₅₀ dBA), calculated as the difference between existing ambient and natural ambient models, is 8.6 dBA. This indicates that the condition of the resource warrants moderate concern under urban criteria. Trend is deteriorating due to regional development growth, increases in ground-based traffic (Federal Highway Administration 2013) and aircraft traffic in recent decades (Federal Aviation Administration 2010).

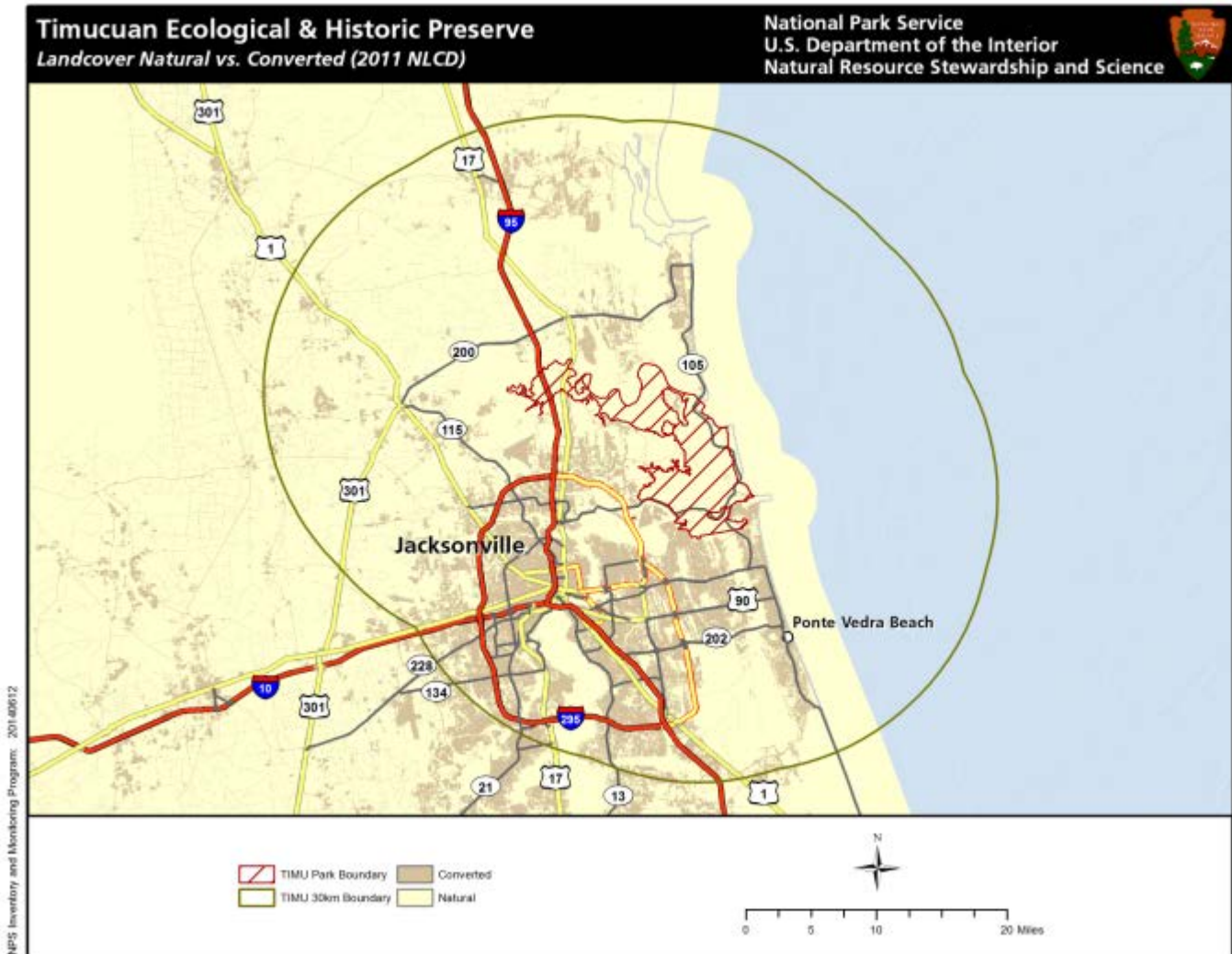


Park-specific L₅₀ dBA impact map for urban section of park, as generated by ver. 2.31 of geospatial model

Resource Brief: Landscape Dynamics – Land Converted

Proportional change in natural land cover is possibly the simplest indication of biotic condition (O'Neill et al. 1997). Calculating the proportion of natural land cover remaining in an area provides a general indication of overall landscape condition surrounding protected areas and offers insight into potential threats and opportunities for conservation (Monahan et al. 2012). Useful thresholds for characterizing landscape connectivity of species and ecological processes are >60% (good), 30–60% (caution), and <30% (concern) (With and Crist 1995, McIntyre and Hobbs 1999, Wade et al. 2003).

According to the National Land Cover Dataset of 2006 (Fry et al. 2011, National Park Service 2013), areas inside and within 30 km of the park are presently dominated by natural land cover (75.6%; Map 1). The area is characterized especially by wetland (36.2%) followed by open water (31.1%). Land cover classification is dominated by developed open space (6.4% of total) and developed low intensity (4.2%).



Natural and converted land cover in the year 2011 occurring within 30 km of TIMU.

Timucuan Ecological & Historic Preserve
Landcover Level 2 Classification (2011 NLCD)

National Park Service
 U.S. Department of the Interior
 Natural Resource Stewardship and Science

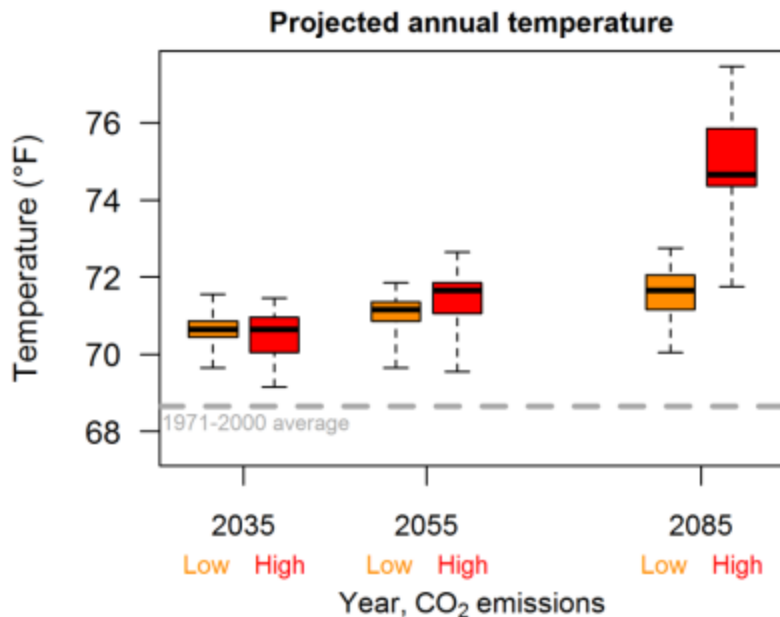


Land cover in the year 2011 occurring within 30 km of TIMU.

Resource Brief: Climate Change and Adaptation

Future Climate Projections

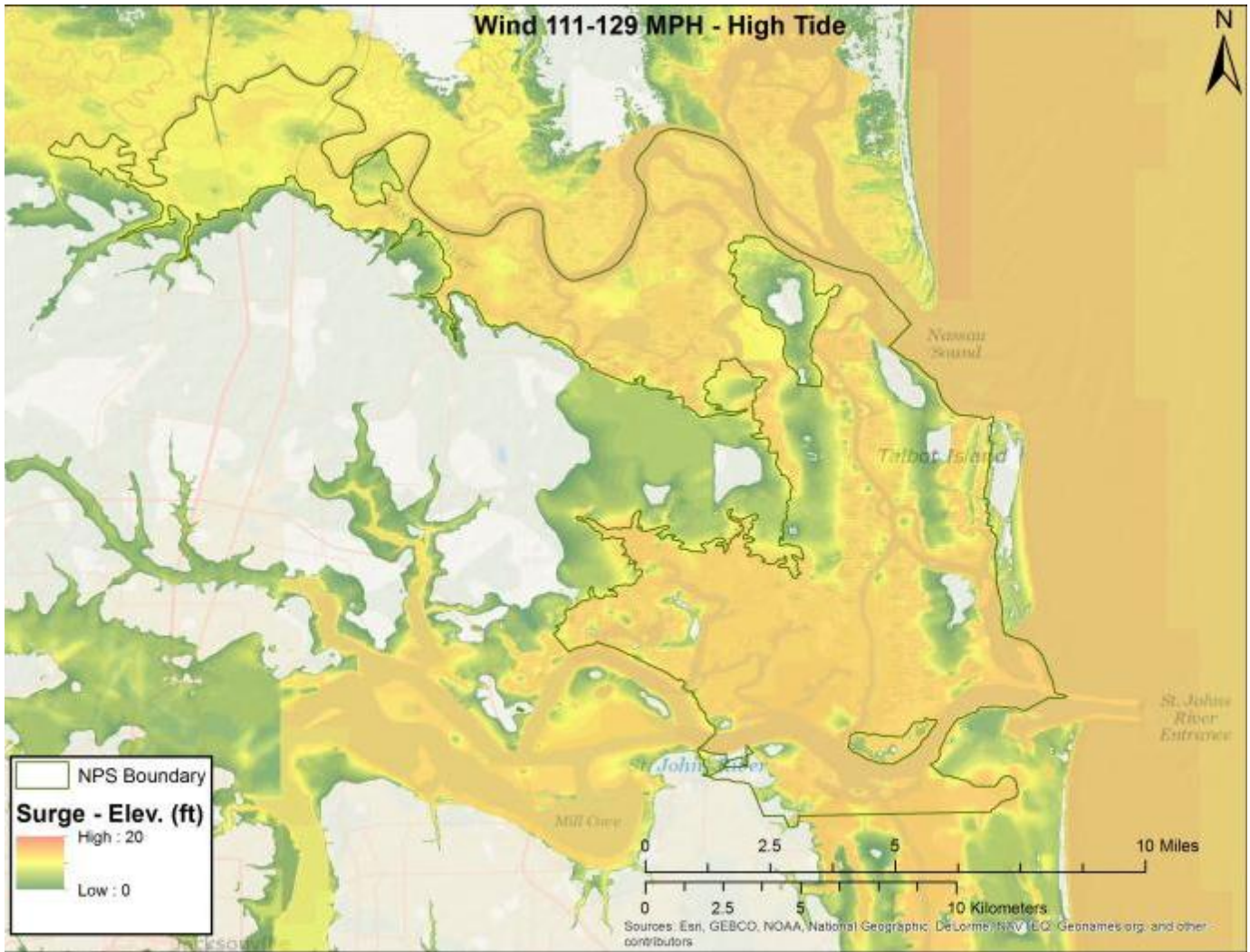
Climate change impacts all aspects of preserve management from natural and cultural resource protection to preserve operations and visitor experience. Effective planning and management must be grounded in our comprehension of past dynamics as well as the realization that future conditions may shift beyond the historical range of variability. For example, average annual temperature (30-year mean) is projected to be higher than the 1971–2000 average under all future climate projections (see figure below). Climate change will manifest itself not only as shifts in mean conditions (e.g., increasing mean annual temperature and sea level) but also as changes in climate variability (e.g., more intense storms and flooding). At TIMU, these changes may alter coastal landscapes and accelerate weathering, deterioration, and loss of cultural resources. Understanding climate change projections and associated levels of uncertainty will facilitate planning actions that are robust regardless of the precise magnitude of change experienced in the coming decades.



