

## CHAPTER 3 – AFFECTED ENVIRONMENT

### 1 INTRODUCTION

2  
3 The Affected Environment and Environmental  
4 Consequences chapters comprise the  
5 Environmental Impact Statement (EIS) for this  
6 Final General Management Plan. The  
7 descriptions, data, and analysis presented focus on  
8 the specific conditions or consequences that may  
9 result from implementing the alternatives. The  
10 EIS should not be considered a comprehensive  
11 description of all aspects of the human  
12 environment within or surrounding the park.

13  
14 A description of existing environmental  
15 conditions gives the reader a better understanding  
16 of planning issues and establishes a benchmark by  
17 which the magnitude of environmental effects of  
18 the various alternatives can be compared.

### 20 CULTURAL RESOURCES

#### 22 Overview

23  
24 This section describes the cultural resources at  
25 Fort Matanzas. The National Historic Preservation  
26 Act recognizes five property types: districts, sites,  
27 buildings, structures, and objects. As called for in  
28 the act, these categories are used in the National  
29 Register of Historic Places, the preeminent  
30 reference for properties worthy of preservation in  
31 the United States. To focus attention on  
32 management requirements within these property  
33 types, the NPS Management Policies categorizes  
34 cultural resources as archeological resources,  
35 cultural landscapes, historic structures, museum  
36 collections, and ethnographic resources.

#### 38 National Historic Preservation Act

39  
40 The intent of this document is to comply with the  
41 requirements of Section 106 of the NHPA, as  
42 amended, which requires federal agencies to  
43 consider the effects of their undertakings on  
44 historic properties and affords the Advisory  
45 Council on Historic Preservation a reasonable  
46 opportunity to comment. Parks are required by  
47 Section 110 of the National Historic Preservation  
48 Act and National Park Service policies to  
49 inventory and evaluate all cultural resources  
50 within the park boundaries. The purpose of

51 Section 106 is to ensure that federal agencies  
52 consult with state and local groups before non-  
53 renewable cultural resources are impacted or  
54 destroyed and ensures that preservation values are  
55 factored into Federal agency planning and  
56 decisions. Section 106 provides a systematic  
57 process for complying with the NHPA. The  
58 preparation of this environmental assessment is  
59 conducted simultaneously with Section 106  
60 review, enabling agency consultation to occur  
61 only once for both processes. All information  
62 gathered and correspondence exchanged during  
63 the Section 106 review process will be included in  
64 this environmental assessment.

#### 66 Archeological Resources

67  
68 Several archeological surveys and investigations  
69 have taken place at Fort Matanzas since the  
70 1960s. These surveys have provided  
71 comprehensive coverage of the park and indicated  
72 the locations of all archeological sites, provided  
73 information on the range of cultural resources,  
74 and suggest the likelihood of finding any  
75 additional archeological or historical sites.

76  
77 There are seven recorded archeological sites at  
78 Fort Matanzas. Table 8 lists these sites by site  
79 number and briefly describes their locations and  
80 characteristics.

**TABLE 8. RECORDED ARCHEOLOGICAL SITES AT FORT MATANZAS**

Site #	Site Name	Location	Description
8SJ28	North Midden	Rattlesnake Island, north of the fort	Shell midden containing artifacts related to the Spanish and British occupations of Fort Matanzas
8SJ44B	Fort Matanzas	Rattlesnake Island	The site number refers to the archeological materials that are related to, but distinct from, the fort
8SJ90	Pompano Farm Midden	Anastasia Island, northern park boundary	Prehistoric shell midden
8SJ3231	West Midden	Rattlesnake Island, west of the fort	Shell midden with artifacts related to the Spanish and British periods of occupation
8SJ3233	Johnson House	Anastasia Island	Prehistoric and historic artifact scatter
8SJ3225	Visitor Center Site	Anastasia Island, parking lot vicinity	Prehistoric and historic midden; camp site
N/A	Marker Midden	Anastasia Island, at massacre marker	Prehistoric artifact scatter

Archeological surveys of the park have been rather comprehensive and suggest that there is a low potential of finding additional sites on land. Much of the southern portion of Anastasia Island contains accretive deposits dating to the twentieth century, and other areas to the south and east reflect nineteenth- and twentieth-century fill that was used to reclaim marshy areas. Such locations have a low potential to contain significant archeological resources. On Rattlesnake Island, archeological resources reflect the Spanish and British military occupations of Fort Matanzas. Because the island is a low-lying marsh that would not be attractive for extended human settlement (except for special purposes like the fort), it has a low potential to contain significant unidentified prehistoric and historic archeological resources. In 1979, an underwater archeological survey of the river east of Fort Matanzas did not identify any submerged cultural resources but suggested that intact resources could be present under 5-12 feet of overburden.

Climate change may impact archeological sites in Fort Matanzas National Monument if more erosion occurs because of increased storm frequency and intensity or sea level rise. As archeological and historic resources become

submerged or compromised because of climate change, they become unavailable for archeological research, artifact recovery, and visitor enjoyment.

## Historic Structures

**Fort Matanzas.** Located on Rattlesnake Island, Fort Matanzas is a very simple structure, its main strengths being the artillery and its strategic location. Built of coquina masonry and set on a foundation of pine timbers and oyster shells, Fort Matanzas includes an elevated gun deck, officer's quarters, soldiers' quarters, powder magazine, and a 30-foot high observation deck. The fort is square, measuring 50 feet on each side. Both Spanish and British forces used the structure in their efforts to guard the Matanzas Inlet and St. Augustine. By the time the U.S. acquired Florida in 1821, the fort had fallen into a state of disrepair. Major efforts were made to stabilize and restore the fort in 1916, 1922, the 1930s, and the late 1970s. Presently, the fort is in good condition.

Lime for the mortar was made by burning oyster shells. A foundation of close-set pine pilings

driven deep into the marshy ground gave the fort stability. Coquina shell rock was quarried south of the inlet and transported to the building site by boat where the rough chunks were squared into blocks. Originally, the entire fort was plastered and whitewashed with perhaps red trim on some of the architectural elements such as the garita (the turret-shaped sentry box on the southwest corner of the fort wall).

**Powder Magazine.** The powder magazine is located within the west wall of the fort and accessed only through the upstairs officer's quarters. The magazine extends down into the wall to the level of the gun deck. The area in front of the powder magazine was used for food storage.

**Gun Deck.** Five cannons once guarded the fortress facing in the three approaching directions. Each cannon could easily reach the inlet, then only a half-mile away. Two original cannon still stand at the fort today. They were made around 1750 (probably in Spain), emplaced at Matanzas in 1793, and left behind by the Spanish when they departed Florida in 1821. The other two cannon now on the gun deck are modern reproductions purchased through donations to the park and used in the park's living history cannon firing demonstrations.

**Cistern.** The fort's cistern is located under the gun deck with its opening under the stairs. The roof of the fort collected rainwater, which drained into the cistern through a wooden pipe.

**Sentry Box.** The sentry box or garita, an architectural feature of Spanish Caribbean forts, had fallen off sometime during the 1800s while Fort Matanzas sat abandoned. It was rebuilt of brick in 1927 and again of coquina in 1929 using steel reinforcing rods to attach it to the existing parapet walls.

**Entry Embrasure.** The small opening on the west embrasure was the "door" to the fort. Soldiers would climb a removable wooden ladder to reach the gun deck. If needed, cannons could be moved to point through this opening just like the one on the east side of the gun deck. Today, sturdy stairs allow easy access for visitors to the fort.

**Headquarters and Visitor Center.** The Headquarters and Visitor Center (HQ/VC) is located on Anastasia Island, on the west side of Highway A1A. The HQ/VC consists of two buildings: a multi-use building that serves as both the primary visitor contact point and park housing, and a secondary utility building that now serves as a ranger office. The main building is two-stories, intersected by an arched breezeway on the ground level. The exterior walls on the first floor are constructed of coquina block masonry. The second floor is of wood frame construction faced with wood siding. The secondary utility building is located 50 feet to the north of the main building.

