

Final Evaluation Findings

Guana Tolomato Matanzas National Estuarine Research Reserve

February 2004 through June 2007



Office of Ocean and Coastal Resource Management
National Ocean Service
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I. EXECUTIVE SUMMARY

The Coastal Zone Management Act (CZMA) of 1972, as amended, established the National Estuarine Research Reserve System. Sections 312 and 315 of the CZMA require NOAA's Office of Ocean and Coastal Resource Management (OCRM) to conduct periodic performance reviews or evaluations of federally-approved National Estuarine Research Reserves. The review described in this document examined the operations and management of the Guana Tolomato Matanzas National Estuarine Research Reserve (GTMNERR) during the period of February 2004 through June 2007. The Florida Department of Environmental Protection's (DEP) Office of Coastal and Aquatic Managed Areas (CAMA) administers GTMNERR.

This document describes the evaluation findings of the OCRM Director with respect to GTMNERR during the review period. These evaluation findings include discussions of major accomplishments as well as recommendations for program improvement. The fundamental conclusion of this evaluation is that DEP is successfully implementing and enforcing the federally-approved GTMNERR.

The evaluation team documented a number of the reserve's accomplishments during the review period. The Administrative Operations Team supports the reserve and CAMA's east coast region with efficient administrative and fiscal services. CAMA and GTMNERR successfully increased the reserve's staff. In 2005, GTMNERR opened its Environmental Education Center. The reserve successfully resolved grants management and performance reporting issues. The Friends of GTMNERR provides strong financial and community support to the reserve. GTMNERR increased its visibility and regularly engages in many diverse partnerships. The Research and Monitoring Program is a strong participant in integrated ocean observing systems at the state and regional level. Education and outreach at GTMNERR has evolved into a proactive, strategic program that targets diverse audiences. The Education and Outreach Program offers high-quality K-12 education and professional teacher development that are closely correlated with state education standards. The program also provides a wide range of innovative and engaging adult and community educational programming. The Volunteer Program has successfully recruited and retained a strong core of volunteers that provides critical support to each of the reserve's programs. The application of a geographic information system at the reserve has enhanced the precision and usefulness of data produced for ongoing projects such as invasive species mapping and prescribed fire planning.

The evaluation team also identified areas where the reserve and its programs could be strengthened. OCRM's recommendations are in the form of one Necessary Action and six Program Suggestions. The Necessary Action requires GTMNERR to submit a final draft of its site profile to OCRM no later than June 2008. Program Suggestions address staffing, revision of the management plan, research priorities and projects, adult and community education, and the Coastal Training Program.

II. PROGRAM REVIEW PROCEDURES

A. OVERVIEW

NOAA's Office of Ocean and Coastal Resource Management (OCRM) began its review of the Guana Tolomato Matanzas National Estuarine Research Reserve (GTMNERR) in April 2007. The §312 evaluation process involves four distinct components:

- An initial document review and identification of specific issues of particular concern;
- A site visit to Florida including interviews and a public meeting;
- Development of draft evaluation findings; and
- Preparation of final evaluation findings, partly based on comments from the state regarding the content and timetables of recommendations specified in the draft document.

The recommendations made by this evaluation appear in boxes and bold type and follow the findings section where facts relevant to the recommendation are discussed. The recommendations may be of two types:

Necessary Actions address programmatic requirements of the Coastal Zone Management Act's (CZMA) implementing regulations and of the federally-approved GTMNERR. Each Necessary Action must be implemented by the specified date.

Program Suggestions describe actions that OCRM believes would improve the program, but they are not currently mandatory. If no dates are indicated, the Florida Department of Environmental Protection (DEP) is expected to address the recommendations by the time of the next regularly-scheduled evaluation.

A complete summary of accomplishments and recommendations is outlined in Appendix A.

Failure to address Necessary Actions may result in a future finding of non-adherence and the invoking of interim sanctions, as specified in CZMA §312. Program Suggestions that are reiterated in consecutive evaluations to address continuing problems may be elevated to Necessary Actions. OCRM will consider the findings in this evaluation document when making future financial award decisions relative to GTMNERR.

B. DOCUMENT REVIEW AND ISSUE DEVELOPMENT

The evaluation team reviewed a wide variety of documents prior to the site visit, including: (1) the 2005 GTMNERR final evaluation findings; (2) the federally-approved Environmental Impact Statement and program documents; (3) financial assistance awards

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and work products; (4) semi-annual performance reports; (5) official correspondence; and (6) relevant publications on natural resource management issues in Florida.

Based on this review and on discussions with OCRM, the evaluation team identified the following priority issues:

- GTMNERR's major accomplishments during the review period;
- Status of GTMNERR's general administration, including grants, financial management and staffing;
- Status and visibility of research, monitoring, education and stewardship programs, including local and system-wide initiatives such as the System-wide Monitoring Program and the Coastal Training Program;
- Status of facilities development and operation;
- Status of the management plan revision;
- Status of the site profile development;
- Status of GTMNERR's coordination with other federal, state and local agencies;
- GTMNERR's role with local communities and its integration with partners; and
- Manner in which DEP and GTMNERR have addressed the recommendations contained in the previous §312 evaluation findings released in 2005. GTMNERR's assessment of how it has responded to each of the recommendations in the 2005 evaluation findings is located in Appendix B.

C. SITE VISIT TO GTMNERR

Notice of the scheduled evaluation was sent to DEP, GTMNERR, relevant federal regulatory and environmental agencies, members of Florida's congressional delegation and regional newspapers. In addition, a notice of OCRM's "intent to evaluate" was published in the Federal Register on May 31, 2007.

The site visit to Florida was conducted on July 17-19, 2007. Ms. Rosemarie McKeeby, Evaluation Team Leader, OCRM National Policy and Evaluation Division; Ms. Erica Seiden, GTMNERR Specialist, OCRM Estuarine Reserves Division; and Mr. Gene Wright, Resource Specialist, Ohio Coastal Management Program composed the evaluation team.

During the site visit, the evaluation team interviewed GTMNERR staff and representatives from state agencies, local governments, nongovernmental organizations, community groups and research institutions. Appendix C lists people and institutions contacted during this review.