Historical and projected mean annual temperature for Timucuan Ecological and Historic Preserve. Historical data (1971–2000 average) are from Monahan and Fisichelli (2014). Projected climate change (30-year means) for the region including the preserve are for three future time periods centered on 2035 (2021–2050), 2055 (2041–2070), and 2085 (2070–2099) (Kunkel et al. 2013). Two greenhouse gas emissions scenarios are presented, the **low** (B1) and **high** (A2) scenarios (IPCC 2007). Projected climate boxplots indicate the variability in future projections among 15 CMIP3 climate models. Values for the area including the preserve are based on the mean model output for that location and the range of climate model projections for the region: the bold horizontal black line represents the mean among all models, the upper and lower bounds of the boxes indicate the 25th and 75th percentile model output values and the whiskers show the minimum and maximum values.

Sea Level Rise and Storm Surge

Sea level rise and associated increases in storm surge impact coastal areas and require parks to revise management goals and strategies (see Caffrey 2014 for the full report). Near Timucuan, sea level has risen more than 8 inches over the past 80 years, and tropical storms frequently pass within 10 miles of the preserve (25 storms since 1842). Sea level is likely to substantially increase over the current century, with projected increases of 1.8–5 feet for TIMU (year 2100 compared with 1992). Storm intensity and storm surge heights are also likely to increase. Based on current sea level, storm surge height at Cedar Point in the preserve would reach 12.3 feet at mean tide during a category 3 hurricane (see figure below).



Storm surge (ft.) generated by a category 3 hurricane at mean tide (prepared using NOAA SLOSH). Storm surge height at Cedar Point in the park is modeled to reach 12.3 feet

Climate Change Effects, Research, and Planning

Climate change is ongoing at TIMU. Although the precise magnitude of future changes cannot be predicted, many trends are already detectable and likely changes should be incorporated into preserve planning.

Warming temperatures will manifest not only as increases in average temperature but also as increases in extreme daily high temperatures ([Kunkel et al. 2013](#)). A shift of only a couple of degrees from the mid-80s (°F) to lower 90s can move visitors from a “Caution” to “Extreme Caution” zone according to the National Oceanic and Atmospheric Administration’s Heat Index. With higher temperatures more frequent and occurring over a longer summer season, it is important to educate visitors on the dangers of heat and to maintain potable fresh water on-site.

South of the preserve is a transition zone from temperate to subtropical climates in Florida. In this zone, there is often an interplay between mangrove and salt marsh, with one or the other dominating depending on the frequency of freeze events (Stevens et al. 2006). More studies are needed to determine if, and to what extent, mangrove could potentially push north into the preserve as minimum temperatures increase.







Sea level rise and coastal inundation are likely to impact natural resources. Expected reduction in habitat for juvenile estuarine finfish and crustacean shellfish may decrease fisheries production. Changes in temperature, ocean pH, local acidification, sea level rise, and saltwater intrusion could impact molluscan shellfish and change their distribution. Warmer water may contribute to more harmful algal blooms and increases in pathogens in shellfish that affect humans when they are consumed ([Ingram et al. 2013](#)). The combination of sea level rise and increased storm surge could exacerbate shoreline erosion at TIMU.

Planning for sea level rise is a challenge given the potential high rates of sea level rise and locations of infrastructure and other sensitive assets near the coast. A recent report, released in draft form by the Climate Change Response Program entitled *Adapting to Climate Change in Coastal Parks: Estimating the Exposure of FMSS-Listed Park Assets to 1m of Sea-Level Rise* helps parks plan for 1 meter (3.3 ft) of sea level rise by documenting the replacement value of resources should they be lost to climate change related storm events ([Peek et al. 2014](#)). Future rates of sea level rise cannot be predicted precisely, but 3.3 ft of sea level rise is likely to occur at some point within the next 100–150 years and provides a standard benchmark for use across parks. It is important to begin planning for sea level rise by considering multiple scenarios that, if unfolded, would adversely impact the preserve. Effective climate change adaptation requires collaboration across large landscapes and the Landscape Conservation Cooperatives are a forum through which the preserve could work with partners to adapt in ways that would offset or mitigate climate-related impacts.



Fort George Inlet at high tide in summer of 2014. Photo credit Pat Leary.

2.2. Cultural Resources

Archeological Resources  web 			
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Percent of sites with known date ranges associated with a research theme.		Of the 45 known archeological sites jurisdictionally administered by the preserve 100% have been associated with date ranges and research themes archeologically pertinent to the Northeast Florida Region.
Inventory	Percent of park adequately surveyed.		Only 10% of the NPS-owned acres have been inventoried to accepted archeological standards. 90% of NPS-owned lands are in need of basic inventory.
Documentation	Percentage of known sites with adequate National Register documentation.		Fifteen percent of known archeological sites administered by the NPS do not have adequate documentation to be assessed for listing on the National Register of Historic Places.
Condition	Percentage of archeological resources in good condition.		Nearly 88% of known archeological sites administered by the NPS have been assessed in good condition.

Resource Brief: Kingsley Plantation Archeology Program

From 2006–2012, the TIMU has partnered with the University of Florida to undertake archeological survey and excavations at Kingsley Plantation. Over the course of these investigations several notable achievements have been completed, adding to the richness of the Kingsley Plantation history. Gaining understanding about enslaved people’s lives from artifacts found in the context of the cabins in which they lived has been a prominent goal of this research. Traces of “Africanism” have been found in the artifacts left behind. Included are blue beads, egg-shaped stones, and pieces of iron used to ward off or enhance their religious and daily lives by rituals to their gods for increased fertility (egg-shaped stones), offerings (blue beads), and to ward against evil (iron). At the entrance to the doorway to cabin designated W-25 a ritual chicken burial with an egg-shaped stone was buried allowing a glimpse into the traditions driving their lifeway.

Other significant finds located during excavations at the site include locating and uncovering a mill structure possibly dating to the McIntosh era circa 1803. Archeological investigations also revealed Zephaniah Kingsley was providing the enslaved population with firearms for use beyond survival hunting. Use of pistols by slave population was unusual in the south because pistols of the day were only used for self-protection. The troubles Kingsley encountered during the “Patriot’s Rebellions” with some of his people being captured and stolen away at Laurel Grove and ongoing discontent by Seminole and Creek tribesmen probably were the reason he went to such measures to protect his people and property on Fort George Island ([Davidson 2010](#)). Other features located were a series of faint building foundations



Chicken Burial from Door Entrance to Slave Cabin E-15. NPS Photo.

just east of the Main House. Based on the upper class nature of the artifacts recovered from these features it appears the buildings served as guest housing. A tabby foundation north of the mill locale was located and may have been associated with storage buildings for cotton or other commodities. However, the most important find at the plantation occurred in 2009 when researchers uncovered the location of the slave cemetery midway between the cabins and the main buildings of the plantation. Six burials were located with very few artifacts associated with them. Markers for these burials included large whelk shells and large iron pieces thought to be associated with the religious beliefs of the enslaved population. It is yet unknown how large the cemetery is or how many people may have been buried in it. These are to be determined during future archeological research.

Resource Brief: Norman Studios

Norman Studios was a silent movie production house in Jacksonville, Florida during the 1920s specializing in “race films” as they were known at the time. These films used African-American actors in realistic roles rather than the demeaning caricatures and stereotypes common in Hollywood films of the era. African-American writers were also used for the productions. Constructed in 1916 as part of the Eagle Studios, five buildings on just over an acre became the site of Norman Studios in 1922. The five buildings included a large production building, an actor’s dressing cottage, a prop storage garage, and a set building. Adjacent to the large production building was a swimming pool. In 1926 it was at this studio complex that Richard E. Norman shot “The Flying Ace,” what many consider his most famous movie. Originally titled “Sky Demon,” it was inspired by Bessie Coleman who tragically died in a plane crash before the project began.

The Norman Studios Silent Film Museum currently consists of four buildings on an acre of land in an area of Jacksonville known as Old Arlington. The land and buildings have been acquired and stabilized (partially through a Save America’s Treasures grant of \$225,000 in 2003) by the City of Jacksonville. There has been significant restoration work done to the property and it exhibits a high degree of integrity. There are two private non-profit organizations very interested in the future of Norman Studios: the Old Arlington, Inc., which is interested in community revitalization and preservation efforts in Old Arlington, and the Board of Norman Studios Silent Film Museum, Inc., which has partnered with the City of Jacksonville to restore and operate the museum.

The National Park Service study team conducted a preliminary analysis of Norman Studio’s resources in 2010. The Reconnaissance survey recommended that a Special Resource Study be recommended to Congress. City Ordinance 2011-453, dated July 27, 2013, authorized and approved the donation of the Norman Studios to the National Park Service and a partnership agreement between the City of Jacksonville and Norman Studios Silent Film Museum, Inc. for the operation and maintenance of the property until its conveyance to the Service. On May 27, 2014, by approval of Ordinance 2014-270, the City of Jacksonville designated Norman Studios as a Local Historic Landmark.

Resource Brief: Santa Cruz y San Buenaventura de Guadalquini Spanish Mission

National Park Service, TIMU, and the University of North Florida (UNF), Department of Anthropology completed their 10th season of cooperative archeological field schools within the preserve. Through the UNF Continuing Education Program the 2011 field season included a public archeology program where those involved received first-hand experience in excavation techniques, the field identification of artifacts, and mapping archeological materials and features.

The site location is where the former Spanish Mission Santa Cruz y San Buenaventura de Guadalquini once stood. A mixture of various Native American groups, including Mocama speaking people Colones, Yguajas and Asajo (Yamassee), established the mission on the southern end of Black Hammock Island in 1684. These native groups had fled their previous mission site, also called Santa Cruz, located on St. Simons Island in Georgia. English and French pirates and raiders drove these groups south to the area of northeast Florida where protection was offered by the Spanish.