The HQ/VC and the surrounding landscape was designed by the NPS Eastern Division, Branch of Plans and Design, and constructed with funds provided by the federal government. The designed landscape around the HQ/VC includes an exterior staircase, a retaining wall, a stone culvert headwall, and other features such as sidewalks, curbing, flagstone walks, parking areas, and roads. Planned in 1935, the HQ/VC illustrates early NPS design philosophy and is an example of NPS Rustic Architecture.

Since their construction in 1937, the two buildings have been in continual use and have undergone only modest alterations. In addition, the surrounding landscape remains largely unchanged since its initial development in 1937. Both the HQ/VC and its designed setting continue to reflect the intentions of the original development plans and retain their original character and integrity to a high degree. On December 31, 2008, the Fort Matanzas Headquarters and Visitor Center and its surrounding landscape, including the entrance road, parking area, and the access road and parking area for the Atlantic Ocean beach on the east side of Highway A1A, were officially listed in the National Register of Historic Places. These facilities occupy most of the 17.34-acre tract donated to the NPS in 1934 by Ada Corbett.

Turning west from Highway A1A, the park road gently curves as it approaches the HQ/VC. The curve of the road leads into a one-way, elongated loop, with the HQ/VC located at the top of the loop. These facilities also constitute historic resources that date from the park development

era. The loop road expands on the southern side to include a 29-car visitor parking area that features sidewalks finished with coquina curbing; after parking, visitors approach the HQ/VC by way of a pedestrian pathway. The pathway leads to the visitor entrance of the HQ/VC, located in an arched breezeway of the main building, and then continues through the breezeway to the dock where visitors board the boat to Fort Matanzas.

A service road that branches off the northern portion of the loop road leads park employees to the garages (now enclosed) of the utility building. Park vehicles once used the service road, which forms a wide arc, to arrive at the garages, formerly located on the end of the building. The roadway's path maximizes the distance between the visitor use and employee use roads, thereby concealing, behind dense vegetation, the service road from the visitor's sightline. These elements combine to create a residential atmosphere around the HQ/VC, which also complements the natural landscape of mature live oaks, native vegetation, and gently rolling dunes.

**Johnson House.** In the 1960s the scope of the park was greatly expanded with the donation by the Johnson family of most of the southern end of Anastasia Island, including the ocean side beaches, dunes, and maritime forests bisected by Highway A1A. Included in this donation was the Johnson family residence, which is located a few hundred feet south of the visitor center. The two-story house is currently used as park housing and is in good condition.

The Johnson House is somewhat rambling and features a large number of double-hung sash windows. The house is constructed of wood and brick with a roof composed of asphalt shingled gables. The west side of the house features an elongated covered porch that faces out to a lawn and the Matanzas River beyond. It is believed that there are portions of the house that date back more than 50 years. Additional research is necessary to determine the history and age of the structure.

The Rattlesnake Island fortification and other historic structures on Anastasia Island at Fort Matanzas National Monument may be vulnerable to increased severe weather that is anticipated in the future due to climate change (Loehman and

Anderson 2009). Sea level rise and an expected increase in severe weather and precipitation may increase the rate of erosion around the fort and may threaten the historic visitor center and the adjacent Johnson House. Coastal fortifications may also be vulnerable to damage from changes in the freeze/thaw cycle that can affect the fabric of the structures and their foundations.

## Museum Collections

The museum collection at the park is combined with the collection for Castillo de San Marcos National Monument and is considered to be one entity for administrative purposes; however, they are reported and accounted for as two separate collections, each with their own accessioning and cataloging systems. Most of the objects are stored together. Fort Matanzas has museum collections comprised of archival collections, historic and archeological artifacts, and biological specimens.

Between Fort Matanzas and Castillo de San Marcos NM, approximately 40,085 archeological specimens have been collected through excavations, with historic ceramics representing the majority of the objects. Some of these objects are on loan to the NPS Southeast Archeological Center (SEAC) in Tallahassee, Florida, for analysis, study, and cataloging. The remainder of the park's museum collections are stored at the Timucuan Ecological and Historical Preserve (TIMU) museum management facility in Jacksonville, Florida.

According to the 2010 Collection Management Report, Fort Matanzas's museum collections consist of 46,651 objects and archival materials, 98.98% of which is catalogued. The first accession in the Fort Matanzas accession book was made in 1993; it was a field collection recovered during an archeological monitoring project for the visitor center in 1989. Archeological accessions continued through the mid-1990s. The accessions included archeological investigations for sewer and power lines, fort stabilization, nearby middens, and boardwalk construction.

Materials found during these projects included architectural samples such as coquina rubble, brick fragments, tabby fragments, and floor samples. Artifacts included glass fragments, a .45

1 caliber brass cartridge, sherds of slipware,  
2 delftware bisque, pearlware, wire nails, and red  
3 brick tile fragments. Net floats, corked green wine  
4 bottles, a Spanish olive jar, one archaic stemmed  
5 point, British brass button, and a variety of  
6 ceramic and stoneware sherds were found in  
7 archeological excavations at Fort Matanzas  
8 between 1935 and 1975.

10 In 2003, two cannons that had long been on  
11 exhibit were accessioned into the collection. The  
12 most recent accessions involve natural history  
13 specimens and associated records generated  
14 through inventorying and monitoring activities.  
15 Herpetological, small mammals, plants, and fish  
16 inventories were accessioned into the collection  
17 from 2004-2006. Also accessioned in 2006 were  
18 gopher tortoise specimens.

## 20 **Ethnographic Resources**

22 Ethnographic resources are landscapes, objects,  
23 plants and animals, or sites and structures that are  
24 important to a people's sense of purpose or way of  
25 life. These peoples are the contemporary park  
26 neighbors and ethnic or occupational communities  
27 that have been associated with a park for two or  
28 more generations (40 years), and whose interests  
29 in the park's resources began before the park's  
30 establishment. There are several types of studies  
31 and research that the NPS uses to determine the  
32 extent of ethnographic resources in a particular  
33 park. The most comprehensive background study,  
34 the Ethnographic Overview and Assessment,  
35 reviews existing information on park resources  
36 traditionally valued by stakeholders. The  
37 information comes mostly from archives and  
38 publications; interviews with community  
39 members and other constituents—often on trips to  
40 specific sites—supply missing data. This study  
41 also identifies the need for further research. Fort  
42 Matanzas National Monument has not yet been  
43 the subject of such an assessment and therefore  
44 the existence (or non-existence) of ethnographic  
45 resources is unknown. Chapter 2 of this General  
46 Management Plan and Environmental Impact  
47 Statement recommends the initiation and  
48 completion of an ethnographic overview and  
49 assessment.

## 51 **Cultural Landscapes**

53 Cultural landscapes are complex resources that  
54 range from large rural tracts covering several  
55 thousand acres to formal gardens of less than an  
56 acre. Natural features such as landforms, soils,  
57 and vegetation are not only part of the cultural  
58 landscape, they provide the framework within  
59 which it evolves. In the broadest sense, a cultural  
60 landscape is a reflection of human adaptation and  
61 use of natural resources and is often expressed in  
62 the way land is organized and divided, patterns of  
63 settlement, land use, systems of circulation, and  
64 the types of structures that are built. The character  
65 of a cultural landscape is defined both by physical  
66 materials, such as roads, buildings, walls, and  
67 vegetation, and by use reflecting cultural values  
68 and traditions.

70 Cultural landscape inventories are conducted to  
71 identify landscapes potentially eligible for listing  
72 in the National Register, and to assist in future  
73 management decisions for landscapes and  
74 associated resources, both cultural and natural.

76 A cultural landscape report (CLR) is the primary  
77 guide to treatment and use of a cultural landscape.  
78 Based on the historic context provided in a  
79 historic resource study, a CLR documents the  
80 characteristics, features, materials, and qualities  
81 that make a landscape eligible for the National  
82 Register. It analyzes the landscape's development  
83 and evolution, modifications, materials,  
84 construction techniques, geographical context,  
85 and use in all periods, including those deemed not  
86 significant. Based on the analysis, it evaluates the  
87 significance of individual landscape  
88 characteristics and features in the context of the  
89 landscape as a whole.