As required by the CZMA, OCRM held an advertised public meeting on July 18, 2007, at 6:00 p.m., at the GTMNERR Environmental Education Center, 505 Guana River Road, Ponte Vedra Beach, Florida. The meeting gave members of the general public the opportunity to express their opinions about the overall operation and management of GTMNERR. Appendix D lists individuals who registered at the meeting. OCRM's

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responses to written comments submitted during this review are summarized in Appendix E.

The evaluation team gratefully acknowledges the critical support of GTMNERR staff with the site visit planning and logistics.

III. RESERVE DESCRIPTION

NOAA's Office of Ocean and Coastal Resource Management (OCRM) designated the Guana Tolomato Matanzas National Estuarine Research Reserve (GTMNERR) in 1999. The Florida Department of Environmental Protection (DEP) is the administrative lead agency for the reserve. As such, DEP provides matching funds for OCRM financial assistance awards and is responsible for GTMNERR's operations and management. GTMNERR is positioned within DEP's Office of Coastal and Aquatic Managed Areas.

GTMNERR represents a relatively undeveloped estuarine ecosystem in the southeastern United States. Located in northeast Florida's St. John's and Flagler Counties, the reserve is near the cities of Jacksonville, St. Augustine and Palm Coast. GTMNERR is geographically separated into: (1) a northern section where the Tolomato and Guana Rivers mix with the Atlantic Ocean; and (2) a southern section along the Matanzas River that extends from Moses Creek to south of Pellicer Creek. The reserve encompasses approximately 55,000 acres of salt marsh and mangrove tidal wetlands,¹ oyster bars, estuarine lagoons, upland habitat and offshore seas. Additionally, the Matanzas Inlet is one of the last natural, unaltered inlets on Florida's Atlantic Coast.

GTMNERR's submerged lands, marshes, islands and conservation lands provide important habitat for a diversity of plants and animals, including birds migrating along the Atlantic Coastal Flyway. The Guana Tolomato Matanzas Estuary supports most of the region's commercially and recreationally valuable finfish and shellfish. The reserve also maintains eight plant and 48 animal species listed as endangered, threatened or of special concern. GTMNERR's nearly five miles of virtually undeveloped Atlantic Ocean beach dunes provide habitat for the endangered Anastasia Island beach mouse. The reserve's beaches are also used as nesting sites by threatened least terns and listed loggerhead turtles, leatherback turtles and green turtles. Additionally, GTMNERR's ocean waters are critical calving habitat for the endangered North Atlantic right whale. West Indian manatees are occasionally observed in Guana River and Pellicer Creek during their seasonal migrations along the Intracoastal Waterway. The gopher tortoise, bald eagle, gopher frog, diamondback terrapin and striped newt are also found within the reserve.

¹ The reserve contains the northernmost extent of mangrove habitat on the east coast of the United States.

IV. REVIEW FINDINGS, ACCOMPLISHMENTS AND RECOMMENDATIONS

A. OPERATIONS AND MANAGEMENT

1. Administration

Previously consisting of one person, the Guana Tolomato Matanzas National Estuarine Research Reserve's (GTMNERR) Administrative Operations Team grew by five positions during the review period. At the time of the evaluation site visit, the team consisted of an Operations Management Consultant, Administrative Assistant, Accountant, Executive Assistant, Secretary and Receptionist. The team provides administrative and fiscal support not only to the reserve's staff of approximately 30, but also to an additional 25 members of the Coastal and Aquatic Managed Area's (CAMA) east coast regional staff.

During the review period, the Administrative Operations Team supported GTMNERR's operations and management in a variety of ways. For example, the team established staffing schedules that allow the reserve's Environmental Education Center (EEC) to stay open to the public seven days a week. Administrative staff also successfully implemented: (1) grants submission and administration through NOAA's Grants Online Program; (2) Florida's online accounting and human resources programs; and (3) CAMA's system-wide accounting tracking program.

Additionally, the Administrative Operations Team established the reserve's internal procedures for: (1) purchasing; (2) revenue management; (3) visitor services; (4) recruitment, hiring and employee orientation; and (5) volunteer training. The Operations Management Consultant created a resource training book for the team's Secretary position and instituted cross-training for all operations staff in travel, fiscal management and visitor services procedures. These steps have improved the team's efficiency.

Accomplishment: The Administrative Operations Team supports GTMNERR and CAMA's east coast region with efficient administrative and fiscal services. The team not only successfully implements a range of department, state and federal administrative systems, but also is proactive in developing and improving the reserve's internal procedures.

2. Staffing

Reserve staff are responsible for GTMNERR's on-site development and daily operations and management. GTMNERR and CAMA worked together during the review period to successfully increase the reserve's staff. Permanent reserve staff at the time of the evaluation site visit included the Reserve Manager, Research Coordinator, Education Coordinator, Volunteer Coordinator, Coastal Training Program (CTP) Coordinator, Stewardship Coordinator, two Park Rangers, Biological Scientist, Operations

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Management Consultant and Facilities Services Consultant. Permanent staff are augmented by the following temporary positions: Research Assistant, two Environmental Educators, Events Planner, Biological Scientist, Computer Support Technician, two Park Rangers, Administrative Assistant, Secretary, Receptionist, Facilities Services Specialist, Visitor Services Specialist and Clerk.

During the review period, CAMA and GTMNERR converted the Administrative Assistant, CTP Coordinator and Education Coordinator from temporary to permanent positions. NOAA's Office of Ocean and Coastal Resource Management (OCRM) commends CAMA and the reserve for this significant accomplishment. However, GTMNERR still has many highly-qualified staff in temporary positions, which negatively affects staff retention. Therefore, OCRM encourages CAMA and the reserve to continue moving highly-qualified temporary staff into permanent positions as practicable.

Accomplishment: CAMA and GTMNERR successfully increased the reserve's staff, improving both the quality and quantity of reserve programming and services. CAMA and the reserve also converted three temporary positions to permanent positions, enhancing the likelihood of retaining those staff.

One of the National Estuarine Research Reserve System's (NERRS) partnership goals is to have the lead agency provide funding for core staff² at each reserve. Two of GTMNERR's core staff, the Reserve Manager and Research Coordinator, as well as several other temporary positions, are supported by the OCRM annual operations award. In fact, 48 percent of the reserve's annual operations grant is used to pay salaries for staff. OCRM acknowledges that Florida, like many other states participating in the reserve system, is facing difficult financial times. However, reserves that receive consistent staff support from their lead agencies tend to be better positioned to make significant progress in program implementation, to undertake new initiatives and to respond to challenges. Florida's Department of Environmental Protection (DEP) should begin providing state support for the Reserve Manager and Research Coordinator. Even a phased approach that begins with support for the Reserve Manager would be an improvement over the current situation.