A council house was built for the mission residents who moved to San Juan. Following previous excavations at the Santa Cruz mission site, the field school and public archeology program from UNF uncovered features related to a large structure (a possible council house) at the mission site. These features are the remnants of post holes where structural posts were placed for walls. When bisected, the post hole features reveal a conical appearance where a square post was placed in the hole and shell and dirt were tamped down around it to hold the post in place. Also uncovered at the site were a significant amount of San Marcos mission-related pottery, Spanish majolica, olive jar sherds, faunal remains, and other accoutrements of daily living.



Volunteers and students from the University of North Florida (UNF) work to expose the mission site of Santa Cruz y San Buenaventura de Gaudalquini. NPS Photo.

Artifact analysis has yielded a wealth of information for understanding how indigenous groups lived and worked at the Santa Cruz mission. Researchers have learned from faunal remains about the types of shellfish, fish, mammals, and reptiles that made up the Native American diet. The recovery of corn cobs and corn kernels have taught researchers the types of maize eaten and allowed for a comparison of diet to types found throughout the region. This may give us an idea of where this crop originated within the New World and may indicate trading patterns. Other remains found at the site included peach pits and domesticated pig bones. These morsels are noted in the mission period documents from this era and finding evidence of them has led to the validation of historical documents.

Through artifact analysis, the research of historical documents, and the recent discovery of structural features, the preserve has verified the location of the Santa Cruz y San Buenaventura de Guadalquini mission at Cedar Point. Future cooperative efforts with the University of North Florida will enable the preserve to better define the mission landscape, locate other areas of occupation, and offer insight as to how the indigenous groups of the Southeast lived.

Cultural Anthropology



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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
<p>Knowledge</p>	<p>Sufficient research exists to understand the relationship of the park's ethnographic resources and the historic contexts.</p>		<p>One Ethnohistorical study has been completed for Kingsley Plantation. However, an ethnographic overview and assessment is needed for the entire preserve.</p>
	<p>Appropriate studies and consultations document ethnographic resources and uses with regards to the park.</p>		<p>There is ongoing and active outreach with local communities through engagement with groups like the Cosmo Preservation Organization (Fort Caroline) and the hosting of annual events such the Kingsley Plantation Heritage Celebration. In addition, an Ethnohistorical Study of the Kingsley Plantation Community funded by NPS has been published along with a book and several articles written from a cultural anthropology perspective about the Kingsley family and plantation community (Jackson 2009, Jackson 2012).</p>

Cultural Landscapes







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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
<p>Knowledge</p>	<p>Sufficient research exists to understand the relationship of the park cultural landscapes to the historic contexts of the park.</p>		<p>One site-specific Cultural Landscape Plan has been completed for Kingsley Plantation (2006), but needs to be updated based on recent discoveries. Several properties (Broward House, Fitzpatrick Ruins, Cedar Point fish camp, Theodore Roosevelt Area, American Beach) with cultural landscapes have been added to NPS ownership. These properties have not been assessed.</p>
	<p>Adequate research exists to document and preserve the cultural landscape of the park.</p>		<p>A Cultural Landscape Inventory (CLI) for Kingsley Plantation was completed in 2004. However, the rest of the preserve is still in need of a study.</p>
<p>Inventory</p>	<p>The scope of cultural landscapes in the park is understood and a determination has been made whether or not they are a fundamental resource.</p>		<p>The scope of cultural landscapes in the preserve is understood. The Foundation Document identifies Kingsley Plantation as a Fundamental Resource of the preserve.</p>
	<p>Percentage of landscapes eligible for the National Register with accurate, complete, and reliable Cultural Landscape Inventory (CLI) data.</p>		<p>Twenty percent of the cultural landscapes in the preserve on NPS-owned lands have been inventoried and recorded to meet the criteria of eligibility for listing on the National Register of Historic Places. Only Kingsley Plantation has a completed Cultural Landscape Inventory.</p>
<p>Documentation</p>	<p>Percentage of cultural landscapes with adequate National Register documentation.</p>		<p>The Kingsley Plantation cultural landscape has been adequately documented to meet the criteria of eligibility for listing in the National Register of Historic Places and is being updated to address recent discoveries. The National Register documentations for the other landscapes need to be expanded to further define the period and areas of significance.</p>

Historic Structures



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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Percentage of historic structures evaluated using appropriate historical contexts.		One hundred percent of the NPS-owned historic structures have been evaluated according to their appropriate historic context. Included are all the buildings at Kingsley Plantation, the Fitzpatrick Plantation ruins, and the Broward House. All have been evaluated according to the Plantation Era or Recreation Era historic context identified in the TIMU General Management Plan/Developmental Concept Plans (1996) and Historic Resource Study (1996) .
Documentation	Percentage of historic structures with adequate National Register documentation.		One hundred percent of the NPS-owned historic structures are either listed or have been found eligible for listing in the National Register of Historic Places.
	All historic structures have been recorded commensurate with their significance and mandated purposes.		All of the NPS-owned historic structures have been recorded in keeping with guidelines of the Secretary of Interior. All the buildings have been assessed for significance according to National Register criteria.
Condition	Percentage of historic structures in good condition.		Of the total NPS-owned historic buildings, 4 are in good condition. The remaining 28 are managed as ruins and in fair to poor condition.

Resource Brief: Stabilization of Historic Slave Cabins

The ruins of 25 of the original 32 slave cabins are an integral part of Kingsley Plantation, a site listed on the National Register of Historic Places and one of the most intact remaining examples of the plantation system in Florida. These cabins are constructed of tabby, a rare vernacular construction method using oyster shells, lime, water, and sand. The stabilization of the cabins entails the removal of foreign matter such as pollutants or biological growth. Through trial and error, staff discovered the most effective and least invasive cleaning methods. The horizontal surfaces are capped using naturally hydraulic lime to help shed water and deter biological growth. A shelter coat or lime wash is applied to the vertical surfaces. These applications are sacrificial and reversible, while preserving the historic tabby construction from human and environmental factors.

At one time Portland cement was used to patch missing or failing tabby. This has proven to be a poor method of treatment because the tabby is a much softer material than cement. Over time the Portland cement actually causes more harm than good due to the different expansion and contraction rates of the materials. To prevent further damage, all cement was removed using various hand tools and replaced with historically accurate tabby. As the cabins continue to age and settle, various components of the structures begin to pull away or break. This can not only be seen in large cracks along the walls but also by the position of several of the fireplaces. Through the use of ropes and levers these building components are being repositioned and secured in their original location.








Cabin E14 showing a large crack in the front left wall, top left and bottom left. The picture on the right shows the repair and stabilization of the wall. NPS Photos.

History



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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Sufficient research is conducted to understand significance of site.		Some background historical information was researched for the National Register nomination for TIMU. But, this information is insufficient to cover the breadth of history associated with the sites in the preserve, which begins some 6,000 years ago and continues to present day. The preserve's 1996 Historic Resource Study (HRS), while still a valuable reference for the preserve, is nearing 20 years old.
	Sufficient research is conducted to establish the reasons for park creation and site history.		Sufficient background historical information was researched for the National Register nomination for the preserve. The preserve is listed in the National Register of Historic Places. The preserve needs an Administrative History that covers the creation of both FOCA and TIMU.
	Research at the appropriate level precedes planning decisions involving cultural resources.		Before planning decisions are made, appropriate historical and historic archeological research is undertaken on NPS-owned lands. Decisions are based on this research and on the Secretary of Interior Standards and Guidelines. This ensures the proposed projects will cause the least impact on cultural resources.
Inventory	Percentage of cultural resources listed in appropriate Servicewide inventories, including the National Register.		One hundred percent of the known historic properties and cultural resource sites on NPS-owned lands have been assessed according to the Service-wide inventories. All cultural resource sites have been assessed according to the criteria established for inclusion in the National Register of Historic Places. Broward House needs to be added to List of Classified Structures.
Documentation	Percentage of historic properties with adequate Nat'l Register documentation or with Determinations of Eligibility.		One hundred percent of the known historic properties on NPS-owned lands have been assessed according to the criteria of eligibility for listing in the National Register of Historic Places.

Museum Collections



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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
<p style="text-align: center;">Inventory</p>	<p>The scope of museum collections in the park is understood. All resources have been surveyed to determine their appropriateness for inclusion in the museum/archive collection.</p>		<p>A Scope of Collections Statement (SOCS) for TIMU and FOCA was updated in 2012. Office and electronic files from staff need to be surveyed.</p>
	<p>Percentage of objects accessioned and cataloged.</p>		<p>Per the FY 2013 Collection Management Report (CMR):</p> <p>82.16% of the TIMU museum collections are cataloged. The collections total 358,883. The largest backlog is archeology at 55,000, followed by 9,000 archives. However, the University Florida at Gainesville has conducted field schools at TIMU for the past eight years but has not provided cataloging or backlog data for all those years.</p> <p>For FOCA, 95.16% of the museum collections are cataloged. The collections total 10,462. The largest backlog is archives at 346 items, followed by 160 archeology artifacts.</p> <p>100% of objects received are accessioned.</p>
<p>Documentation</p>	<p>Park has current and appropriate baseline documentation (scope of collections statement, collection management plan, housekeeping plan(s), IPM plans(s), EOP, security and fire safety plan(s), and conservation survey(s).</p>		<p>TIMU/FOCA:</p> <ul style="list-style-type: none"> Collection Management Plan (CMP) (2003) Fire/Security Survey (2008) Collection Condition Survey (1995) Archives backlog cataloging (2011/2012) Collection Storage Plan (CSP) (2003) Museum Collections Emergency Operations Plan (2011) Scope of Collection Statement (SOCS) (2012) Integrated Pest Management Plan (IPM) draft form Housekeeping Plan (2010)
<p>Condition</p>	<p>Overall condition of the collection based on condition survey and improvements to storage.</p>		<p>The preserve has an excellent storage facility for the museum collections (built in 2004). Objects are generally in stable condition and are conserved as needed.</p>

Resource Brief: Leg Stocks Exhibit

A set of wooden leg stocks was found in the basement of Kingsley Plantation during the Florida State Park ownership of the house (c. 1950–1991). These leg stocks, probably built between 1810 and 1835, were used to punish or confine slaves by securing their ankles within the two sets of boards and restricting movement. It is unknown who they belonged to or if Zephaniah Kingsley actually used them to punish his slaves.

The leg stocks were sent to the National Park Service’s Harpers Ferry Conservation Center for treatment in 2001. The conservators cleaned the stocks, treated them with consolidant and rust inhibitor, and prepared them for exhibit. In 2009, when new exhibits were installed at Kingsley Plantation, a custom exhibit case in the Kitchen House was designed for the stocks. This acrylic case is well-sealed to prevent insect infestation and keep humidity levels low to ensure the wood is well-preserved, while allowing visitors to view this tangible object that is a reminder of the inhumane treatment of slaves.