91 There are no designated cultural landscapes at  
92 Fort Matanzas National Monument. Therefore,  
93 completion of a cultural landscape inventory and  
94 a cultural landscape report has been recommended  
95 in this general management plan.

97 Climate change may affect potential cultural  
98 landscapes within the boundaries of Fort  
99 Matanzas National Monument, including the  
100 historic visitor center and surrounding grounds  
101 and facilities and the Johnson House and its  
102 environs. As potential cultural landscapes, these  
103 areas represent connections between people and  
104 the land. Sea level rise, increased storm intensity  
105 or frequency, and increased air and water

temperature may damage natural or cultural resources in these locations, compromising the cultural landscapes as a whole. Resilience of these landscapes may depend on their ability to withstand both gradual and extreme weather variations.

## **Interpretation and Museum Operations**

Exhibits are located throughout the park. When visitors arrive at the park, they will find several exterior exhibits that establish the context of the fort's history. Interior space at the HQ/VC is extremely limited; a model shows how the fort looked when in use, there is a small sales area, and a staffed sales/information desk. An audiovisual program introduces visitors to the park and suggests on-site activities.

The park offers regular boat trips to the fort supported by ranger talks, recreated settings inside the fort, living history and weapons firing demonstrations in season, and a few interpretive signs.

Rangers also give regular talks on both historical and natural topics. School groups can arrange for programs in advance.

A 0.6-mile nature trail provides visitors with access to a portion of Anastasia Island, and short boardwalks provide access to both the bay and the ocean. There are trailheads and wayside exhibits along the bay and ocean boardwalks.

## **NATURAL RESOURCES**

### **Physical Resources**

This section discusses the physical environment at Fort Matanzas, including soils and geology, floodplains, wetlands, air quality, and noise.

**Geology and Soils.** The U.S. Department of Agriculture (USDA) Natural Resource Conservation Services surveyed the soils at Fort Matanzas in 1983. A total of seven soil series were delineated and described in the vicinity of the fort on Rattlesnake Island. The soil series ranged from poorly drained to excessively drained, depending on their topographic position and texture. Textures range from fine sand to silty clay loam, but are mostly fine sand. The soil series located on Rattlesnake Island include St. Augustine fine sand, clayey substratum, Moultrie fine sand, Pellicer silty clay loam, and beaches. The soil series found on Anastasia Island include Fripp-Satellite complex, Satellite fine sand, Pottsburg fine sand, and beaches. Table 9 describes the characteristics of each soil series.

The definition of a hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Hydric soils are one of three required criteria for a site to be characterized as a wetland and include soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation. Of the seven soils series that occur in the vicinity of the fort, Moultrie fine sand, Pellicer silty clay loam, and beaches are considered hydric soils.

Climate change may impact geological resources and soils in the National Monument as a result of increased storm intensity and duration. These predicted changes are expected to result in shoreline erosion, flooding, and inundation (Loehman and Anderson 2009).

**TABLE 9. CHARACTERISTICS OF SOILS PRESENT AT FORT MATANZAS NATIONAL MONUMENT**

Soil Series	Permeability	Available Water Capacity	Slopes (%)	Flooding	Soil Constraints
St Augustine fine sand, clayey substratum	Moderate to Rapid	Very Low	0-2	Rare	Wetness
Moultrie fine sand	Very Rapid	Very Low	0-1	Frequent	Flooding and wetness
Pellicer silty clay loam	Slow	High	<1	Frequent	Flooding, wetness, slow permeability
Satellite fine sand	Rapid	Moderate	0-2	Frequent	Shallow water table, wetness
Fripp-Satellite complex	Rapid	Moderate	0-2	Frequent	Wetness

Source: USDA, 1983

**Noise.** Current noise sources in the surrounding area are predominantly the result of human activities. These activities include traffic from the local roadways, (primarily Highway A1A), boating traffic along the Matanzas River, including the NPS ferry operation, and human recreational activities in the vicinity of Fort Matanzas.

## Water Resources

**Hydrology.** The main body of water in the vicinity of the fort is the Matanzas River, which is part of the Lower St. Johns River Basin. The Matanzas River is narrow and tidally influenced with a maximum width of approximately 1.5 miles. The river is approximately 17 miles long and extends from St. Augustine through Fort Matanzas and connects to the Atlantic Ocean at the Matanzas Inlet. The Matanzas River is protected from the Atlantic Ocean by Anastasia Island to the east.

The Atlantic Intracoastal Waterway is a series of federally maintained navigation channels along the southeastern seaboard of the U.S. that extend from Norfolk, Virginia to Miami, Florida. The 1200-mile course includes manmade canals, bays protected by barrier islands, natural river channels, and estuaries. The Atlantic Intracoastal Waterway Association was established in 1999 to ensure that the Intracoastal Waterway is

maintained for commerce and recreation. Within St. Johns County, the Intracoastal Waterway is comprised of the Tolomato, Guana, and Matanzas Rivers, and their tributaries.

**Water Quality.** The Florida Department of Environmental Protection (FDEP) created a watershed management program in 1999 to implement the provisions of the Florida Watershed Restoration Act. As part of this watershed management program FDEP created five water management districts that are responsible for managing ground and surface water supply. Fort Matanzas is located in the Northern Coastal Basin of St. Johns River Water Management District. The district established the surface water quality monitoring program in 1983 that maintains water quality monitoring of approximately 73 stations throughout the district. This program also monitors sediments for priority pollutants and benthic community sampling. The data generated under the program are uploaded to the U.S EPA National Water Quality Storage and Retrieval Database. At the regional level, FDEP and the St. Johns River Water Management District are the two main agencies involved in surface water permitting procedures.

The Clean Water Act requires that surface waters for each state be classified according to Florida's designated uses. The Florida Administrative Code applies classifications, criteria, an anti-

degradation policy, and special protection of certain waters in Florida. Water quality classifications are arranged in order of the degree of protection required, with Class I water having the most stringent water quality criteria and Class V the least. These classifications are designed to maintain the minimum conditions necessary to assure the suitability of water for the designated use of the classification. The Matanzas River is designated as Class II waters, which is defined as “Shellfish Propagation or Harvesting.” A large portion of the Matanzas River is Conditionally Approved for shellfish harvesting.

Because the authorized boundary of the National Monument extends only to the mean high tide line on both Anastasia and Rattlesnake Islands, neither the waters of the Matanzas River, the Atlantic Intracoastal Waterway, nor the Atlantic Ocean are part of the National Monument.

**Floodplains.** Floodplain Management, Executive Order 11988 issued 24 May 1977, directs all federal agencies to avoid both long- and short-term adverse effects associated with occupancy, modification, and development in the 100-year floodplain, when possible. Floodplains are defined in this order as “the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a one percent greater chance of flooding in any given year.” Flooding in the 100-year zone is expected to occur once every 100 years, on average. In addition, NPS proposed actions that may adversely affect floodplains must comply with Director’s Order #77-2: Floodplain Management.

All federal agencies are required to avoid building in a 100-year floodplain unless no other practical alternative exists. The NPS has adopted guidelines pursuant to Executive Order 11998 stating that NPS policy is to restore and preserve natural floodplain values and avoid environmental impacts associated with the occupation and modification of floodplains. The guidelines also require that, where practicable alternative exist, Class I action be avoided within a 100-year floodplain. Class I actions include the location or construction of administration, residential, warehouse, and maintenance buildings, non-excepted parking lots, or other manmade features

that by their nature entice or require individuals to occupy the site.

The majority of the park is located within the 100-year floodplain, which has been mapped by the Federal Emergency Management Agency on a Flood Insurance Rate Map issued in 2004.

Climate change is expected to increase the extent and frequency of coastal flooding (Loehman and Anderson 2009). These floods may alter the natural floodplain distribution in the National Monument, leading to changes in vegetation, wildlife habitat, and sand regimes on the islands.