1. Program Suggestion: OCRM strongly encourages DEP to provide consistent, long-term support for the reserve's core staff positions.

3. Facilities

GTMNERR's Facilities Team is composed of a Facilities Services Consultant, Facilities Services Assistant, Visitor Services Specialist and Aquarium Maintenance Specialist. Facilities staff implement the reserve's Master Facilities Plan, which is updated every ten years. The team's specific responsibilities include: (1) building maintenance and

² Reserve Manager, Research Coordinator and Education Coordinator.

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administration; (2) vehicle and vessel maintenance and administration; (3) oversight of facilities contractors; (4) new facilities projects and acquisitions; and (5) visitor services.

The centerpiece of GTMNERR's facilities is the 21,000 square foot EEC in the northern section of the reserve. Dedicated in 2005, the EEC is designed to facilitate the reserve's education, research and stewardship programs. The building also houses GTMNERR's administrative staff and serves as a focal point for public outreach in St. John's and Duval Counties. The EEC's interpretive exhibits include aquaria, environmental sculptures, dioramas, displays and films. The building also includes offices, classrooms, teaching and working laboratories, a reference library, a 200-seat auditorium with audio-visual equipment, and an outdoor amphitheater.



A view of the reserve's EEC.

The EEC is an excellent facility that provides a unique opportunity to offer hands-on environmental education and natural resource interpretation in northeast Florida. However, operation of the building has not been free of challenges. Although the building is new, the Facilities Team has already encountered complicated maintenance issues and identified areas for improvement. For example, the building's air conditioning system was not installed properly and does not operate as intended. GTMNERR and CAMA are pursuing options to fix the system. The reserve is also seeking to make "green" improvements to the building as opportunities arise. OCRM encourages these efforts.

Accomplishment: In 2005, GTMNERR opened the EEC, which serves as a platform for hands-on environmental education and natural resource interpretation in northeast Florida. The Facilities Team has provided successful operations and maintenance for the EEC and is pursuing opportunities to improve the building using "green" practices.

Public recreation facilities at Guana Dam are located adjacent to the EEC. These facilities include an automated entry pay station and guard house, road, boat ramps to both Ponte Vedra Lake and the Guana River, trailer parking, parking for trail users, a trailhead picnic pavilion and restrooms. Improved parking areas include 87 automobile spaces and ten designated trailer spaces. All of these facilities have been recently added or improved upon in an effort to provide amenities for visitors while ensuring that they

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do not adversely impact the environment. Thus, all improvements occurred at previously disturbed sites. Stormwater runoff is captured and retained in swales. The boat ramps were designed to prevent erosion, as were new fences that prohibit visitors from trampling previously damaged salt marsh areas. There are also three parking lots to the north of Guana Dam that provide access to the reserve's undeveloped Atlantic Ocean beachfront.

GTMNERR's original administrative building is located in the Town of Marineland in Flagler County. The building is near the Marineland Oceanarium, River to Sea Preserve and the University of Florida's Whitney Laboratory for Marine Bioscience. The reserve's Research and Monitoring Program works primarily out of the Marineland location.

4. Grants Management

OCRM awards grants to federally-approved reserves for operations and management, research and monitoring, education and outreach, stewardship, construction and acquisition. During the review period, GTMNERR satisfactorily resolved a grants management issue that was raised during the previous evaluation. NOAA's Grants Management Division requires 30 percent match for all NERRS operations grants. The match may be allocated in any object class category as long as the total is 30 percent. In the previous review period, OCRM expressed concern that GTMNERR was not representing the true source of its match. The reserve had matched an award with state fixed capital outlay project funds that support projects in the state parks located within the reserve's boundary. While fixed capital outlay project funds were a legitimate source of match, DEP showed that each task and each object class category within the agreement was matched by 30 percent. Reserve-specific and reserve system-wide projects are not part of state park maintenance and cannot be covered by fixed capital outlay project funds. Thus, the 2005 GTMNERR final evaluation findings required that the reserve submit grant applications that: (1) specifically identify the source of match; and (2) allocate funds to the appropriate object class. During the current review period, GTMNERR prepared and submitted all grants in accordance with NOAA's guidelines. The reserve successfully managed its federal funding, achieved desired results from funded tasks and successfully built upon established projects.

OCRM also requires reserves to submit semi-annual performance reports for each grant; the reports present consolidated information about accomplishments related to a reserve's financial assistance awards. Early in the current review period, GTMNERR often submitted performance reports late or not at all. At one point, the reserve requested a no-cost extension for an award for which it had not submitted any performance reports, despite repeated requests from OCRM's GTMNERR Specialist. Thus, the no-cost extension was denied and significant funds were deobligated. GTMNERR subsequently resolved the issue of delinquent performance reports, and, at the time of the site visit, was submitting performance reports containing necessary information on schedule.

Accomplishment: GTMNERR has successfully resolved grants management and performance reporting issues. The reserve is preparing all grants in accordance with NOAA guidelines and submitting informative and timely performance reports.

5. Management Plan

NERRS regulations require each reserve to have an OCRM-approved management plan that must be updated every five years. A reserve's management plan has three primary functions: (1) to provide a framework for the direction and timing of the reserve's programs; (2) to allow the reserve manager to assess how successfully the reserve's goals have been met and to determine any necessary changes in direction; and (3) to guide programmatic evaluations of the reserve. The plan must also describe the reserve's intended strategies for research, education and interpretation, public access, construction, acquisition and resource preservation, and restoration. Additionally, the plan is required to describe staff roles in each of these areas.

GTMNERR's revised management plan, reflecting the reserve's vision and strategy for 2008-2012 is due this year, and it is clearly an opportune time for the reserve to revise its management plan. Many of the evaluation discussions focused on topics that are properly addressed in a revised management plan, such as facilities improvements, monitoring program enhancements, educational programming at both reserve facilities and further development of CTP. Additionally, the aquatic preserves located within the reserve also have management plans that are due for revision. In fact, GTMNERR's revised management plan will be the first CAMA plan to combine management plans for a NERR and aquatic preserves. Combining the plans presents a challenge in that NERRS management plans and aquatic preserve management plans each have their own requirements. It is important to ensure that the final document will clearly serve as GTMNERR's revised management plan.