Leg stocks. NPS Photo.





Visitors viewing leg stocks exhibit. NPS Photo.

2.3. Visitor Experience

Visitor Numbers and Visitor Satisfaction

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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Number of Visitors	Number of visitors per year		<p>The total of 1,384,345 visitors to the preserve in 2013 is slightly higher (6%) than that of 2012 (1,076,310). The 2013 total is higher than the 10-year average of 980,929 visitors for 2003–2012. Fort Caroline National Memorial and Kingsley Plantation visitor centers in 2013 hosted 98,000 visitors as compared to 96,000 in 2012 and 106,000 in 2011. It is extremely challenging to get an overall accurate visitor count due to numerous access points and no entrance stations. The low confidence level in the total visitation counts for the preserve come from several unrelated causes. Visitor counts at both the Jim King Park and Boat Ramp at Sisters Creek and the Joe Carlucci Sisters Creek Park and Boat Ramp are estimates as they are owned by the City of Jacksonville and they do not have actual traffic counters. While we use actual traffic counts received from the St. Johns River Ferry, it is questionable as to whether the ferry riders know they are in the preserve.</p>
Visitor Satisfaction	Percent of visitors who were satisfied with their visit		<p>Based on the standard visitor satisfaction survey conducted each year, the percentage of visitors satisfied in FY13 was 98.0%, which is higher than the average for the previous five years (97.0%) and ten years (94.9%). The anecdotal experience of preserve staff suggests high satisfaction of visitors although the actual sample size for the satisfaction surveys is very small and can only be conducted under rigid constraints. Source: 2013 Visitor Survey (Card Data Report).</p>

Resource Brief: Discover History

The Timucuan Preserve hosted “Discover History,” a living history timeline event that spanned the 6,000 years of human occupation in Florida. The event was co-sponsored with the preserve’s educational partner the Duval County Public Schools. The two-day event brought history to life for over 700 local elementary school students.

The event included seven stations representing different periods in Florida history, where students were able to listen to and interact with costumed interpreters. The students ground corn in traditional Seminole fashion, participated in pike drills just like early Spanish explorers, listened to French settlers tell the story of Fort Caroline, and held animal skins similar to those used by the Timucuan Indians such as the fox and deer.







This collaboration between Duval County Public Schools, a professional group of living history interpreters, and the National Park Service added a greater richness to the event, more so than if any one group had attempted such an undertaking on their own. The preserve also met the Call to Action goal #18 – Ticket to Ride, as the school bus trips were paid for by the National Park Service and were free to the students and schools. Students were noticeably enthralled with the program and were asking intuitive questions about history and culture. This event allowed hundreds of children to experience local history in an up-close and exciting way!

Students watching a portrayal of the Timucuan people. NPS Photo.

Interpretive and Education Programs – Talks, Tours, and Special Events



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Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Education Programs	Number and quality of programs, and number of participants		<p>2013 – Number of Programs/Participants: 128/3,505 2012 – Number of Programs/Participants: 239/6,564 2011 – Number of Programs/Participants: 276/8,184</p> <p>Program quality has remained very high; however, due to staff cuts, number of programs has decreased.</p>
Ranger Programs	Number and quality of programs and attendance		<p>2013 – Number of Programs/Participants: 496/3,884 2012 – Number of Programs/Participants: 176/3,567 2011 – Number of Programs/Participants: 257/3,739</p> <p>Program quality has remained very high and the increase in programs in 2013 represents an increase in informal programs. The number of visitors served has remained constant. Resource Education has a goal of having 10% of visitors to the Fort Caroline and Kingsley Plantation sites participate in Ranger programs.</p>
Junior Ranger Programs	Number of programs and attendance		<p>2013 – Number of Participants: 1,066 2012 – Number of Participants: 900 2011 – Number of Participants: 682</p> <p>Junior Ranger program participation has increased because formal education programs have decreased and Junior Ranger is one option for self-guided groups. Additionally, homeschool groups and boy/girl scout participation has increased and they enjoy the educational component to the Junior Ranger program. Also, Fort Caroline introduced a new 450th anniversary edition that is featured on the website.</p>
Special Events	Variety and longevity of events, community involvement		<p>Kingsley Heritage Celebration: 1998–Present Harvest Day: 2012–Present Timucuan Science & History Symposium: 2013–Present Timucuan Adventure Day/Citizens Science Day: 2012–Present 150th Civil War Anniversary: 2012 450th Anniversary of Ribault Landing: 2012 Public Archaeology Day: 2006–2013 Total number of visitors to special events: 2013 – 6,831 2012 – 7,825 2011 – 4,989</p> <p>Community partners/involvement included Timucuan Trail Parks Foundation (friends group); Florida State Parks; City of Jacksonville; Duval County Public Schools; Men of Menendez; Florida Historic Militia; Golden Teacup Society; University of North Florida; Jacksonville University Marine Science Research Institute; Alliance France; Sisters Cities; Visit Jacksonville, FPAN (Florida Public Archaeology Network)</p>

Resource Brief: Healthy History Program Grant

The preserve collaborated with the National Park Foundation, via a grant from their Ticket to Ride initiative, to fund transportation costs for students to visit a National Park. The students experienced history while also learning to engage in healthy physical activity. The program itself is unique in that it combines health and history. The program compares the lifestyles of the 16th-century Timucua people and French colonists at Fort Caroline. Students learn history as well as how to develop a healthier lifestyle.

The students were given a pedometer at the beginning of the program to keep, so that they are able to keep track of how much they walked. The students compared the Timucua people's physical activity levels and their food options with those of today's sedentary lifestyle. The goals of this program were to provide opportunities for students to experience the preserve, learn about the cultures that once lived here, and recognize examples of healthy snack options and the benefits of physical activity. The pedometer was a creative and fun way to enhance the student's math skills, but utilizing a gadget also kept up their interest level in healthy active pursuits.



Students involved in an activity, which simulated the building of a Timucua hut. NPS Photo.

Interpretive Media – Brochures, Exhibits, Signs, and Website



[web](#) ▶

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Wayside Signs	Condition and currency of signs		<ul style="list-style-type: none"> FOCA – Excellent condition; currency of signs 2011 Theodore Roosevelt Area – New condition; to be installed Kingsley Plantation – Excellent condition; currency of signs 2009 Cedar Point – Poor condition; currency pre-1999; funding expected 2015 to replace signs
Park Directional Signs (off-site)	Usefulness, quantity, and placement		Usefulness is poor due to DOT generic sign requirements and lack of traditional park entrance; Quantity is acceptable; Placement is acceptable
Exhibits	Timucuan Visitor Center		Good condition – installed in 1997
	Kingsley Plantation		Kitchen House and Barn exhibits were installed in 2009 and are in excellent condition.
	Fort Caroline Exhibit		Overall, Fort Caroline exhibit is in fair condition. Fort walls and moat need rehabilitation. Fort doors are in process of being rehabilitated. Pergola is in excellent condition. Due to erosion issues, the Fort Caroline Exhibit has stabilization concerns and the northwest corner of the palisade has the potential of being undermined by the river.
Print Media	Accuracy and availability of primary park publications		Publications are accurate, updated annually, and always available.
Audio-visual Media	Orientation Films		TIMU only has one four-minute orientation film of the preserve, which was produced in the late-1990s. The film was a low-budget production with no audio except for background music. Currently, there is no auditorium to show orientation and educational films.
	Other AV material/audio tour		A GPS-based audio tour is available at Kingsley Plantation. It was installed in May 2013 and received the National Association of Interpretation Digital Media Award (2013). Plans are in place to reformat for Apple iTunes download.
Websites	Currency and scope of website; number of website visitors		Dedicated staff person to update website on a weekly basis. The Website has had 428,000 hits.
	Social media: Facebook updates and “likes,” overall activity		Variety of staff post to social media platforms (Facebook , Twitter , and Instagram) on a weekly basis.

Resource Brief: “The Lion’s Storyteller” Audio Tour

TIMU introduced a new multimedia interpretive tour in May of 2013. Preserve management was seeking an experience whereby the visitor could be immersed in an interpretive story without having to be distracted by operation of an electronic device. The project faced many challenges including interpreting the sensitive issue of slavery, finding the appropriate delivery device, and providing an immersive experience for visitors.






The story of Kingsley Plantation is a story of perseverance; the human spirit surviving the most dehumanizing conditions of slavery. However, the present day setting of this national park site is idyllic and very peaceful, which provides interpretation with the difficult challenge of telling a difficult story in a place of most amazing beauty.

The powerful and compelling script entitled “The Lion’s Storyteller” was coupled with dynamic voice talents to create a compassionate and moving story. To make the tour more fully immersive, sound effect tracks were created to play between each triggered stop. The sound effect tracks are ambient sounds one would expect to hear at different locations on the plantation grounds, and change based on the GPS location of the listener.



Another challenge was how to deliver this program without taking the visitor out of the story. The preserve decided to deliver the program via a device using the Apple iOS operating system to automate the tour without running underground cabling through the sensitive archeological site. The program utilizes the GPS location function of the iOS device to trigger the program automatically as the visitor approaches each tour stop. This eliminated the need to bury cabling around the plantation grounds.

Preserve management is extremely pleased and proud of the audio tour. It is a moving story that provides the visitor a sense of the pain and suffering, as well as the overwhelming spirit to survive, held by those people enslaved at Kingsley Plantation. Response to the audio tour has been overwhelmingly positive, including that from plantation descendants.

Accessibility [web](#) ▶

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Mobility	ADA compliance		Based on the 2006 Accessibility Assessment, 90% of the findings have been corrected and are now ADA compliant. The remaining 10% have been identified and are awaiting funding.
Visual Accommodation	ADA compliance		The audio tour at Kingsley Plantation is audio-described. Wayside signage follows NPS graphic identity guidelines but not sure whether the guidelines meet ADA requirements.
Auditory Accommodation	ADA compliance		The audio tour at Kingsley Plantation is closed-captioned.
Public Transportation	Access to park via public transportation		Currently, there is no public transportation available to any TIMU sites. City of Jacksonville partner support exists for extending public transportation to nearby Fort Caroline National Memorial. Kingsley Plantation now includes a public tram route on Ft. George Island.
Multi-lingual Resources	Audio and print materials in multiple languages and bi-lingual staff		Print materials are available in French, Spanish, and German. Bi-lingual staff speaks French and Spanish.

Safety [web](#) ▶

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Visitor Safety	Recordable incidents		The safety of visitors and employees is a preserve priority. The preserve works to quickly identify and mitigate potential hazards, and the number of accidents is very low.
Staff Safety and Training	Number of staff trained		Operational Leadership Training has been completed by preserve staff, and CPR, First Aid, and AED training are offered to staff on a space-available basis. Job Hazard Analysis is conducted before specific tasks throughout the preserve. Regular safety messages are given and distributed to staff members. TIMU’s safety program has been identified as a best practice model in the SE Region.