## Natural Resources

**Overview.** Natural resources are in abundance within the boundary of Fort Matanzas. The park contains river and ocean beaches, wetlands, and distinct habitats that harbor a number of species, several of which are listed as endangered or threatened. The ocean beach at Fort Matanzas provides a nesting area for the threatened loggerhead and endangered green and leatherback sea turtles, the ghost crab, least tern, Wilson’s plover and other migratory shorebirds and seabirds. In addition, Fort Matanzas provides migrating and wintering habitat for the endangered piping plover. Black skimmers and brown pelicans also use the park’s beach extensively for roosting, mostly outside of breeding season. The gopher tortoise, a species of special concern (listed as threatened by the Florida Fish and Wildlife Conservation Commission in 2007) in Florida, is found in the adjacent dune and scrub habitat along with the endangered Anastasia Island beach mouse, the threatened eastern indigo snake, and five-lined skink. Herons, egrets, and endangered wood storks feed on the mud flats, which are also the home of fiddler and hermit crabs. Ospreys, bald eagles, black skimmers, brown pelicans, and various other shorebirds and seabirds can be seen flying over Fort Matanzas National Monument, and it is not unusual to sight dolphin or even the endangered manatee within the Matanzas River and inlet.

**Coastal Barriers.** Coastal barriers are landscape features that shield the mainland from the full force of wind, wave, and tidal energies, and can take on a variety of forms such as bay barriers,

tombolos, barrier spits, or barrier islands. Coastal barriers include barrier islands, which are coastal barriers completely detached from the mainland. Both Anastasia and Rattlesnake Islands are considered coastal barrier islands. Other examples of mapped coastal barriers in St. Johns County include Guana River, Usinas Beach, Conch Island, and Matanzas River. The floodplain map issued in 2004 by FEMA (shown in Figure 3-1) indicates that the entire project area has been designated an "Otherwise Protected Area," which is defined in the Coastal Barrier Resources Act as "an undeveloped coastal barrier within the boundaries of an area established under Federal, State, or local law, or held by a qualified organization, primarily for wildlife refuge, sanctuary, recreational, or natural resource conservation purposes."

**Coastal Hammock (Maritime) Forest.** The oldest and highest part of the barrier island (Anastasia Island) is covered with a forest called a hammock -- an ancient dune on which larger plant species have taken root in the thin layer of decayed remains from pioneer species. Cabbage palm, red bay, magnolia, and live oak provide a canopy under which diverse animal species can thrive.

Spiders, lizards, snakes, great horned owls, cardinals and Carolina wrens, raccoons, opossum, and even a bobcat all live here. A small herd of white tail deer finds shelter in the forest on Rattlesnake Island. Understory plants such as wax myrtle, saw palmetto, yaupon holly, beauty berry, and grape vines provide food for some of these animals as well as for migrating birds that stop for a rest in the maritime forest.

On the ocean side of Anastasia Island are the sand dunes. Sea oats and other grasses, vines like beach morning glory, and other salt-tolerant plants grow on the dunes and help stabilize them with their extensive root systems. These plants also provide cover and shade for the few hardy species that live here.

These grasses and dunes also act like styrofoam, giving a little, but mostly absorbing the force of storm winds and waves, thus protecting the island from storms. What might happen in a big storm in areas where the dunes have been destroyed or built on?

**Coastal Scrub.** Between the hammock and the dunes grow dense thickets of scrub live oak interspersed with thick stands of saw palmetto, bay and cedar, and an occasional sabal palm, all laced together by a tangle of grape and other vines. Prickly pear cacti grow in the more open, areas. Sandy and dry, scoured by harsh, salt-laden winds, the scrub is a harsh environment for animals, but a beautiful garden for wildflowers in the spring and summer.

**Estuary and Salt Marsh.** Behind the dunes and the coastal forest lie the tidal creeks and marshes of the estuary where salt water meets fresh. The open water between Anastasia Island where the visitor center is located and Rattlesnake Island where the historic fort sits is called the Matanzas River. Not a true river, it is actually a long, thin sound with a mouth at both ends-- the St. Augustine Inlet to the north and the Matanzas Inlet at Fort Matanzas National Monument at the south.

The estuary and salt marsh is the most diverse habitat of the island in terms of animal species. Great blue herons, great egrets, snowy egrets, and little green herons feed on the rich soup of fish and crustaceans living in the tidal flats and salt marshes.

**Salt Marsh Plants.** Plants must have special adaptations in order to live in the salt marsh where their roots and even much of their tops might be covered by salt water for much of the day. Many plants like the salt marsh cordgrass (*Spartina alterniflora*), the predominate plant of the marsh, has pores which secrete the salt the plant takes up. A film of salt crystals is visible on their stems and leaves.

Pickleweed (*Salicornia sp.*) rids itself of excess salt by means of joints which allow a part of the plants to be broken off. The plant sends salt to its tips and, in the fall, these compartments dry up and break off.

Mangroves, one of the few trees of the salt marsh, can survive because of specially adapted roots. The red mangrove can be identified by its prop roots which stabilize the plant in soft muddy soil and which exposes more root surface to the oxygen in the air. Black mangroves can be

identified by numerous finger-like projections called pneumatophores which serve the same purpose.

Both of these mangroves are at the northern-most extent of their range at Fort Matanzas National Monument. It has only been because of several years without major freezes that these trees survive here in north Florida at all.

**Wetlands.** Executive Order 11990 – *Protection of Wetlands*, directs all federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. In the absence of such alternatives, parks must modify actions to preserve and enhance wetland values and minimize degradation. Consistent with E.O. 11990 and Director’s Order #77-1: *Wetland Protection*, NPS adopted a goal of “no net loss of wetlands.” Director’s Order #77-1 states that for new actions where impacts to wetlands cannot be avoided, proposals must include plans for compensatory mitigation that restores wetlands on NPS lands, where possible, at a minimum acreage ratio of 1:1.

Wetlands are characterized by soil type and a diversity of vegetation, including trees, shrubs, and herbaceous ground covers. Wetlands provide a variety of beneficial functions from supplying habitat for a variety of wildlife, storage and attenuation of floodwaters, trapping silts and other

sediments during floods, to biologically filtering contaminants from surface waters. The National Wetlands Inventory (NWI) of the U.S. Fish and Wildlife Service (USFWS) produces information on the characteristics, extent, and status of the nation’s wetlands and deepwater habitats. National Wetlands Inventory maps are prepared by the USFWS from the analysis of high altitude imagery and wetlands are identified based on vegetation, visible hydrology and geography. Based on the NWI maps at the site from the USFWS and NPS definition of wetlands, roughly half (147.4 acres) of the total acreage of Rattlesnake Island and Anastasia Island is mapped as wetlands. Roughly 100 acres of this total wetlands figure is on Rattlesnake Island.

In the vicinity of Fort Matanzas, the northeastern shoreline of Rattlesnake Island and the southwestern shoreline of Anastasia Island are mapped by the inventory as an estuarine, intertidal, unconsolidated shore that is regularly flooded. The majority of Rattlesnake and Anastasia Islands are mapped by the inventory as an estuarine, intertidal, emergent/scrub-shrub broad-leaved evergreen wetland. South of the fort on Rattlesnake Island, a small estuarine wetland exists and on Anastasia Island inland from the shoreline, a linear excavated estuarine wetland.

The wetland classifications within Fort Matanzas have been classified by U.S. Fish and Wildlife Service’s National Wetlands Inventory as the following:

**TABLE 10. WETLANDS PRESENT IN FORT MATANZAS**

NWI Mapping Code	NWI Wetland Classification	Project Area
E2EM/SS3U	Estuarine, intertidal, emergent/scrub-shrub broadleaved evergreen, uplands	Rattlesnake Island and Anastasia Island
E2USN	Estuarine, intertidal, unconsolidated shore, regularly flooded	Rattlesnake Island and Anastasia Island Shorelines
E2USP	Estuarine, intertidal, unconsolidated shore, irregularly flooded	South of the fort, Rattlesnake Island
E1UBL	Estuarine, subtidal, unconsolidated bottom, subtidal	Matanzas River
E1UBLx	Estuarine, subtidal, unconsolidated bottom, subtidal, excavated	Anastasia Island open water canal

In addition to the National Wetlands Inventory maps, the St. Johns County Soil Survey has mapped hydric soils (one of the three wetland indicators) on both Anastasia and Rattlesnake Islands. On Rattlesnake Island in the vicinity of Fort Matanzas, the soil series Pellicer silty clay loam, Moultrie fine sand, and Beaches are all classified as hydric soils. Portions of the shoreline of Anastasia Island are also mapped as hydric soils, including Pellicer silty clay loam and Beaches.