During the review period, GTMNERR devoted considerable time to the management plan revision. At the time of the site visit, the reserve was focusing on developing the issue characterization chapter, perhaps the most essential component of the management plan. The chapter will include a characterization of each of the reserve's coastal management issues and a delineation of unique goals, objectives and strategies for meeting the challenges presented by the issues. As issue-based management creates a unified direction for reserve programs, OCRM recognizes GTMNERR for its emphasis on the management plan's issue characterization chapter. OCRM also strongly encourages the reserve to complete its management plan revision promptly.

2. Program Suggestion: GTMNERR should complete revision of its management plan no later than December 2007.

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6. Management Advisory Group

In the NERRS, advisory groups play an important role in the federal-state partnership. Such groups are designed to provide for broad representation among a reserve's many stakeholders, including government agencies, commercial interests, special interest groups, research and education entities, and the general public. Advisory groups can counsel a reserve's lead state agency regarding the preparation and implementation of specific reserve plans. A group composed of diverse and dedicated individuals also can significantly assist a reserve in furthering its mission and increasing its visibility.

Following GTMNERR's designation in 1999, DEP established a 21-member Management Advisory Group (MAG) to assist with the long-term administration and operation of the reserve. Group members represent various disciplines that reflect GTMNERR's mission, principles and goals. The MAG is composed of the following representatives:

- The Mayor of the Town of Marineland or designee;
- A commissioner of Flagler County or designee;
- A commissioner of St. John's County or designee;
- A representative of the St. John's River Water Management District;
- A representative from the DEP Division of Recreation and Parks;
- A representative from the National Park Service;
- A representative from the Florida Fish and Wildlife Conservation Commission;
- A commissioner of the St. Augustine Port, Waterway and Beach District or designee;
- A representative of the Division of Forestry;
- A representative of the Florida Inland Navigation District;
- Ten citizens, among whom there is at least one person representing: (1) the science of estuarine ecology, (2) environmental education, and (3) private property rights;
- A representative of the reserve's friends group.

DEP requests appointment of local and state government representatives by their respective agencies. Nominations for private citizens from St. Johns and Flagler Counties are solicited from the general public. A committee of state legislators whose districts overlap the boundaries of the reserve then appoints citizen representatives to the MAG.

The MAG maintains its own charter, which includes provisions for: (1) length of members' terms in office; (2) establishment of ad hoc subcommittees to address relevant issues; and (3) all other procedural functions. As noted previously, GTMNERR is currently revising its management plan. A review of the MAG's charter, composition and function to ensure its continued effectiveness should be part of the management plan review.

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7. Friends of the Reserve

The Friends of GTM Reserve, Inc. is a non-profit 501(c)(3) citizen support organization that was established in 2001. The Friends' purpose is to support and enhance environmental education, stewardship of natural and cultural resources, and scientific research at the reserve through volunteer initiatives, citizen involvement and community partnerships. In 2004, the Friends of GTM Reserve expanded by incorporating the Friends of Guana River State Park. The resulting friends group is composed of 425 members and governed by a 15-member Board of Directors.

The Friends raise funds, provide volunteer services and promote environmental awareness of the reserve. The group raises \$35,000-\$40,000 annually through various events. The Friends also provide a full-time staff person to operate the reserve's Nature Store. Additionally, the group increases reserve visibility by sponsoring events such as receptions for local artists at the EEC.

<p>Accomplishment: The Friends of GTM Reserve provides strong financial and community support to the reserve, enhancing its operations and management.</p>

8. Visibility and Partnerships

GTMNERR successfully increased its visibility during the review period. Key staff positions, facilities additions and enhancements, new education activities and innovative partnerships have all contributed to the reserve's improved visibility. However, achieving and maintaining visibility is always a challenge for new reserves. While it was clear to the evaluation team that many people are aware of the reserve's facilities and programs, they are not always aware that those facilities and programs are made available by GTMNERR. For example, people often refer to the reserve as Guana State Park.³ The reserve is addressing this issue by attempting to brand itself as the "research reserve," which is more likely to be remembered than GTMNERR. OCRM acknowledges GTMNERR's improvements in visibility during the review period and encourages it to continue such efforts.

Emphasis on external partnerships and collaboration is a strength of the reserve. The reserve coordinates well with partners such as the St. John's River Water Management District, the Florida Fish and Wildlife Conservation Commission and the Florida Inland Navigation District. For example, the St. John's River Water Management District has little in the way of educational resources; thus, GTMNERR's Education and Outreach Program often partners with the organization to inform the public about the district's active management projects. During the evaluation site visit, a district representative noted the importance of the reserve's education and outreach efforts to the success of the district's projects.

³ The former Guana State Park is just one piece of GTMNERR.

Accomplishment: GTMNERR increased its visibility and regularly engages in many diverse partnerships. The reserve successfully coordinates with federal, state, local, academic and private agencies and organizations. Increased visibility and strong partnerships facilitate the reserve's ability to carry out its mission.

B. RESEARCH AND MONITORING PROGRAM

1. Research Priorities and Projects

Facilities development and equipment acquisition has been a major focus of the Research and Monitoring Program since reserve designation. Particular effort has been devoted to bringing the various elements of the System-wide Monitoring Program (SWMP)⁴ into compliance with national directives. SWMP is the Research and Monitoring Program's major monitoring activity and currently measures abiotic water quality variables such as pH, conductivity and temperature.

In addition to SWMP, participation in the development of integrated ocean observing systems at the state and regional level has been a priority for the Research and Monitoring Program. For example, GTMNERR's Research Coordinator is strongly involved in the Florida Coastal Ocean Observing System and the Southeast Coastal Ocean Observing Regional Association (SECOORA). He has participated in efforts such as the development of governance structures and business plans for the organizations. His involvement also improves the link between GTMNERR and CAMA, as the CAMA Director is DEP's representative to SECOORA.

Accomplishment: The Research and Monitoring Program actively participates in integrated ocean observing systems at the state and regional level.