Resource Brief: Operational Leadership

Beginning in May of 2011 and throughout FY 2012, TIMU Park Ranger (Law Enforcement) Jason King facilitated 7 Operational Leadership classes. Ranger King trained approximately 100 employees from parks including Timucuan Ecological and Historic Preserve/ Fort Caroline National Memorial, Castillo de San Marcos / Fort Matanzas, Desoto National Memorial, Cumberland Island National Seashore, Fort Frederica, Fort Pulaski, as well as the SER Monitoring Network. Jason received many compliments on his ability to create thoughtful interaction of the participants with real park scenarios. The safety inspection process and program has also improved through Jason's ability to use Operational Leadership skills to lead employees to think and act safer.



**Jason King, LE Ranger at TIMU and Operational Leadership Instructor.
NPS Photo.**

Partnerships



[web](#) ▶

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Volunteers	Number and hours contributed		2013 – Number/Hours: 249/6,312 2012 – Number/Hours: 157/9,202 2011 – Number/Hours: 108/7,917 2010 – Number/Hours: 141/8,884 2009 – Number/Hours: 83/7,912 The demographic of volunteers has changed. We now have many more local volunteers working shorter hours versus long-term volunteers working longer hours. We also have more volunteers for special one-time events.
Partnerships	Number of official and unofficial partnerships		Since 1999, Preservation Project Jacksonville (PPJ) was an unofficial partner with the TIMU. In 2011, PPJ changed its name to the Timucuan Trail Parks Foundation and was established as TIMU's official friends group. TIMU currently has nine official partnerships and more than 17 unofficial partnerships.

Resource Brief: Stop Talking and Listen

TIMU Superintendent Barbara Goodman announced a significant archeological discovery at an event at Kingsley Plantation on November 10, 2011. The discovery was of the previously unknown location of an enslaved people burial ground with six early 19th-century human burials confirmed. The announcement was attended by a group of Kingsley Plantation descendants, including Dr. Johnnetta Cole, director of the Smithsonian Institution's National Museum of African Art. "There is much more research to be done at this site," Goodman said. "As we continue to determine what that research will be, we will engage the community on a number of themes that will help us properly respect and honor those resting here. That engagement begins today and will continue through the coming months and years."

Kingsley Plantation is the site of a former large estate on Fort George Island. It was owned in the early 1800s by Zephaniah Kingsley, a slave trader and shipper who married one of his slaves, Anna Jai. In 1811 he freed her and their three children. She went on to manage the plantation in Kingsley's absence and own slaves herself. After the United States annexed Florida in 1821, racial policies changed. Interracial marriage was prohibited. Free blacks and those of mixed race were prohibited from inheriting property. In response, Kingsley eventually moved his family to the free black society of Haiti.

The archeological research leading to the discovery was conducted by the University of Florida Department of Anthropology in partnership with the Timucuan Preserve. Dr. James M. Davidson led an archeological field school at Kingsley Plantation between May 10 and June 18, 2010, when the discovery was made. The field school consisted of 17 students, numerous volunteers, and members of the Timucuan Preserve staff.

On November 12, 2011, park rangers and the park archeologist presented a "Day of Discovery" at the site. Rangers offered guided tours of the grounds and answered questions regarding the history of Kingsley Plantation and the cemetery. Visitors were offered the opportunity to engage at a "reflection station" to share their thoughts, ideas, and stories related to their personal connection to this discovery.

On February 2, 2012, preserve staff led by the consulting firm of StetsonRollins gathered a group of community leaders at the studios of WJCT in Jacksonville to engage in dialogue and planning in the civic engagement process based on the discovery of the slave burial grounds. The purpose of the event was to continue to engage our community in thoughtful reflection and dialogue about the personal and community values evoked by the discovery of the slave burials. The event was videotaped and aired as an hour long presentation on several evenings during the month of February. A portion of the program can be viewed [online](#).



Announcement of the discovery of the slave cemetery at Kingsley Plantation. NPS Photo.

2.4. Park Infrastructure





Overall Facility Condition Index



[web](#) ▶

The National Park Service uses a facility condition index (FCI) to indicate the condition of its facilities and infrastructure. FCI is the cost of repairing an asset, such as a building, road, trail, or water system, divided by the cost of replacing it. The lower the FCI number, the better the condition of the asset. The condition of the buildings and other infrastructure assets at each park is determined by regular facility inspections, or “condition assessments,” including daily informal inspections and formal yearly inspections. Deficiencies identified from these assessments are documented in the NPS Facility Management Software System and the cost for each repair determined. Repairs that cannot be completed within the year count against the condition of a structure. The total cost of these deferred repairs divided by the total cost to replace the structure results in the FCI, with values between 0 and 1 (the lower the decimal number, the better the condition). The FCI is assigned a condition category of Good, Fair, Poor, or Serious based on industry and NPS standards. Deferred maintenance projects that require additional funding are identified based on FCI. Planned preventive maintenance on critical components occurs during the year, using a park’s base budget. For additional information about how park managers use information about the condition of facilities and infrastructure to make decisions about the efficient use of funding for maintenance and restoration activities at the park, [Click Here](#).

Asset Category	Number of Assets 2008 / 2013	FCI 2008 / 2013	Condition Status/Trend	Rationale
Buildings	17 / 30	0.265 / 0.039		The preserve has an effective PM (Preventive maintenance) and CM (Corrective Maintenance) program in place. Preserve baseline data is in above average condition, which enables management to program maintenance cycles. For example, roof replacement, painting, carpet replacement, HVAC Systems, etc. are on established cyclic schedules—all reflected in PMIS.
Trails	15 / 13	0.090 / 0.196		Declining trails trends are specifically related to a single trail being affected by shoreline erosion. The TIMU Trail Relocation Project’s deferred maintenance costs are exponential (the trail is essentially being replaced near its Current Replacement Value). Additionally, this project involves an area of rich archeological and cultural resources with any action to be determined by a significant archeological survey.
Waste Water Systems	6 / 10	0.071 / 0.037		The preserve has replaced an aging septic system at Kingsley Plantation with a new eco-friendly system. Through effective FMSS Asset management, the preserve has established cycles for system inspections and pumping, extending the useful life of its systems. The preserve has also utilized a vault system at Cedar Point, completely eliminating the need for an in-ground system.

Asset Category	Number of Assets 2008 / 2013	FCI 2008 / 2013	Condition Status/Trend	Rationale
Water Systems	3 / 7	0.000 / 0.000		In conjunction with the 2010 energy retrofit, the preserve implemented flow monitoring for all water systems to enable better tracking of water use. Large systems, like the Fort Caroline National Memorial irrigation system have been upgraded to have rainfall sensors to limit unnecessary usage. As the preserve has significant inholdings, old unused wells have been grouted and/or capped.
Unpaved Roads	10/11	0.027 / 0.018		The preserve has established PM and CM programs for the grading and resurfacing of unpaved roads and parking areas. Baseline data is in an above average condition, which enables management to plan effective maintenance cycles. Portions of the preserves paved and unpaved roads are jointly inspected by preserve personnel and Federal Highway Administration (FHWA). The FHWA assists the preserve directly with work orders and scheduled maintenance.
Paved Roads, Parking Areas, Bridges, Tunnels	1/ 5	0.123 / 0.200		The preserve has established PM and CM programs for the resurfacing of paved roads and parking areas. Baseline data is in an above average condition, which enables management to plan effective maintenance cycles. The FCI is an inaccurate reflection of preserve paved areas as almost all paved surfaces have recently (2009–2014) been overlaid. Deferred Costs are directly associated to PMIS projects for future paving cycles of these assets.
All Others	52 / 75	0.112 / 0.083		The preserve has an effective PM and CM program in place. Preserve baseline data is in above average condition, which enables management to program effective maintenance cycles.

Resource Brief: Kingsley Plantation House Floor Safety Corrections

In FY 2013 the preserve received funding to correct interior discrepancies within the Kingsley Plantation Main House. The project was to address sagging flooring, uneven doorjambs, and windowsills. Once work was underway it was discovered that the former owners had improperly installed the central stairway. A load bearing support wall was removed and the load-bearing beam to span the distance was not adequate. It was determined that the cause of the discrepancies targeted by this project were a result of the inadequacy of the beam.

The preserve worked with the Historic Preservation Training Center, several Student Conservation Association historic preservation interns, and preserve volunteers to develop and execute a plan to open the walls and install the correct load-bearing beam. The end result immediately restored the floors, door jambs, and window sills to level. This project also allowed the preserve an opportunity to discover period craftsmanship hidden within the walls, which assists in further understanding the historic aspects of the house.

Engineers had deemed the upstairs unsafe for tours due to the excessive floor sagging. This project now enables guided tours to the once closed upstairs. A seemingly minor project to restore jambs and window sills evolved into the potential “saving” of one of the preserve’s major assets as well as providing valuable resource and interpretive information to staff and the visiting public.



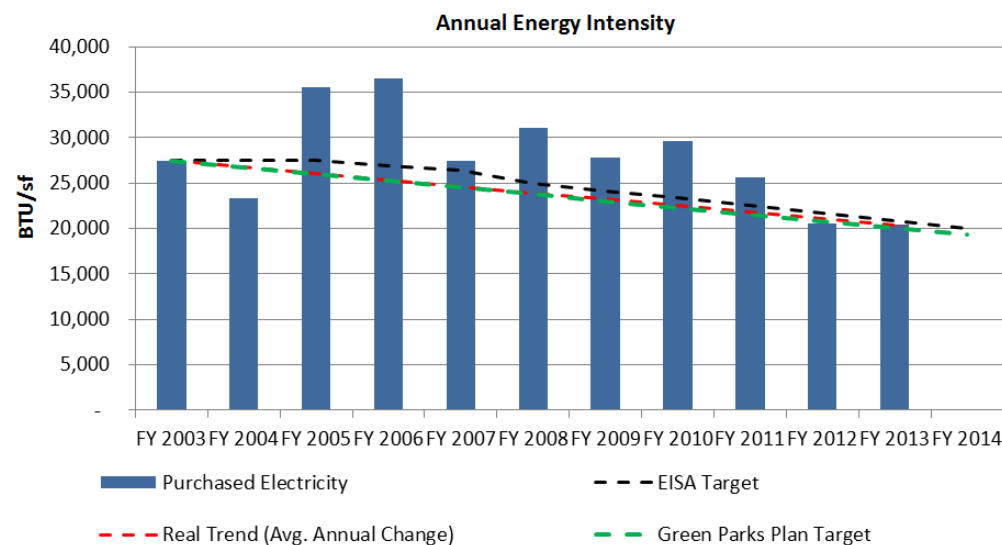
Staircase showing before (left) and after (right). NPS Photo.