Also noteworthy, the Matanzas River, a navigable waterway of the U.S., is characterized as an estuarine, subtidal wetland with unconsolidated bottom. Several state and Federally listed species that occur or may occur within this habitat include the West Indian manatee (*Trichechus manatus*) and five species of both state and federally listed sea turtles, including the Loggerhead turtle (*Caretta caretta*), Green sea turtle (*Chelonia mydas*), Leatherback sea turtle (*Dermochelys coriacea*), Hawksbill sea turtle (*Eretmochelys imbricata*), and Kemp's Ridley sea turtle (*Lepidochelys kempii*).

26

**Terrestrial Resources.** This section discusses natural resources, including terrestrial vegetation and wildlife found at Fort Matanzas. Federally listed threatened and endangered species potentially found at Fort Matanzas are discussed below.

**Vegetation.** A vegetative survey of Fort Matanzas was conducted in 2003 and 2004. A total of 237 species of vascular plants were identified representing 189 genera and 73 families. Of the 237 species identified, 125 species were identified on Rattlesnake Island and 197 were identified on Anastasia Island.

Six major community types have been described for the park, including Matanzas River open beach, foredune, backdune, maritime forest, salt marsh, and disturbed areas.

Table 11 provides a list of common species found within the six major community types.

**TABLE 11. COMMON SPECIES WITHIN MAJOR COMMUNITY TYPES AT FORT MATANZAS**

Scientific Name	Common Name
<b>Backdunes</b>	
<i>Andropogon glomeratus</i>	Bushy bluestem
<i>Gaillardia pulchella</i>	Blanket flower
<i>Helianthus debilis</i>	Beach sunflower
<i>Hydrocotyle bonariensis</i>	Pennywort
<i>Ipomopsis rubra</i>	Standing cypress
<i>Muhlenbergia capillaries</i>	Purple muhly grass
<i>Opuntia</i> spp.	Prickly pear cactuses
<i>Spartina patens</i>	Cordgrass
<b>Disturbed Areas</b>	
<i>Acalypha graciliens</i>	Slender threeseed
<i>Conyza canadensis</i>	Canadian horseweed
<i>Oxalis corniculata</i>	Creeping woodsorrel
<i>Pteris vittata</i>	Ladder brake
<i>Salvia lyrata</i>	Lyreleaf sage
<b>Foredune</b>	
<i>Atriplex cristata</i>	Crested saltbush
<i>Cakile edulenta</i>	American searocket
<i>Cakile lanceolata</i>	Coastal searocket
<i>Chamaesyce bombensis</i>	Dixie sandmat
<i>Gaillardia pulchella</i>	Firewheel
<i>Helianthus debilis</i>	Cucumberleaf sunflower
<i>Ipomoea imperati</i>	Beach morning-glory
<i>Ipomoea pes-caprae</i>	Bayhops
<i>Iva imbricata</i>	Seacoast marshelder
<i>Panicum amarum</i>	Bitter panicgrass
<i>Salsola kali</i>	Russian thistle

Scientific Name	Common Name
<i>Sesuvium portulacastrum</i>	Shoreline seapurslane
<i>Spartina patens</i>	Saltmeadow cordgrass
<i>Sporobolus virginicus</i>	Seashore dropseed
<i>Uniola paniculata</i>	Seaoats
<b>Maritime Forest</b>	
<i>Callicarpa americana</i>	American beautybush
<i>Cnidoscolus stimulosus</i>	Stinging spurge
<i>Erythrina herbacea</i>	Coralbean
<i>Illex vomitoria</i>	Yaupon holly
<i>Juniperus salicicola</i>	Southern red cedar
<i>Myrica cerifera</i>	Wax myrtle
<i>Nephrolepis exaltata</i>	Boston fern
<i>Persea borbonia</i>	Red bay
<i>Polypodium polypodioides</i>	Resurrection fern
<i>Quercus virginiana</i>	Live oak
<i>Sabal palmetto</i>	Cabbage palm
<i>Serenoa repens</i>	Saw palmetto
<i>Vitis spp.</i>	Wild grape
<i>Zamia pumila</i>	Coontie
<i>Zanthoxylum clava-heculis</i>	Hercules club
<i>Magnolia grandiflora</i>	Southern magnolia
<b>Open Beach</b>	
<i>Panicum amarum</i>	Bitter panic grass
<i>Ipomoea pes-caorae</i>	Railroad vine
<i>Uniola paniculata</i>	Sea oats
<b>Salt Marsh</b>	
<i>Avicennia germinans</i>	Black mangrove
<i>Batis maritima</i>	Saltwort
<i>Juncus roemerianus</i>	Black needlerush
<i>Salicornia spp.</i>	Glasswort
<i>Spartina alteriflora</i>	Saltmarsh cordgrass

1 **Wildlife.** The diversity of habitats found at Fort  
2 Matanzas supports a rich variety of wildlife.  
3 Major habitats present on Anastasia Island  
4 include open beach, backdunes, foredunes,  
5 maritime forest, Florida coastal scrub\*, and  
6 coastal hammock. Major habitats present on  
7 Rattlesnake Island include slash pine and  
8 redbay woodlands, cedar/wax myrtle/cabbage  
9 palm forests, salt marshes, tidal creeks, and  
10 mangroves. There are a limited number of  
11 mammals found on the beach and sand dunes of  
12 Rattlesnake and Anastasia Islands. Table 12

13 provides a list of common wildlife species  
14 found within habitats at Fort Matanzas (Source:  
15 *FINAL ENVIRONMENTAL ASSESSMENT*,  
16 *Proposed Shoreline Stabilization Features and*  
17 *Boat Dock Replacement*, National Park Service,  
18 June 2006) \*The Florida coastal scrub habitat is  
19 described as “characterized by sand pine and/or scrub oaks  
20 and/or rosemary and lichens” on the Florida Native Plant  
21 Society website,  
22 <http://www.fnps.org/pages/plants/vegtypes.php> , accessed  
23 1-7-2011.