The Research and Monitoring Program conducts some long-term monitoring on non-indigenous crab species, the green mussel and a large acorn barnacle. Study of green mussel distribution is complemented by researchers at the University of North Florida who are examining larval distribution and attempting to track the source of adult populations. A related effort by the University of Florida is developing a tool that can be used to examine how green mussel larvae would be distributed from particular spawning points in the estuary. The tool essentially accesses appropriate data sets over the Internet through a user-friendly interface to run a three-dimensional hydrodynamic model of the estuary.

While the Research and Monitoring Program does engage in biological monitoring, such efforts are more opportunistic than systematic. During the site visit, the evaluation team heard from several reserve staff and partners about the reserve's need for a regular biological monitoring strategy. The evaluation team agreed and noted that it was an

⁴ SWMP is described in detail in the next section of the document.

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opportune time to develop such a strategy given that the reserve is revising its management plan.

3. Program Suggestion: The Research and Monitoring Program should develop a biological monitoring strategy that should be a systematic and integral component of GTMNERR's overall monitoring strategy.

In addition to monitoring efforts, other mapping, research and modeling activities have provided important information on several aspects of GTMNERR's estuarine systems. The St. John's River Water Management District's Northern Coastal Basins Program has been the lead on many of these efforts, often in partnership with the reserve. Such studies include:

- Surveying the distribution and abundance of fish species as a function of habitat and season;
- Developing a two-dimensional hydrodynamic model of the reserve's estuarine systems; and
- Delineating emergent marsh vegetation within the reserve.

Research activities by outside investigators have also contributed to the understanding of the reserve's natural processes and dynamics. Examples include:

- A geographic information system (GIS) based study that quantified the extent of marsh erosion resulting from boat wakes along the intracoastal waterway in the southern section of the reserve;
- A study that examined the abundance and distribution patterns of bluefish during fall and winter in the vicinity of both St. Augustine and Matanzas Inlets; and
- A study that developed molecular tools for measuring levels of *Vibrio vulnificus* in estuarine waters.

During the site visit, the evaluation team, Research and Monitoring Program staff and reserve partners discussed opportunities for improving the program. First, the Research and Monitoring Program should regularly reach out to external researchers in order to encourage research at the reserve that addresses GTMNERR's priorities. Completion of the site profile⁵ will assist with this effort. The program should also carefully track research conducted at the reserve and develop a system to disseminate the results of those studies. For example, research briefs that summarize each completed research project and its importance to coastal ecology and management would likely be of interest not only to prospective researchers, but also to the general public. Closer collaboration with GTMNERR's Education and Outreach Program would also be beneficial in translating research results to coastal decision-makers and the interested public as the Research and Monitoring Program moves forward.

⁵ The site profile is discussed in section IV-B-4.

4. Program Suggestion: The Research and Monitoring Program should develop systematic methods of: (1) encouraging external research; (2) tracking all research projects within the reserve; and (3) disseminating the results of research projects through collaboration with the reserve's Education and Outreach Program.

2. System-wide Monitoring Program

Participation in and contribution to system-wide efforts such as planning, development and implementation are important aspects of being part of the NERRS. National programs and initiatives are developed in collaboration with all reserves and OCRM. One example of such an effort is SWMP. The goal of SWMP is to identify and to track short-term variability and long-term changes in estuarine water quality, habitat and land use in each reserve. The data gathered through SWMP provides information about how estuaries function and change over time, enabling scientists to predict how these systems will respond to anthropogenic changes.

SWMP provides critically needed, standardized information on national estuarine environmental trends while allowing reserves the flexibility to assess coastal environmental management issues of regional or local concern. Designed to enhance the value and vision of the NERRS as a system of national reference sites, this program has three components and a phased approach to implementation. The three components are:

- **Abiotic Variables:** SWMP measures pH, conductivity, temperature, dissolved oxygen, turbidity, water level and atmospheric conditions. In addition, the program collects monthly nutrient and chlorophyll samples and monthly diel samples at one SWMP data logger station. Each reserve uses a set of automated instruments and weather stations to collect these data for submission to the Centralized Data Management Office (CDMO) at the University of South Carolina's Belle W. Baruch Institute for Marine Biology and Coastal Research. The CDMO provides additional quality control for data and metadata. It also compiles and disseminates the data and summary statistics via the Internet,⁶ where researchers, coastal managers and educators can readily access the information.
- **Biotic Variables:** As funds become available, the reserve system is incorporating monitoring of organisms and habitats into SWMP. The first aspect to be incorporated quantifies vegetation (e.g. marsh vegetation, submerged aquatic vegetation) patterns and their changes over space and time. Other aspects include monitoring of infaunal benthic communities and plankton communities.
- **Habitat Mapping and Change:** This component of SWMP is being developed to identify changes in coastal ecological conditions with the goal of tracking and evaluating changes in coastal habitats and watershed land use. The main

⁶ <http://cdmo.baruch.sc.edu>.

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objective of this element is to examine the links between watershed land use activities and coastal habitat quality.

During the review period, the Research and Monitoring Program maintained four long-term SWMP water quality stations and one weather station. The water quality stations are located at Pine Island, San Sebastian River, Fort Matanzas and Pellicer Creek. The weather station is also located at Pellicer Creek. Research and Monitoring Program staff: (1) conducted monthly nutrient sampling and analysis at the water quality stations; (2) applied quality assurance, quality controls and data management consistent with SWMP protocols; and (3) made timely submissions to the CDMO. GTMNERR's SWMP supplies real-time and archived meteorological and water quality information to reserve staff, visiting researchers and surrounding communities.

3. Graduate Research Fellows

The NERRS Graduate Research Fellows (GRF) Program supports management-related research projects that enhance scientific understanding of the reserve system, provide information needed by reserve managers and coastal decision-makers, and improve public awareness and understanding of estuarine ecosystems and management issues. GRF funds are available on a competitive basis to students enrolled in a full-time masters or doctoral program at accredited colleges and universities in the United States. Each reserve is provided funding to support up to two fellows at a time, and fellowships may be funded for up to three years. Projects must: (1) address coastal management issues identified as having regional or national significance; (2) relate the issues to NERRS research focus areas; and (3) be conducted mostly within one or more designated reserve sites. Research priorities include:

- eutrophication, effects of non-point source pollution and/or nutrient dynamics;
- habitat conservation and/or restoration;
- biodiversity and/or the effects of invasive species;
- mechanisms for sustaining resources within estuarine ecosystems; and
- economic, sociological, and/or anthropological research applicable to estuarine ecosystem management.