Resource Brief: Green Parks Plan

The NPS manages the largest number of constructed assets of any civilian agency in the Federal Government. It operates more than 67,000 structures that account for more than 50 million square feet of constructed space such as visitor centers and historic structures. The [Green Parks Plan](#) (GPP) defines a collective vision and a long-term strategic plan for sustainable management of NPS operations. A critical component of the implementation of the GPP will be informing and engaging parks' staff, visitors, and community partners about climate change and sustainability to broaden opportunities to foster change.

The Vision defined in the GPP plan is, "The NPS will preserve park resources unimpaired for the enjoyment of current and future generations by reducing its environmental impact through sustainable operations, design, decisions, and management at every level of the organization." The plan is based on nine strategic goals that focus on the impact of facilities on the environment and human welfare.

For Energy, one of the performance objectives is to reduce Servicewide building energy intensity by 35 percent by 2016 from the 2003 baseline, where energy intensity is energy consumption per square foot of building space. Historical data for energy consumption reported by TIMU and available in the Energy Data Reporting Tool (EDRT) is shown below.



TIMU incorporates Green Design in all aspects of preserve operations. Current and future project planning always incorporates environmentally-friendly concepts and current green products and concepts in project development. We reduced our carbon footprint by researching and utilizing earth-friendly products in day-to-day maintenance and projects.

In 2010 the preserve was selected to participate as part of the pilot program for energy retrofitting of lighting, HVAC, and water distribution. Through this project, the basic suggestions incorporated through a comprehensive audit, and the changes made by the preserve, immediately showed (over a 1-Year cycle) a 12% drop in energy usage at the target facilities.

The preserve carried this further by incorporating solar ready and energy star rated HVAC systems throughout the preserve on units scheduled for replacement. This concept was implemented in FY12 when cyclic funding was received and has carried through additional funded projects in FY13. To date, seven HVAC systems at the preserve have been replaced with solar ready energy star rated systems.

The preserve typically has 1–2 tropical storms a year that generate substantial debris that is typically slated for landfills. The preserve identified facilities that recycle (mulch) storm debris, recycling and reducing the significant tonnage that used to go directly to landfill. Larger material is cut into "fireplace sized" portions and then used for preserve living history events. The preserve also fully revamped its recycle program to a single source contractor who takes all recyclable waste (plastic, aluminum, glass, paper, etc.). This consolidation also significantly lowered the costs associated with multiple recycle vendors and/or travel by preserve staff to recycling centers for disposal and/or sorting.

Recent preserve projects, such as the rehabilitation of the Johnson Barn, incorporated numerous "greening" concepts in the construction phase. For example, electrical needs were dramatically reduced by utilizing solar tubular lighting in the bay and attic areas. Materials used in the roofing as well as siding were 25%–75% reclaimed/recycled materials. Useable framing components were also re-used from previous demolition projects, reducing materials going to landfills as well as reducing project costs.

Chapter 3. Summary of Key Stewardship Activities and Accomplishments

Activities and Accomplishments

The list below provides examples of stewardship activities and accomplishments by park staff and partners to maintain or improve the condition of priority park resources and values for this and future generations:

Natural Resources

- Science and History Committee made up of representatives from several universities formed in 2012 to coordinate research and science activities within the preserve.
- Initiation of the annual Science and History Symposium beginning in 2012 to present research conducted by staff and outside researchers in the preserve.
- Completion of baseline inventories and initiation of Vital Signs Monitoring.
- Installation of STEM station at Fort Caroline NM.
- Ongoing water quality monitoring partnership with the City of Jacksonville.
- Establishment of permanent invasive species monitoring program including Air Potato bio control, Yards to Parks Program, and membership in the First Coast Invasives Working Group.
- Establishment of Timucuan Student Research Grant program in partnership with TPPF, UNF, and JU Marine Science Research Institute to conduct studies at the preserve.
- Launched a study to evaluate mercury levels using dragonflies.
- Completed compliance for the Kingsley Plantation Interpretive Tram Tour and the Ribault Monument Seawall.
- Coordinated agency review of the Jacksonville Harbor Mile Point Project and Harbor Deepening Projects conducted by the USACE.

Cultural Resources

- Archeological excavations of Kingsley Plantation grounds and cabins by University of Florida archeology field school (2006–2012).
- Discovery of Spanish mission sites by University of North Florida archeology field schools (2002–2007, 2009–2013).
- Stabilization of historic buildings at Kingsley Plantation, including stabilization of slave cabins (capped, applied lime wash, repositioned fireplaces).
- Re-roofed Cabin E-1 and Barn.
- Rehabilitated Main House and Kitchen House.
- Installed shutters on Main House.
- Constructed Curatorial Storage Building that meets NPS and museum standards.
- Completed Ethnohistorical Study of Kingsley Plantation (2006) (connecting with descendent communities).
- Research and Collecting Permits issued have increased from an average of 2 permits per year between 2001–2009 to 7 permits per year between 2010 and 2014 with the highest number on record at 14 in 2014.
- Acquired the Napoleon Bonaparte Broward House in 2004 and completed the Historic Structure Report (2010).

Visitor Experience

- Kingsley Plantation’s audio tour, “The Lion’s Storyteller” is an immersive experience that tells the story of the plantation from the perspective of the enslaved people who lived and toiled on Fort George Island.
- 36 out of 41 preserve wayside exhibits are new as of 2009.
- 450th anniversary celebrations at Fort Caroline (i.e., the exploration of the St. Johns River by the French in 1562 and the subsequent founding of la Caroline colony two years later).
- Kingsley Plantation hosted 5 Project Archeology teacher workshops sponsored by the Florida Public Archaeology Network. This effort trains teachers on how to effectively use the shelter curriculum in their classrooms.
- Applied for and received a grant from the National Park Foundation, which funded student transportation to Fort Caroline to attend the Healthy History Program. This program gave students access to their local park and provided an interactive learning experience which included physical activity such as running, trail-walking, and “hunting and gathering” while gaining cultural and historical knowledge.
- The Kingsley Plantation has presented the Kingsley Heritage Celebration for the past 17 years. Begun as an event for the Kingsley descendants, it has since transformed into a community-wide cultural celebration.
- Fort Caroline debuted a new 450th anniversary edition of the Junior Ranger Program, which includes information from the new 2012 waysides.
- TIMU continues to expand its social media presence. TIMU joined Facebook in 2008 and was a beta park for NPS Twitter.

- Fort Caroline hosted a living history timeline event sponsored by Duval County Public Schools. These events introduced over 1,000 local students to different periods in Florida history by observing and interacting with costumed interpreters.
- TIMU, Florida State Parks, and the Timucuan Trails Parks Foundation sponsored Timucuan Adventure Day for the past 2 years. This citizen science event engages visitors of all ages in the scientific process through fun educational activities.
- Resource Education and Stewardship divisions are working together to create an interactive visitor experience that incorporates the Fort Caroline weather station constructed by the University of North Florida. Visitors can access information and science activities with personal smart devices.
- TIMU has introduced new foreign language rack cards explaining the cultural significance of preserve sites.
- Preserve sites have incorporated the use of iPads in their interpretation. For example, rangers have also delivered programs to local schools via Skype.
- TIMU safety committee continues to engender a recognized safety culture throughout the preserve. The award-winning safety points program effectively tracks and rewards safe behavior, preserve specific safety newsletters are produced regularly and safety tips and videos are disseminated to employees each week.
- TIMU is a model park for Operational Leadership, with the preserve's safety officer presenting training for many parks in the Southeast Region. All permanent employees, as well as volunteers and temporary employees, have been trained with the Operational Leadership program.
- TIMU celebrated Migratory Bird Day with various events including a bird count at Spanish Pond.

Park Infrastructure

- Preserve has consolidated its fleet to include E85 & Hybrid vehicles as well as reducing number of vehicles at preserve.
- Preserve has rehabilitated the Johnson Barn, utilizing green products to include: solar tube lighting, recycled roofing and siding materials and some reclaimed materials from the "old" structure.
- Upgrades to the FOCA irrigation system including new rain/rainfall sensors to minimize unnecessary consumption.
- As standard water heaters require replacement, the preserve has replaced them with more efficient tankless, on-demand water heaters.
- The septic system serving the Kingsley Plantation Army/Navy lodge was determined to have exceeded its useful life. Due to the limited space available for a new system (historic landscape & proximity to water) an ingenious new design called Enviro-Chamber was identified and constructed at the old site.
- Via another SER fund request, the preserve competed for and was awarded funding for establishing centralized cleaning stations at select preserve facilities. Stations were installed at the FOCA Visitor Center, Kingsley Plantation maintenance, and Preserve Headquarters. These stations pre-mix 4 standard cleaning agents commonly used at all sites, enabling the preserve to dramatically reduce its chemical inventory.
- The preserve was able to maximize funds in accomplishing numerous projects throughout the preserve. At the Broward House, the facilities roof was replaced with historically accurate wood shake shingles, replacing the failing asphalt roof. This is in-line with recommendations by the structure's HSR.
- The Kingsley Plantation Main House interior stairwell support beams were found to be bowing significantly to the weight of the stairway. Preserve staff replaced these beams with new beams of proper proportions to support the stairways load. In conjunction with this project, the settling resulting from the undersized beams caused minor plaster damage in portions of the upstairs. This was also repaired after the beams were replaced.
- In conjunction with the preserve's 450th anniversary event, M&E conducted significant repairs to the Fort Caroline National Memorial area. Staff designed and constructed a memorial Pergola for new interpretive signage associated with the fort model.
- At the Ribault Column site, refinishing of the brick entry wall was completed to resemble a white coquina finish. The entire area was re-landscaped with native vegetation. The ADA Boardwalk Ramp was rebuilt to incorporate new decking, grab rails, and fall barriers. The decking surface was finished with non-slip paint. The parking area was also redesigned to eliminate ADA access into the drive through area. This was accomplished by installing a sidewalk from the ADA parking slots to the boardwalk.
- The FOCA staff completely designed and constructed a new brick oven at the Fort Exhibit. The previous feature had failed and was removed. As this feature is extremely popular with visitors and staff, the new oven was constructed as soon as possible. Completion of the exhibit corresponded with the preserve's annual reenactment program.
- The Higgy spillway at Spanish Pond was also substantially repaired. The corrugated spillway upright had rusted to the point of failure, which was causing excessive water drainage at the pond. Staff temporarily dammed around the Higgy and applied rubber membrane and concrete to correct the failure.