**Table 12. Common Wildlife Species at Fort Matanzas**

Scientific Name	Common Name	Habitat
<b>Birds</b>		
<i>Ardea alba</i>	Great egret	Nests and roosts in colonies in woody vegetation over water, and on islands. Feeds in wetlands, including marshes, tide flats, and along inlets and estuaries.
<i>Ardea herodias</i>	Great blue heron	Nests and roosts in colonies in woody vegetation over water, and on islands. Feeds in wetlands, including marshes, tide flats, and along inlets and estuaries.
<i>Butorides virescens</i>	Little green heron	Nests and roosts in colonies in woody vegetation over water, and on islands. Feeds in wetlands, including marshes, tide flats, and along inlets and estuaries.
<i>Calidris alba</i>	Sanderling	Roosts and feeds along beaches, mud flats, inlets, and estuaries.
<i>Catoptrophorus semipalmatus</i>	Willet	Nests under woody brush or in tall grass near marsh. Roosts and feeds along beaches, mud flats, inlets, and estuaries.
<i>Charadrius vociferous</i>	Killdeer	Nests in open areas, often near water. Feeds in moist substrate along beaches, inlets, and mudflats.
<i>Haliaeetus leucocephalus</i>	Bald eagle	Nests in tree tops. Feeds in open water, often where perches are nearby.
<i>Larus argentatus</i>	Herring gull	Found along beaches, inlets, mudflats, and estuaries.
<i>Larus atricilla</i>	Laughing gull	Found along beaches, inlets, mudflats, and estuaries.
<i>Mycteria americana</i>	Wood stork	May nest in mangroves. Feeds in fresh, brackish, and salt water.
<i>Pandion haliaetus</i>	Osprey	Nests in trees or manmade structures. Feeds in fresh, brackish, and salt water, often where perches are nearby.
<i>Pelecanus occidentalis</i> *	Brown pelican	Nests and roosts along coast. Feeds in ocean and estuarine waters.
<i>Phalacrocorax auritus</i>	Double-crested cormorant	Nests and roosts in woody vegetation along coast. Roosts in woody vegetation or on the ground. Feeds in ocean and estuarine waters.
<i>Sternula antillarum</i>	Least tern	Nests and roosts on sand and shell beaches and spoil banks along coast. Feeds in ocean and estuarine waters.
<i>Thalasseus maximus</i>	Royal tern	Nests and roosts on sand and shell beaches and spoil banks along coast. Feeds in ocean and estuarine waters.
<b>Mammals</b>		
<i>Didelphis virginiana phasma</i>	Opossum	Dens in tree cavities, hollow logs, brush piles, underground burrows, or manmade structures. Feeds in a variety of natural and disturbed coastal habitats.
<i>Peromyscus polionotus</i>	Oldfield mouse	Inhabit burrows in well-drained, sandy soils.
<i>Procyon lotor</i>	Raccoon	Inhabits a variety of habitats, from uplands to wetlands.
<i>Sylvilagus palustris</i>	Marsh rabbit	Inhabit freshwater and estuarine wetlands.
<b>Reptiles</b>		
<i>Cnemidophorus sexlineatus</i>	Six-lined racerunner	Found in dry grassy or sandy areas, and open woodlands.
<i>Columer constrictor</i>	Southern racer	Found in pinelands, hardwood hammocks, prairies, sandhills, scrub, and cypress strands.
<i>Crotalus adamanteus</i>	Eastern diamondback rattlesnake	Found in pine flatwoods, longleaf pine and turkey oak, sand pine scrub areas, and coastal barrier islands
<i>Elahpe obsolete</i>	Yellow rat snake	Found in a variety of habitats, including forested areas, wetland margins, and around manmade structures.
<i>Elaphe guttata</i>	Corn snake	Found in sandy upland habitat, including areas around manmade structures.
<i>Gopherus polyphemus</i>	Gopher tortoise	Found in coastal dunes and other well-drained soils with abundant low vegetation cover.
<i>Masticophis flagellum</i>	Eastern coachwhip	Found in coastal dunes and other open habitat with well-drained soils.
<i>Opheodrys aestivus</i>	Rough green snake	Found in a variety of habitats, including open forests and wetland margins.
<i>Terrapene carolina</i>	Florida box turtle	Found in a variety of upland and seasonally flooded habitats.

**Birds.** Formal bird surveys of the islands for shorebirds and forest birds have been and continue to be conducted. More than 125 species of birds have been seen throughout the years at Fort Matanzas. The park lies on the eastern flyway allowing a large number of migrating birds to be observed from February through April and again in September and October.

Responsibilities of Federal agencies to protect migratory birds are governed by the Endangered Species Act, the Migratory Bird Treaty Act, and Executive Order 13186 (President William Jefferson Clinton, January 10, 2001). Among other requirements, EO 13186 required each Federal agency taking actions that would or could have a measurable negative effect on migratory bird populations to develop and implement a memorandum of understanding with the U.S. Fish and Wildlife Service to promote conservation of migratory bird populations. On April 12, 2010, the directors of the NPS and the Fish and Wildlife Service signed the required memorandum of understanding.

Fort Matanzas has been selected as a stop on the Great Florida Birding Trail by the Florida Fish and Wildlife Conservation Commission. The Great Florida Birding Trail is divided into four sections: East Florida, West Florida, Panhandle Florida, and South Florida. Each Birding Trail section consists of a series of clusters, with each cluster containing 1 to 15 sites highlighting communities and special ecosystems. This 2,000-mile, self-guided highway trail connects nearly 500 birding sites throughout Florida. Other Birding Trail sites in the vicinity of Fort Matanzas include Anastasia State Park, Faver-Dykes State Park, Fort Mose Historic State Park, and the Guana Tolomato Matanzas National Estuarine Research Reserve.

Fort Matanzas is also within an area that has been designated by the Audubon Society as an Important Bird Area (IBA). Source: [http://web4.audubon.org/bird/iba/florida/IBA\\_site\\_list.htm](http://web4.audubon.org/bird/iba/florida/IBA_site_list.htm) (Accessed 7-31-13) IBAs are sites that provide essential habitat for one or more species of birds according to criteria established by BirdLife International. Source: <http://www.birdlife.org/action/science/sites/> (Accessed 7-31-13).

Least terns (*Sternula antillarum*) nest in great numbers on the beach. The area known to be a nesting area for least terns is initially marked with flags, string, and signs. The area is expanded as needed if the birds expand their nests beyond the initial boundaries. Wilson's plovers (*Charadrius wilsonia*) and willets (*Tringa semipalmata*) also nest within the park. Shorebird surveys at Fort Matanzas documented at least 17 red knots (*Tringa canutus*) in 2008 and 13 red knots in 2009. There have also been red knots observed in the park in 2010. The red knot is a Federal candidate for listing. The reddish egret forages on broad, barren sand or mud flats, usually in water less than six inches deep (Paul 1996).

State-listed species of concern that have the potential to be seen at Fort Matanzas include the snowy egret (*Egretta thula*), white ibis (*Eudocimus albus*), brown pelican (*Pelecanus occidentalis*), and black skimmer (*Rynchops niger*).

**Reptiles and Amphibians.** Herptile (both reptile and amphibian) surveys were conducted from 2001-2002 and in 2009. A total of 30 species were identified on Anastasia Island (29 species) and Rattlesnake Island (18 species). Nine additional species have been identified on Anastasia Island during other systematic collections. The northern end of Rattlesnake Island and its eastern shoreline consist of white sand dunes and storm water overwash areas. The most abundant reptiles in these dunes meadows include the six-lined racerunner and the state-listed species of concern gopher tortoise (*Gopherus polyphemus*). The gopher tortoise is one of the most abundant reptiles within Fort Matanzas and can be found in all open dry habitats, dunes, dunes meadows, and areas between patches of forest.

**Aquatic Resources.** The Matanzas River is considered an estuary, where salt water from the Atlantic Ocean and freshwater from the tributaries flowing into the Matanzas River mix to form brackish water. The Matanzas River supports a large number of fish, shellfish, and crustaceans. Table 13 provides a list of finfish species and marine mammals found in the Matanzas River.

1 Federally listed threatened and endangered

2 species are discussed below.

**TABLE 13. FINFISH SPECIES AND MARINE MAMMALS AT FORT MATANZAS**

Scientific Name	Common Name
<b>Finfish Species</b>	
<i>Archosargus probatocephalus</i>	Sheepshead
<i>Coryphaena hippurus</i>	Dolphin
<i>Mugil cephalus</i>	Striped mullet
<i>Mugil spp.</i>	Mullet
<i>Paralichthys spp.</i>	Flounder
<i>Pomatomus saltatrix</i>	Bluefish
<i>Sciaenops ocellatus</i>	Red drum
<i>Trachinotus carolinus</i>	Florida pompano
<b>Marine Mammals</b>	
<i>Trichechus manatus</i>	West Indian manatee
<i>Tursiops truncatus</i>	Bottlenose dolphin

1 **Finfish Species.** The Florida Fish and Wildlife  
2 Conservation Commission (FWCC) manages  
3 Florida's fish and wildlife resources. The Fish and  
4 Wildlife Research Institute was established by  
5 Florida FWCC to monitor marine and freshwater  
6 resources, monitor wildlife habitats, and conduct  
7 research. The Matanzas River supports  
8 commercial and recreational fishing. The majority  
9 of commercial fishing in St. Johns County is  
10 performed in the vicinity of the Matanzas Inlet.  
11 Recreational anglers on St. Johns County beaches  
12 outnumber commercial fisherman. St. Augustine  
13 and Matanzas Inlets are among the most popular  
14 areas for recreational fishing.