GRFs work with the host reserve's Research Coordinator to develop a plan for participation in the reserve's Research and Monitoring Program. Fellows are asked to provide up to 15 hours a week of research assistance to the host reserve.

GTMNERR supported five GRFs during the review period. Examples of GRF projects at the reserve include: "Estuarine response to extreme events: the GTMNERR case study," "Assessing and modeling mangrove forest dynamics along the temperate-subtropical ecotone in eastern Florida," and "How estuaries respond to nutrient load: the GTMNERR as a model case." OCRM recognizes the Research and Monitoring Program for hosting high-quality GRFs during the review period and encourages it to continue recruiting strong graduate researchers to the reserve.

4. Site Profile

NERRS implementing regulations require each reserve to develop a comprehensive site profile. The reason for developing a site profile is to enhance research efforts by generating inventory information and assimilating baseline data about a reserve's resources and habitats. A site profile is designed to: (1) compile scientific datasets relating to the reserve; (2) characterize the physical and biotic components of the environment; (3) synthesize the known ecological relationships within the reserve and its watershed; (4) trace the impact of natural and human disturbances; and (5) explore the need for future research, education and management initiatives.

In general, the completion of a site profile occurs in two stages:

- **Environmental Characterization:** This stage requires a literature search and review of all existing research and field data. The environmental characterization also involves the compilation of all information describing the geology, biology, chemistry, geomorphology and hydrology of the reserve.
- **Site Profile Development:** This stage requires a synthesis of information gathered during the environmental characterization. The resultant document will illustrate the reserve in terms of its resources, management issues, constraints and research needs.

At the time of the evaluation site visit, the Research and Monitoring Program had not yet completed the site profile's environmental characterization. The Research Coordinator noted that the site profile was included as a task in the reserve's annual operations award and that he anticipated completion of the site profile within a year. OCRM must approve the site profile outline, drafts and final document. Given that the task has been pending since designation of the reserve, the Research and Monitoring Program should complete the site profile as soon as possible.

<p>5. Necessary Action: The Research and Monitoring Program must submit a final draft of GTMNERR's site profile to OCRM no later than June 2008.</p>

C. EDUCATION AND OUTREACH PROGRAM

Education, outreach and interpretation in the NERRS combine a range of programs and methodologies that include science-based content and are systematically tailored to key audiences around priority coastal resource issues. Education and training programs target K-12 students, teachers, university and college students and faculty, as well as coastal decision-makers such as environmental groups, municipal and county zoning boards, planners, elected officials, landscapers and eco-tour operators. Education and outreach staff work with local communities and regional groups to address coastal resource management issues such as nonpoint source pollution, habitat restoration and invasive species. Integration of reserve research and education programs improves a reserve's ability to help communities address critical coastal management issues.

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GTMNERR has a strong Education and Outreach Program that has moved from a reactive, opportunistic approach to more proactive and strategic programming during the review period. Shortly after its inception, the program was largely trying to “be all things to all people” by responding to every request for educational activities. This approach quickly overburdened the Education and Outreach Program’s small staff. During the review period, the program successfully increased its staff from one to five and began to focus on offering programming that strategically targets diverse audiences. For example, the Education and Outreach Program is preparing for the needs associated with increasing development. New programming will introduce recent residents to Florida’s environment and teach them how to be good stewards by “living with nature.”

Accomplishment: Education and outreach at GTMNERR has evolved into a proactive, strategic program that targets diverse audiences.

The Education and Outreach Program’s goals include: (1) developing a sense of public responsibility for environmental conditions; (2) instilling an ethic of resource protection and conservation; and (3) motivating the public to alter personal behaviors that affect natural resources. In order to achieve these goals, the reserve provides on-site educational programming for students, workshops for adults, and interpretation for and outreach to the general public. Education and outreach at the reserve comprises three major components: (1) K-12 and professional teacher development; (2) adult and community education; and (3) CTP. The opening of the reserve’s EEC in September 2005 led to an expansion of education and interpretive programs in the northern component of the reserve, and demand for programs at all levels continues to rise.

1. K-12 and Professional Teacher Development

GTMNERR’s K-12 and professional teacher development programs use established coastal and estuarine science curricula aligned with state and national science education standards. GTMNERR’s Education and Outreach staff provide programming for fourth grade, seventh grade and high school students who visit the reserve as an extension of their classroom learning.⁷ Grade-specific curricula: (1) teach the importance and interconnectedness of Florida’s coastal resources; (2) identify the uniqueness of estuaries; and (3) provide students with the tools and knowledge necessary to make difficult decisions about the future of coastal resources. Fourth grade students focus on the estuary food web, seventh grade students study estuarine interactions and beach connections, and high school students examine water quality. Curricula are correlated to the Sunshine State Standards in science, math, social studies and language arts. Additionally, pre- and post-visit lesson plans are available for classroom educators. During the 2005-2006 school year, the Education and Outreach Program hosted 1,015 students and 258 teachers. These numbers more than doubled during the 2006-2007 school year with staff providing programming for 2,694 students and 568 teachers.

⁷ Self-guided and volunteer-led programs are available to other grades that visit the EEC.

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The Education and Outreach Program also collaborates with the St. John’s County School District to offer the Learning in Florida’s Environment (LIFE) Program. LIFE is an initiative to establish a series of field-based, environmental science education programs throughout Florida. Each program is a partnership between DEP and a local school district with the goals of increasing student achievement and teacher professional development in science. While the content and delivery of each program varies from site to site, all LIFE Programs share a core set of principles:

- Alignment with Florida Sunshine State Standards;
- Multi-day field experiences emphasizing current technologies for environmental science;
- Program content derived primarily from teacher-identified needs and priorities;
- Integration of all subject areas by connecting field experiences with pre-and post-classroom lessons; and
- Focus on underrepresented and underserved audiences.

During the first year of the LIFE Program at GTMNERR, 125 seventh grade students from Sebastian Middle School participated in the program. Field activities included beach profiling, long-shore current monitoring, marsh vegetation analysis, water quality testing, seining and plankton study. During the evaluation site visit, Education and Outreach staff noted that, while challenging to offer, the program was successful in engaging students who do not always respond well in a traditional classroom setting. Staff also noted that they planned to work with the reserve’s Stewardship Program to determine whether it could use the data collected by the students.