Chapter 4. Key Issues and Challenges for Consideration in Management Planning

Preserve Jurisdiction

The Preserve was established to protect the natural ecology of over 46,000 acres of lands and waters along the St. Johns and Nassau Rivers in northeast Florida. The salt marshes of this area are a vanishing resource along the southeastern United States coastal areas and serve as home to a variety of threatened and endangered species along with unique ecological communities. Salt marshes are susceptible to waterfront development in the form of private residences, agricultural uses, docks, piers and bulkheads, all of which can have adverse impacts on preserve resources. Commercial port operations and harbor maintenance activities can influence shoreline erosion, water quality and salinity changes, sediment transport and contamination, and invasive species introduction, which can adversely affect preserve resources. The types of jurisdiction in the preserve include concurrent jurisdiction on properties acquired before February 22, 2001 and proprietary jurisdiction on all properties acquired since the last cessation of jurisdiction by the State of Florida. There are no areas of exclusive legislative jurisdiction or partial legislative jurisdiction in the preserve. The preserve has provided comments on USACE and DEP permits for dock construction but has not exercised our full authority to regulate activities in the preserve below the mean high water line under 36 CFR Section 1.2(a)(3).

Visitor and Resource Protection

The Preserve currently has one commissioned law enforcement ranger; in 1997 the preserve had four. Since 1997 the preserve has identified areas of concern such as the patrol/enforcement of isolated areas of the preserve far removed from HQ but used by visitors, e.g., Thomas Creek area, Cedar Point area, and islands owned by the NPS. Law Enforcement coverage averages 212 work days per year. After hours response and night patrols of developed areas are done by the local law enforcement when available. Local and state law enforcement provides assistance and augments back country patrols.

The Preserve has an existing Memorandum of Understanding with JSO. The JSO has been very helpful through the years in assisting the preserve with investigations ranging from break-ins to suicides. JSO officers routinely patrol roads and waterways in the preserve. A JSO radio is kept in the preserve law enforcement patrol vehicle in order to monitor local LE situations and also to request assistance as needed. JSO officers often are called to respond to intrusion alarms when preserve staff is unavailable. The Florida Fish and Wildlife Conservation Commission (FWCC) and other state and Federal agencies personnel continue to be of great assistance anytime their help is requested. The sole commissioned officer is authorized to assist JSO personnel within a mile of preserve-owned lands in the event of a true emergency involving life or death issues affecting JSO personnel. The cooperative relationship is particularly important in light of newly stated jurisdictions.

Climate Change Concerns

The TIMU was established to protect the natural ecology of over 46,000 acres of lands and waters and over 6,000 years of human history along the St. Johns and Nassau Rivers in northeast Florida. The preserve includes and administers Fort Caroline National Memorial. In 2012, we developed our foundation document to identify our core mission, purpose, significance and fundamental and important resources and values. As a coastal park, we realized that climate change has and continues to have a significant impact on our ability to preserve this national park for this and future generations. The issues identified below are the result of the foundation document workshop.

St. Johns and Nassau River Salt Marsh Estuary

Estuarine wetlands and waterways encompass over 75% of the 46,000 acre preserve. These important areas perform a variety of ecological functions and are among the most productive ecosystems on the planet. Within the St. Johns and Nassau River watersheds freshwater flushing has declined within the preserve due to a long-term drought in the region. Increased water withdrawals from the river and springs alter the salinity of the St. Johns River. Extreme high tides and heavy rainfall contribute to altered nutrient loads in the estuary. The preserve is concerned about mitigating the impacts of these stressors on the salt marsh community and ecological functions of the estuary. A number of entities are exploring salt marsh restoration and management options to increase salt marsh elevation in advance of sea level rise. We will work with our partners and subject matter specialists to determine the options for managing this critical resource.

Fort Caroline National Memorial

A fundamental resource and value, Fort Caroline National Memorial commemorates the French Colony of la Caroline. Founded in 1564, the colony was the outpost of Huguenot settlers who sought religious freedom, territorial expansion, and wealth in the New World. Today the scaled exhibit of the fort and the Ribault Monument commemorating the 1562 French claim to the region provide an opportunity for visitors to understand and learn about the first contact and colonial interests of Europeans in the Americas. Located on the St. Johns River, the scaled exhibit of the fort is threatened by subsidence and shoreline erosion along St. Johns Bluff. The Ribault Monument is also threatened by shore line erosion and slope instability. The preserve is faced with the need to determine the

feasibility of future investments in maintaining the scaled exhibit and visitor facilities at Fort Caroline with the threat of sea level rise inundating the exhibit.

Kingsley Plantation

Kingsley Plantation, a fundamental resource and value, is the oldest surviving example of an antebellum Spanish Colonial plantation in the United States. The site exemplifies the transition from Spanish Empire rule in Florida to U.S. territory governance in the early 1820s. The tabby slave cabins at the site represent one of the largest intact collections of tabby construction in America. The site is located along the Fort George River on Fort George Island, once a barrier island along the Atlantic Coast. The Fort George River, once maintained as a navigable waterway, has changed dramatically over the years, now containing billions of cubic yards of sediment, which historically would have been transported down the coast or into the mouth of the St. Johns River. Due to engineering structures to stabilize the mouth of the St. Johns River for JaxPort, sediment is transported into the Fort George River where it has settled to create sand islands and salt marsh habitat. The combined effects of climate change with the intervention of engineering structures to support commercial port operations at JaxPort create a complex problem for managing the Fort George River. Options to maintain the historic structures of Kingsley Plantation and the cultural landscape and mitigate for sea level rise impacts to the historic structures must be identified and evaluated to determine future investments.

Land Protection Planning

The last update to the preserve's land protection plan was in 2004. Since that time the preserve boundary was expanded with a donation of the Dune at American Beach and we also acquired additional properties on Black Hammock Island. We are in the process of updating the master tract listing and the Land Protection Plan with support from SERO Lands. A boundary dispute beginning in 2005 regarding upland owners riparian rights in the Tidewater Subdivision was resolved in 2013 through a settlement agreement and final judgment quieting title which established the preserve boundary and NPS ownership of the wetlands adjacent to the Tidewater community (May 2013). However, phase 2 of the development is underway and the same issue is likely to arise although the property is owned by The Nature Conservancy. In 2012, The Nature Conservancy contacted us with their intention to donate approximately 10,000 acres of lands and wetlands within the preserve known as the Machaba Balu Preserve. The donation requires considerable coordination on the part of NPS SE Region Lands and the Solicitors office to resolve title issues. Remaining actions include contracting environmental site assessment.

We received LWCF funds in 2014 for acquisition of lands. We have been working with the Trust for Public lands to facilitate the identification of willing sellers within our priority acquisition list. Several properties have recently become available; however, the appraised value has not been acceptable to the owners who are perhaps still looking forward to a recurrence of the real estate market prior to 2008. One property listed in the enabling legislation and still under private ownership is the Spanish American Battery. This property has recently been sold and the potential for NPS ownership is unknown at this time. Nearly intact except for the heavy artillery, this site has significant vegetation encroachment and invasive plants.

Visitor Experience – Issues and Challenges

NPS Identity Crisis – Fort Caroline National Memorial, authorized in 1950, has been a field-trip destination for generations of local students. In Florida, kids study Florida History in fourth grade and what better place to bring young kids to bring history “alive” than to a fort. This is an awesome memory that has been indelibly etched in people's mind; what is not remembered is that Fort Caroline is a National Park. While the recognition of TIMU/FOCA by the community has progressed; the identity problem has carried through the creation of the preserve in 1988 and continues to this day.

There are many potential reasons for the identity crisis experienced by the National Park Service in Northeast Florida. Preserve managers have identified one as being the lack of a traditional National Park entrance with the ubiquitous Park Service entrance sign. The preserve is a sprawling land mass with countless entrance possibilities.

Partnerships and Volunteers – Volunteers are a valuable partnership that the preserve is not fully leveraging. In an attempt to augment the loss of temporary preserve guides; resource education employees have actively recruited long-term volunteers. The preserve has a long history of long-term volunteers, who live in the lodge at Kingsley Plantation or at the Recreational Vehicle (RV) pads at Fort Caroline. However, with only two RV pads in the preserve we are continually turning away well qualified volunteers. Efforts to add RV pads to Kingsley Plantation and Cedar Point were stymied by the rich archeological resources found at both sites. During 2013, volunteers selflessly donated 6,312 hours of their time to the preserve. This is approximately 3.1 FTE and represents an economic donation equivalent to \$139,747. Much effort is spent on other partnerships, but none of them delivers such an impact to the preserve as does our partnerships with volunteers.

Reduced Educational and Community Outreach Programming – Education programs are an integral part of the mission of the resource education division to “encourage awareness, sense of value, and eventual stewardship ... of our cultural and natural resources through emotional/intellectual connections that meet the needs of a diverse and changing population.” Due to erosion of budgets over time the park average of 7,000 school children each year has fallen to just over 3,500 between FY12 and FY14, a 47% reduction in contacts at Fort Caroline and Kingsley Plantation. The most noticeable impact to the program was the termination of all ranger-led school visits

to the preserve. In response to reduced staffing, the division had already stopped all off-site visits to classrooms. This affects our outreach and response to requests for school visits and our interaction with underserved schools in the Jacksonville area. There are 50 elementary schools, in the local district, which qualify for the Federal Title One program status. During 2013, only seven Title One Schools attended educational programs at the preserve, compared to 23 title one schools the previous year. These outreach programs promoted awareness and appreciation of the two National Parks within the Jacksonville community.

Housing

A Housing Management Plan documenting the need for five separate housing units (four houses and one dormitory) was completed in March of 2013 and is awaiting central office approval. A Housing Needs Assessment was written and received central office approval in July of 2014. These documents show there is a need for housing in the preserve and any available bedrooms could be utilized by volunteer help. Even though there are two pads in existence for Recreational Vehicle hook-up a need for additional RV pads exists throughout the preserve. Throughout the years Timucuan Preserve volunteers have hooked up RVs at partner campgrounds and have stayed in state-owned facilities. This is an ongoing need.

New Visitor Opportunities via Commercial Services

Preserve staff seriously began planning for commercial services in 2002 and has been seeking appropriate guidance and funding to enable interpretive boat tours and other commercial ventures to occur in the preserve. Boat docks at the Fort Caroline and Kingsley Plantation sites were built to accommodate this approved activity. A Boat Tour Prospectus was issued in 2014, which unfortunately, resulted in nonresponsive bids. The work is ongoing to make this a reality in these ever-changing market conditions.

Administrative Background for Managing Two Parks

Congress authorized the establishment of the Fort Caroline National Memorial on September 21, 1950 and the TIMU on February 16, 1988. The first act was passed to commemorate the historic Fort Caroline settlement, St. Johns Bluff, Florida. The second act preserved a greater portion of the St. Johns River valley ecological area and protected significant historic assets. Congressman Charles Bennett specifically stated the Timucuan Preserve would be established where Timucuan Indians lived in prehistoric and historic times. Mr. Bennett mandated that Fort Caroline administer the Timucuan Preserve, which has created challenges in managing the two parks.