15  
16 **Shellfish.** Shellfish thrive in estuaries and include  
17 oysters, clams, and mussels. Shellfish are filter  
18 feeders, meaning they intake large quantities of  
19 water across their gills for food and oxygen.  
20 During this process, shellfish take in bacteria,  
21 viruses, and chemical contaminants that can be  
22 stored in their digestive systems. Waters are  
23 classified for harvest of shellfish as approved,  
24 conditionally approved, restricted, conditionally  
25 restricted, prohibited, and unclassified. The  
26 Matanzas River in the vicinity of Fort Matanzas is  
27 classified by the state as a Class II conditionally  
28 approved harvesting area. A conditionally  
29 approved area is defined as an area periodically  
30 closed to shellfish harvesting based on events that  
31 may increase pollution in the harvesting area,  
32 such as rainfall or increased river flow.

33  
34 The Matanzas River at Fort Matanzas supports  
35 living oyster beds that provide a great habitat in  
36 the estuarine ecosystem. Oyster beds provide

37 many crevices for other animals to hide in, such  
38 as juvenile fish, crabs, and algae. In addition,  
39 clams and ribbed mussels reside in this area.  
40 Shellfish are harvested in the vicinity of Fort  
41 Matanzas.

42  
43 **Marine Mammals.** Two marine mammals, the  
44 federally endangered West Indian manatee  
45 (*Trichechus manatus*) and the bottlenose dolphin  
46 (*Tursiops truncatus*), are found in the Matanzas  
47 River. These marine mammals are offered federal  
48 protection under the Marine Mammal Protection  
49 Act of 1972. The Act established a moratorium on  
50 the taking or harassment of marine mammal  
51 species, and the West Indian manatee is further  
52 protected as a depleted stock under the Act.

53  
54 **Threatened and Endangered Species.** Certain  
55 species of plants and animals are protected by  
56 federal regulations under the Endangered Species  
57 Act (ESA) of 1973. The primary state law that  
58 allows and governs the listing of endangered  
59 species is the Florida State Endangered Species  
60 Act of 1976. The FWCC maintains a state list of  
61 threatened and endangered animals, and the  
62 Florida Department of Agriculture and Consumer  
63 Services maintains a list of plants. Threatened and  
64 endangered (T&E) species are those plant and  
65 animal species that are most in need of  
66 conservation efforts due to habitat loss and  
67 declining populations.

68  
69 Under Section 7[a] of the ESA, the NPS is  
70 required to consult with USFWS and National  
71 Marine Fisheries Service (NMFS) if federally  
72 protected T&E species may be present in the area

1 affected by a proposed project. NMFS and  
 2 USFWS share authority over certain federally  
 3 protected species and have total jurisdiction over  
 4 others.  
 5  
 6 This section, along with the impacts analysis for  
 7 the preferred alternative in Chapter 4 of this plan,  
 8 fulfills the NPS's obligation under Section 7 to  
 9 document federally listed species and impacts of

10 the preferred alternative on these species via an  
 11 embedded Biological Assessment.  
 12  
 13 Table 14 lists the federally protected T&E species  
 14 and depicts the federal agency associated with  
 15 each species. There are no federally listed plant  
 16 species known to occur within the park  
 17 boundaries.

**TABLE 14. FEDERALLY PROTECTED THREATENED AND ENDANGERED SPECIES**

Scientific Name	Common Name	Federal Status	Federal Agency with Jurisdiction
<b>Birds</b>			
<i>Charadrius melodius</i>	Piping plover	Threatened	USFWS
<i>Mycteria americana</i>	Wood stork	Endangered*	USFWS
<b>Mammals</b>			
<i>Peromyscus polionotus phasma</i>	Anastasia Island Beach Mouse	Endangered	USFWS
<i>Trichechus manatus latirostris</i>	West Indian (Florida) Manatee	Endangered/Critical Habitat Designated	USFWS
<b>Reptiles</b>			
<i>Caretta caretta</i>	Loggerhead Sea Turtle	Threatened	USFWS/NMFS
<i>Drymarchon corais couperi</i>	Eastern Indigo Snake	Threatened	USFWS
<i>Chelonia mydas</i>	Green sea turtle	Endangered	USFWS/NMFS
<i>Dermochelys coriacea</i>	Leatherback sea turtle	Endangered	USFWS/NMFS
<i>Lepidochelys kempii</i> turtle	Kemp's Ridley sea	Endangered	USFWS/NMFS
*The U.S. Fish & Wildlife Service has proposed to reclassify the continental United States (U.S.) breeding population of wood stork from endangered to threatened under the Endangered Species Act of 1973, as amended (Act). Source: Federal Register /Vol. 77, No. 247 /Wednesday, December 26, 2012 / Proposed Rules, page 75947.			

Source: U.S. Fish & Wildlife Service, North Florida Ecological Services Office, Federally Listed Species Website: <http://www.fws.gov/northflorida/CountyList/Johns.htm> , (Accessed 12-15-2010).

1 The park has developed the following Endangered  
 2 Species Protection Protocols/Best Management  
 3 Practices:  
 4  
 5 The park patrols the beach on a daily basis and  
 6 when injured or stranded turtles are discovered,  
 7 they are delivered to a sanctuary for rehabilitation  
 8 and ultimate re-release into the wild.  
 9  
 10 Shore Birds: Piping plovers winter in Florida  
 11 along inlets and adjacent shorelines, including  
 12 beaches and intertidal wetlands within and  
 13 contiguous to Fort Matanzas. Wood storks do not  
 14 nest on the beach but use habitats within Fort  
 15 Matanzas for loafing and foraging. The park  
 16 closes a portion of the beach from April 15  
 17 through August 31 each year. These dates are  
 18 flexible and the closure could begin earlier if nests  
 19 are discovered earlier and could end later if  
 20 nesting is still occurring.  
 21

22 Dune species (including Anastasia Island beach  
 23 mouse and eastern indigo snake): The dune  
 24 system at Fort Matanzas is closed to pedestrian  
 25 and vehicle access all year. Boardwalks provide  
 26 pedestrian access from roadside parking areas to  
 27 the beach. The conservation zone extends 15 ft.  
 28 seaward from the toe of the dune. The park patrols  
 29 the beach and monitors the dune system year  
 30 round.  
 31  
 32 **Ecologically Critical Areas.** The Endangered  
 33 Species Act of 1973, as amended, has a provision  
 34 that provides for the designation of habitat critical  
 35 to the conservation and recovery of threatened  
 36 and endangered species. Critical habitat is defined  
 37 in the ESA as a specific geographic area that  
 38 contains habitat features essential for the  
 39 conservation of a threatened or endangered  
 40 species. Designated critical habitat can include  
 41 both occupied and unoccupied habitat if the latter  
 42 is deemed necessary to the recovery of the

species. There is no federally designated critical habitat within Fort Matanzas boundaries.

The Matanzas Inlet is state designated as an active Critical Wildlife Area for the state-listed least tern from 1 April to 1 September, which is also suitable habitat for the federally listed piping plover and several other state-listed species. The designated Florida Critical Wildlife Area covers an area located within the park at the southernmost point of Anastasia Island. The park has recognized this area as an important “Least Tern Nesting Area”.

**Designated Natural Areas.** Fort Matanzas is situated within the boundaries of the Guana Tolomato Matanzas (GTM) Reserve, which is part of the National Estuarine Research Reserve System. This system is a network of protected areas established for long-term research and education. The GTM Reserve encompasses approximately 55,000 acres and includes salt marsh habitats, mangrove tidal wetlands, oyster bars, estuarine lagoons, and upland habitats. The reserve is separated into a northern and southern section, and Fort Matanzas is located in the southern section of the reserve. The Matanzas River from Moses Creek to south of Pellicer Creek is included in the reserve. The Matanzas Inlet, located within the GTM Reserve, is one of the last natural, unaltered inlets on Florida’s Atlantic coast.