The Education and Outreach Program also partners with environmental education agencies and organizations throughout northeast Florida to provide educators with a variety of professional development and training opportunities. These professional development programs, which are open to teachers of all grade levels, promote the use of the reserve as a place for field study. Teacher training also provides educators with information and activities that they can use in the classroom or other field locations that may be closer to their school. Teacher workshop topics have included: water quality and human health, “Project WET,” and saltwater species collection permits.

Accomplishment: The Education and Outreach Program offers high-quality K-12 education and professional teacher development that are closely correlated with state education standards. The program is also an active partner in LIFE, which engages underserved and underrepresented students in science through field study.

2. Adult and Community Education

GTMNERR’s Education and Outreach Program provides a wide variety of innovative adult and community education activities. Brown bag lunch lectures are held the first Friday of every month and address topics such as wildlife monitoring projects at the reserve, invasive species, sea turtles, humpback whales, seashells of northeast Florida,

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insects of Florida, and the history of Guana. The brown bag lunch lectures draw an average of 50 participants. Three times a month, staff offer a “Family Fun Nature Story and Craft,” targeted to children ages three to ten. These popular events have covered a range of topics including sea turtles, hermit crabs, insects, sharks, alligators and seahorses. “Star Parties,” which invite the public to view the night sky with the reserve’s powerful telescopes, average 65 attendees. “Creature Feature” is held at the reserve every Saturday morning and provides a presentation on a live animal from the estuary. During the evaluation site visit, staff noted that they were considering adding another weekly session of “Creature Feature” due to its popularity. The Education and Outreach Program also hosts “Meet the Artist” receptions four times a year. Events such as these receptions help draw nontraditional audiences to the reserve.

The Education and Outreach Program also provides a range of guided nature walks and tours. For example, the program offers a monthly session of “Birds, Botany and Breakfast” that includes donuts and coffee after a guided walk. Marsh walks, uplands walks, beach walks, “Bike Guana,” and Guana River kayak tours are also popular. Additionally, self-guided walking tours are available to all visitors during regular public access hours.

In cooperation with Florida Sea Grant, Florida State Park Service and Marineland Oceanarium, the Education and Outreach Program conducted weeklong naturalist courses. “Exploring our Environment – From Ocean to Estuary” had a full class of 20 participants each time it was offered, and a waiting list was created for each program. Class topics included: (1) beach: sea beans, mollusks, sea turtles and beach seine; (2) invasive exotics: both marine and terrestrial plants and animals; (3) coastal uplands: coastal strand, maritime hammock and watersheds; and (4) estuaries: functions and values, water quality testing, manatees and dolphins.

All programs for the general public are scheduled on a monthly basis and published in the reserve’s e-mail newsletter, “GTMNERR News.” In its sixth year of publication, the free e-mail newsletter is sent out the first of every month to more than 1,500 subscribers. The Education and Outreach Program also provides calendar announcements to the local press for publication. Public programs can also be specially scheduled for large groups upon request.

The Education and Outreach Program gives outreach presentations to the general public and outside organizations. These presentations describe the reserve itself, volunteer opportunities, environmental and research topics, and coastal issues. Groups such as elderhostels, garden clubs, civic organizations, church groups and others request education and outreach programs offered by the reserve. The reserve also participates in many community events such as Earth Day, beach cleanups and nature festivals.

GTMNERR and its education programs have also been featured monthly on Flagler College Radio on Saturday mornings. Comcast Cable filmed a half-hour feature for its local programming at the reserve. The segment focused on GTMNERR’s mission and

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helped to publicize the natural resources and activities that are available to the public. The reserve also receives frequent coverage in local newspapers.

Accomplishment: The Education and Outreach Program provides a wide range of innovative and engaging adult and community educational programming. Events such as “Meet the Artist” receptions bring nontraditional audiences to the reserve.

Prior to the opening of the EEC, GTMNERR was headquartered at Marineland, and thus most of its education and outreach programming was focused there as well. As noted previously, the opening of the reserve’s EEC in September 2005 led to a significant expansion of education and interpretive programs in the northern section of the reserve. At the time of the evaluation site visit, little educational programming was occurring in the southern portion of the reserve. The evaluation team heard from the Mayor of Marineland that the town would like to see a resumption of some adult and community educational programming in their area. The evaluation team discussed this with Education and Outreach Program staff who noted that some of the reserve’s volunteers lived in the vicinity of Marineland and might be interested in providing more programming there.

6. Program Suggestion: The Education and Outreach Program should reinstate adult and community educational programming at the southern portion of the reserve as resources allow. The program should explore the possibility of volunteers running programs such as nature walks in Marineland.

3. Coastal Training Program

CTP is an important aspect of a reserve’s Education and Outreach Program. The program is designed to: (1) inform coastal decision-making; (2) improve coastal stewardship at local and regional levels by increasing the application of science-based knowledge and skills by coastal decision-makers; and (3) increase dialogues and collaboration among coastal decision-makers. Planning for the program includes establishing a training advisory committee, conducting a market survey of training providers and an audience needs assessment, developing a program strategy that outlines priority coastal issues to be addressed during the next three to five years, prioritizing target audiences, and creating a marketing plan.

During the review period, the reserve’s CTP completed its market analysis and needs assessment. Towards the end of the review period, the program coordinated with the CTPs at Rookery Bay NERR and Apalachicola NERR to complete a combined “Coastal Training Programs of Florida Needs Assessment Report.” The three programs’ combined website⁸ identifies water quality and quantity, land use density and intensity, and shoreline management and coastal erosion as priority issues. The website also provides a

⁸ <http://www.floridacoastalstrategies.org>

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variety of model ordinances, best management practices, case studies, demonstration projects and current research in each of the priority areas.

During the review period, GTMNERR's CTP sponsored, co-sponsored and hosted a variety of workshops, including:

- Sierra Club whale symposium;
- Sea Turtle Stranding and Salvage Network workshop;
- Prescribed Fire workshop;
- Landscaping best management practices workshop;
- Northeast Florida Sea Turtle Patrol coordination meeting;
- Small dock and pier workshop;
- Green lodging workshop;
- Law enforcement cultural resource workshop;
- Cultural resource volunteer training;
- Inaugural northeast Florida underwater cultural resource symposium; and
- GIS training.