As the 130-acre Fort Caroline is a very small part within the approximately 46,000-acre Timucuan Preserve, visitors have difficulties realizing it is managed as one large area. Early in the preserve's existence there were separate financial plans, museum collections, FMSS databases, and scorecards, as well as duplication in other NPS programs. As long as these databases exist preserve staff will continue to deal with this confusion unless the data can be combined or viewed as one unit. The organization code 5310 is for Fort Caroline and 5308 is for the Timucuan Preserve. The preserve is mostly known as the Timucuan Preserve but is listed as "Fort Caroline/Timucuan" in Washington's Green Book.

Staffing

The TIMU Superintendent oversees and supervises all activities within the two preserve areas including four divisions, located in the preserve headquarters in the Theodore Roosevelt Area. The four divisions are: Resource Stewardship and Partnership, Resource Education, Facility Management and Administration. The preserve operates visitor contact stations at Kingsley Plantation and Fort Caroline.

The preserve has expanded its boundaries, acquired more properties, and rehabilitated other buildings increasing the gap. It is clear that shrinking budgets mean the existing staff needs to be selective in what work is done and it is managed. Partnering is key to protecting the area within the boundaries.

References

See the [State of the Park Report for the Park website](#) for a more complete list of references to documents and data sets upon which the assessments in this State of the Park report are based. References for several of the key documents cited in this report are as follows:

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See Also:

[Collection of Natural Resource-Related References](#)

[Collection of Cultural Resource-Related References](#)

[Collection of Visitor Experience-Related References](#)

Glossary

See the [State of the Parks home page](#) for a link to a complete glossary of terms used in State of the Park reports. Definitions of key terms used in this report are as follows:

Americans with Disabilities Act (ADA)	Law enacted by the federal government that includes provisions to remove barriers that limit a disabled person's ability to engage in normal daily activity in the physical, public environment.
Archeological Sites Management Information System (ASMIS)	The National Park Service's standardized database for the basic registration and management of park prehistoric and historical archeological resources. ASMIS site records contain data on condition, threats and disturbances, site location, date of site discovery and documentation, description, proposed treatments, and management actions for known park archeological sites. It serves as a tool to support improved archeological resources preservation, protection, planning, and decision-making by parks, centers, regional offices, and the national program offices.
Baseline Documentation	Baseline documentation records the physical condition of a structure, object, or landscape at a specific point in time. A baseline provides a starting point against which future changes can be measured.
Carbon Footprint	Carbon footprint is generally defined as the total set of greenhouse gas emissions caused by an organization, event, product, or person.
Climate Friendly Park	The NPS Climate Friendly Park designation requires meeting three milestones: completing an application; completing a comprehensive greenhouse gas (GHG) inventory; and completing a Climate Action Plan, which is the actions, policies, programs, and measures a park will put into place to reduce its GHG emissions.
Cultural Landscapes Inventory (CLI)	A Cultural Landscapes Inventory describes historically significant landscapes within a park. The inventory identifies and documents each landscape's location, size, physical development, condition, characteristics, and features, as well as other information useful to park management.
Cultural Landscape Report (CLR)	A Cultural Landscape Report is the principal treatment document for cultural landscapes and the primary tool for long-term management of those landscapes. It guides management and treatment decisions about a landscape's physical attributes, biotic systems, and use when that use contributes to historical significance.
Curation	National parks are the stewards of numerous types of objects, field notes, publications, maps, artifacts, photographs, and more. The assemblage of these materials comprises a museum collection. Curation is the process of managing, preserving, and safeguarding a collection according to professional museum and archival practices.
Exotic Plant Management Team (EPMT)	One of the ways the NPS is combating invasive plants is through the Exotic Plant Management Team Program. The program supports 16 Exotic Plant Management Teams working in more than 225 park units. EPMTs are led by individuals with specialized knowledge and experience in invasive plant management and control. Each field-based team operates over a wide geographic area and serves multiple parks.
Facility Condition Index (FCI)	FCI is the cost of repairing an asset (e.g., a building, road, bridge, or trail) divided by the cost of replacing it. The lower the FCI number, the better the condition of the resource.

Foundation Document	A park Foundation Document summarizes a park’s purpose, significance, resources and values, primary interpretive themes, and special mandates. The document identifies a park’s unique characteristics and what is most important about a park. The Foundation Document is fundamental to guiding park management and is an important component of a park’s General Management Plan.
Fundamental and Other Important Resources and Values	Fundamental resources and values are the particular systems, processes, experiences, scenery, sounds, and other features that are key to achieving the park’s purposes and maintaining its significance. Other important resources and values are those attributes that are determined to be particularly important to park management and planning, although they are not central to the park’s purpose and significance. These priority resources are identified in the Park Foundation Document and/or General Management Plan. The short-cut name that will be used for this will be Priority Resources.
General Management Plan (GMP)	A General Management Plan is a strategic planning document that outlines the future management of a National Park Service site for the next 15 to 20 years. The plan will set the basic philosophy and broad guidance for management decisions that affect the park’s resources and the visitor’s experience.
Green Parks Plan (GPP)	The Green Parks Plan defines a collective vision and a long-term strategic plan for sustainable management of NPS operations. A critical component of the implementation of the GPP will be informing and engaging park staff, visitors, and community partners about climate change and sustainability to broaden opportunities to foster change.
Historic Integrity	Historic Integrity is the assemblage of physical values of a site, building, structure, or object and is a key element in assessing historical value and significance. The assessment of integrity is required to determine the eligibility of a property for listing in the National Register.
Historic Resource Study (HRS)	The historic resource study is the primary document used to identify and manage the historic resources in a park. It is the basis for understanding their significance and interrelationships, a point of departure for development of interpretive plans, and the framework within which additional research should be initiated.
Historic Structures Report (HSR)	The historic structure report is the primary guide to treatment and use of a historic structure and may also be used in managing a prehistoric structure.
Indicator of Condition	A selected subset of components or elements of a Priority Resource that are particularly “information rich” and that represent or “indicate” the overall condition of the Priority Resource. There may be one or several Indicators of Condition for a particular Priority Resource.
Integrated Resource Management Applications (IRMA)	The NPS-wide repository for documents, publications, and data sets that are related to NPS natural and cultural resources.
Interpretation	Interpretation is the explanation of the major features and significance of a park to visitors. Interpretation can include field trips, presentations, exhibits, and publications, as well as informal conversations with park visitors. A key feature of successful interpretation is allowing a person to form his or her own personal connection with the meaning and significance inherent in a resource.
Invasive Species	Invasive species are non-indigenous (or non-native) plants or animals that can spread widely and cause harm to an area, habitat, or bioregion. Invasive species can dominate a region or habitat, out-compete native or beneficial species, and threaten biological diversity.

List of Classified Structures (LCS)	LCS is an inventory system that records and tracks the condition of the approximately 27,000 historic structures listed in the National Register of Historic Places that are the responsibility of NPS.
Museum Collection	NPS is the steward of the largest network of museums in the United States. NPS museum collections document American, tribal, and ethnic histories; park cultural and natural resources; park histories; and other aspects of human experience. Collections are managed by professionally-trained NPS staff, who ensure long-term maintenance of collections in specialized facilities.
National Register of Historic Places (NRHP)	The National Register of Historic Places is the official list of the Nation’s historic properties worthy of preservation. Authorized by the National Historic Preservation Act of 1966, the National Park Service’s National Register of Historic Places is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America’s historic and archeological resources. Listing in the National Register of Historic Places provides formal recognition of a property’s historical, architectural, or archeological significance based on national standards used by every state. The National Register is a public, searchable database about the places.
Native American Graves Protection and Repatriation Act (NAGPRA)	A federal law passed in 1990. NAGPRA provides a process for museums and federal agencies to return certain Native American cultural items (e.g., human remains, funerary objects, sacred objects, objects of cultural patrimony) to lineal descendants and culturally-affiliated Indian tribes and Native Hawaiian organizations.
Natural Resource Condition Assessment (NRCA)	A synthesis of existing scientific data and knowledge, from multiple sources, that helps answer the question: what are current conditions of important park natural resources? NRCAs provide a mix of new insights and useful scientific data about current park resource conditions and factors influencing those conditions. NRCAs have practical value to park managers and help them conduct formal planning and develop strategies on how to best protect or restore park resources.
Priority Resource or Value	This term refers to the Fundamental and Other Important Resources and Values of a park. These can include natural, cultural, and historic resources as well as opportunities for learning, discovery, and enjoyment. Priority Resources or Values include features that have been identified in park Foundation Documents, as well as other park assets or values that have been developed or recognized over the course of park operations. Priority Resources or Values warrant primary consideration during park planning and management because they are critical to a park’s purpose and significance.
Project Management Information System (PMIS)	A servicewide intranet application within the National Park Service to manage information about requests for project funding. It enables parks and NPS offices to submit project proposals to be reviewed, approved, and prioritized at park units, regional directorates, and the Washington Office.
Resource Management	The term “resources” in NPS encompasses the many natural, cultural, historical, or sociological features and assets associated with parks. Resource management includes the knowledge, understanding, and long-term stewardship and preservation of these resources.
Southeast Coast Network (SECN)	One of 32 I&M networks established as part of the NPS Inventory and Monitoring Program . The Southeast Coast Network comprises 20 parks in Alabama, Florida, Georgia, North Carolina, and South Carolina.
Specific Measure of Condition	One or more specific measurements used to quantify or qualitatively evaluate the condition of an Indicator at a particular place and time. There may be one or more Specific Measures of Condition for each Indicator of Condition.

U.S. Army Corps of Engineers (USACE)	The U.S. Army Corps of Engineers provides public engineering services in peace and war to strengthen national security, energize the economy, and reduce risks from disasters.
Visitor and Resource Protection (VRP)	VRP includes, among other responsibilities, protecting and preserving park natural and cultural resources, enforcing laws that protect people and the parks, fire management, search and rescue, managing large-scale incidents, and on-the-ground customer service.
Volunteers In Parks Program (VIP)	The Volunteers In Parks Program was authorized by Public Law 91–357 enacted 1970. The primary purpose of the VIP program is to provide a vehicle through which the National Park Service can accept and utilize voluntary help and services from the public. The major objective of the program is to utilize this voluntary help in such a way that is mutually beneficial to the National Park Service and the volunteer. Volunteers are accepted from the public without regard to race, creed, religion, age, sex, sexual orientation, national origin, or disability.
Wilderness	A designation applied to certain federal lands set aside for preservation and protection in their natural condition, in accordance with the Wilderness Act of 1964 .