**Soundscape.** Current noise sources in the surrounding area are predominantly the result of human activities. These activities include traffic from the local roadways (Highway A1A), boating

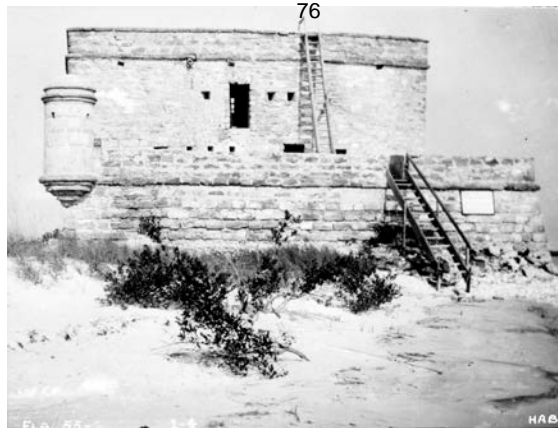
traffic along the Matanzas River, including the ferry operating at Fort Matanzas, and human recreational activities in the vicinity of Fort Matanzas. A secondary source of sound in the vicinity of the site is natural and includes calls from birds and other wildlife, wind, and surf.

## HUMAN ENVIRONMENT

**Recreation.** Fort Matanzas offers a variety of recreational activities throughout the park, including bird watching, boating, fishing, kayaking, nature walks, swimming, and wildlife viewing. The park offers a 0.5-mile self guided nature trail on a boardwalk through a coastal maritime forest and through the dunes to a beach overlook. Fishing is permitted along the shoreline of the Matanzas River. No license is required for Florida residents or children under the age of 16. In addition, boating using powered boats or canoes/kayaks is permitted on the Matanzas River. Walking along the river shoreline, watching for wading birds and crabs, is also one of the recreational uses for the park. Fort Matanzas offers excellent bird watching; it has been selected as a stop on the Great Florida Birding Trail. The park also offers guided boat tours to the fort on the Matanzas Queen ferryboat.

### Demographics, Income and Ethnic

**Composition.** According to U.S. Census estimates as of 2009, the population of St. Johns County was 187,436. The median household income for St. Johns County was \$67,238. Persons below the poverty level were 7.9%. The composition of the county is provided in Table 15.



Fort Matanzas - 1934 - Historic American Buildings Survey Photo

**TABLE 15. POPULATION COMPOSITION OF ST. JOHNS COUNTY AND THE STATE OF FLORIDA.**

Category	St. Johns County	Florida
Population, percent change, April 1, 2000 to July 1, 2009	52.2%	16.0%
Persons under 5 years old, percent, 2008	5.5%	6.2%
Persons under 18 years old, percent, 2008	20.6%	21.8%
Persons 65 years old and over, percent, 2008	14.8%	17.4%
Female persons, percent, 2008	50.9%	50.9%
White persons, percent, 2008	90.1%	79.8%
Black persons, percent, 2008	6.4%	15.9%
American Indian and Alaska Native persons, percent, 2008 (a)	0.2%	0.5%
Asian persons, percent, 2008	2.0%	2.3%
Persons reporting two or more races, percent, 2008	1.1%	1.4%
Persons of Hispanic or Latino origin, percent, 2008	4.7%	21.0%
White persons not Hispanic, percent, 2008	85.7%	60.3%

**Aesthetics.** The aesthetic nature of the area surrounding Fort Matanzas is well preserved as most of the surrounding lands have been set aside for conservation and open space. There are several residences across the Matanzas River from the fort on Anastasia Island, and a waterfront community called Summer Haven is located south of Rattlesnake Island on the south side of the bridge that crosses the Matanzas Inlet. These residences, the bridge, and several other man-made structures are visible from the fort. Currently within Fort Matanzas, aesthetic resources are in good condition. The grounds are maintained daily throughout the park.

**Public Health and Safety.** The number of parking areas and spaces available for visitors going to the ocean beach on Anastasia Island as well as the shore of the western side of the island on the Matanzas River is inadequate on many summer weekends. The three available parking areas frequently fill up early and visitors park on the shoulders of Highway A1A, which bisects the Anastasia Island section of the park. Beach users also park in the visitor center parking lot which is intended for visitors desiring to take the boat to the fort on Rattlesnake Island. On most summer weekends the parking lots on the east and west sides of Highway A1A fill early and parking on the shoulders of the road creates dangerous conditions for both pedestrians and drivers.

Some visitors to Fort Matanzas National Monument may be unaware of dangers presented by a Florida barrier island environment. Although the NPS attempts to inform visitors of dangers through signs, bulletin boards, brochures, and individual contacts, the National Monument continues to present a variety of hazards. These include the possibility of drownings and near drownings as a result of rough surf conditions, strong ocean currents, and rip tides; getting struck by sudden lightning storms (central Florida receives more lightning strikes than any other section of North America); sunburn and heat stroke/exhaustion; and jellyfish/Portuguese man-of-war stings (in the ocean surf).

**Visitor Use and Experience.** Fort Matanzas consists of 298 acres on Anastasia and Rattlesnake Islands north of Matanzas Inlet where the NPS owns and manages both oceanfront and riverfront property. Most of the parkland on Anastasia Island is accessible to the public. Anastasia Island includes the entrance to the park, visitor center, boardwalk, picnic area, and parking lots. A majority of the land on Rattlesnake Island is closed to the public. Fort Matanzas is open to the public from 9 am to 5:30 pm every day of the year, except December 25. There are no fees to enter the park or to take the ferry to the fort. Fort Matanzas currently has approximately 56,000 visitors annually that use the ferry to see the fort; however, other areas of the park, including the beach on Anastasia Island, receive close to one

1 million visitors annually. The number of visitors  
2 is highest March through Labor Day and during  
3 the December holidays. Visitation is at its lowest  
4 from mid-September through mid-November. The  
5 park is busiest on holiday weekends throughout  
6 the year. There is a small visitor center, open from  
7 9 am until 4:30 pm, which offers displays, an 8-  
8 minute video, and various books and materials for  
9 sale. Park staff offer 45 minute guided boat tours  
10 to the fort. Other features available for visitor use  
11 include nature trails and beaches, and special  
12 programs are frequently offered, such as living  
13 history and guided nature walks.

14  
15 **Park Operations.** This section describes the  
16 existing conditions related to park operations and  
17 administration. Most of the operations necessary  
18 to manage the park occur on Anastasia Island, as  
19 there are few daily operations related to  
20 maintaining the dock and fort structures on  
21 Rattlesnake Island.

22  
23 **Utilities** – The park has 2 dumpsters, 1 recycle  
24 dumpster, no septic systems, 1 hydrant, 1 test well  
25 (drilled by state agency St. John River Water  
26 Management District), 1 county supplied water  
27 and sewer system. The maintenance complex is  
28 1860 sq. ft. and consists of a workshop and 5

29 equipment storage bays. There are no utilities or  
30 roads currently located on Rattlesnake Island.

31  
32 **Personnel** – Fort Matanzas has 1 STEP (Student  
33 Temporary Employment Program) position, 2  
34 part-time, 3 permanent subject to furlough and 3  
35 full-time. The capacity of the ferry is 35 (new  
36 USCG weight rules reduced the total capacity of  
37 the ferry). The fort is limited to 70 people  
38 maximum per tour. There are 8 total maintenance  
39 personnel, 1 is assigned to Fort Matanzas the  
40 others assigned on a project by project basis or  
41 when the regular maintenance person is on lieu  
42 days. The park operation is supplemented by 4  
43 four-hour volunteer shifts each day. There are  
44 approximately 50 volunteers on the Fort Matanzas  
45 roster.

46  
47 **Parking** – There are currently four parking lots  
48 available at Fort Matanzas. Near the north end of  
49 the park boundary on Anastasia Island, there is a  
50 lot on the west side of Highway AIA that provides  
51 parking primarily for visitors to the fort. On the  
52 east side, there is a lot for visitors to the beach.  
53 There are also two parking lots in the mid portion  
54 of the park boundary on Anastasia Island, just off  
55 Highway AIA. The east side lot is used mostly by  
56 visitors to the beach and the west side lot is used  
57 mostly by visitors to the beach and the river.



**Fort Matanzas Interpretive Program**