OCRM recognizes that CTP has addressed important topics such as cultural resource training for law enforcement officials during the review period. However, it appeared to the evaluation team that the program is more opportunistic than it is driven by the needs assessment. This is likely the result of several factors, including: (1) the program's implementation at GTMNERR is relatively new; (2) the reserve experienced a great deal of turnover in the CTP Coordinator during the review period; and (3) at the time of the evaluation site visit, the CTP Coordinator had not yet met with the program's Advisory Committee. Given that GTMNERR is currently revising its management plan, it is a good time for CTP to: (1) meet with its Advisory Committee; (2) assess whether Advisory Committee membership should be expanded to include additional partners; and (3) update its program strategy. CTP should begin to develop into a more mature program that addresses the reserve's priority issues and serves as a point of integration for the reserve's core programs. For example, CTP should closely collaborate with the Research and Monitoring Program to provide the results and implications of reserve research to coastal decision-makers and the interested public.

7. Program Suggestion: CTP should meet with its Advisory Committee and assess whether its membership should be expanded to include additional partners. CTP should also update its program strategy as it moves toward becoming a more mature program that addresses the reserve's priority issues and serves as a point of integration for the reserve's core programs.

4. Volunteer Program

Volunteers can be a great asset to a reserve, providing critical support for operations and programming. Among other tasks, volunteers can assist permanent staff with: (1) operating the Visitors' Center; (2) performing administrative tasks; (3) assisting with facility maintenance and public access improvement projects; (4) assisting with research

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and monitoring projects; (5) providing staff support for programming, workshops and special projects; and (6) serving on reserve advisory committees. Additionally, as a strong link to the local community, volunteers also can provide invaluable outreach for a reserve.

GTMNERR has an outstanding formal Volunteer Program. Prospective volunteers fill out an application that asks them to identify which areas of volunteer work most interest them as well as which skills they would like to contribute as volunteers. Each question provides a menu of options for the prospective volunteers to select. The applications are processed by the Volunteer Coordinator, who enters the individuals' preferences and skills into a database. She then meets with the prospective volunteers prior to their beginning any duties at the reserve. Volunteers receive a handbook, general introductory training and project-specific training. In order to request volunteer assistance on a project, reserve staff submit a form to the Volunteer Coordinator describing: (1) the project; (2) the skills, equipment or training necessary to complete the task; (3) the type of volunteer needed – one-time, occasional or regular; (4) the number of volunteers needed; and (5) the days and times the volunteers will be required. The Volunteer Coordinator then uses her volunteer database and "VolSoft" computer software to e-mail a list of volunteers who are a good match for the specific project.

In 2005, the reserve had 128 active volunteers who served 4,900 hours. In 2006, while the number of active volunteers increased slightly to 143, the number of hours served more than doubled to 10,700. Volunteers are integrated into all the of the reserve's programs. For example, GTMNERR's volunteers have participated in sea turtle patrols, beach cleanups, fourth grade educational programming, seventh grade water-quality classes, Christmas camp and aquarium maintenance. In fact, the variety of projects available was cited by a volunteer as a major factor in her choosing to serve at GTMNERR. The Volunteer Program also places special emphasis on volunteer appreciation. Among other activities, the program holds a volunteer appreciation day each spring for volunteers who serve 21 hours or more during the year.⁹

Accomplishment: The Volunteer Program has successfully recruited and retained a strong core of volunteers that provides critical support to each of the reserve's programs. The program is well-run, organized and efficient and is an excellent model for other volunteer programs.

D. STEWARDSHIP PROGRAM

1. Geographic Information System

GTMNERR's Stewardship Program provides GIS support for the reserve. The reserve's Biological Scientist and Information Technology Specialist have technical expertise in GIS, and they are responsible for accurately maintaining the reserve's GIS data. Collected through geographic positioning systems, remote sensing and calibration, the

⁹ In 2006, 89 of the reserve's 143 active volunteers, or 62 percent, served 21 hours or more.

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data occurs in a variety of formats and is documented according the Federal Content Standards for Digital Geospatial Data. In addition to data maintenance, the Stewardship Program assists all reserve staff in using the data by producing maps for research, education, resource management and planning. During the review period, the program experienced increasing demands to support reserve programs with mapping products. The Stewardship Program also hosted an advanced GIS training class for cooperating agencies to help improve partners' GIS capabilities.

The use of GIS at the reserve has greatly enhanced the precision and usefulness of data produced for ongoing projects. Typical GIS applications at GTMNERR include:

- Management plan maps – property boundaries, land acquisition, land use, hydrology, geology, archaeology and habitat;
- Trail and feature maps to support recreational and educational activities;
- Invasive and designated species mapping – green mussels, sea turtles and gopher tortoises; and
- Prescribed fire planning – burn units, wells and hydrants.

<p>Accomplishment: The application of GIS at the reserve has enhanced the precision and usefulness of data produced for ongoing projects such as invasive species mapping and prescribed fire planning.</p>
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2. Resource Management

The size and complexity of GTMNERR's estuarine systems result in a variety of resource management challenges for the reserve's Stewardship Program. Resource management initiatives at GTMNERR include: (1) listed species monitoring and protection; (2) reintroduction of prescribed fire as a restoration tool to appropriate upland communities; (3) control of invasive and nuisance species; (4) non-listed species protection; (5) habitat protection; (6) land acquisition; (7) cultural resource protection; and (8) shoreline erosion control.

Listed Species Monitoring and Protection: The Stewardship Program, in cooperation with the Florida Fish and Wildlife Conservation Commission, has responsibility for Marine Turtle Permit #140. The permit authorizes specific reserve staff and volunteers to conduct daily activities related to sea turtle nest monitoring, stranding and salvage incidents on 14 miles of state index nesting beaches.

The sea turtle monitoring program at GTMNERR serves an important resource protection function. The population of nesting loggerhead sea turtles in northeast Florida, Georgia and the Carolinas has been determined likely to be a separate population from those loggerheads nesting south of Cape Canaveral and along the Gulf Coast. As state index nesting beaches, GTMNERR's beaches have historically recorded a relatively high density of nesting loggerheads for this population. The sea turtle monitoring program also provides an important opportunity for public outreach within the community.

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Prescribed Fire as a Restoration Tool: The Stewardship Program has reintroduced prescribed fire as a management and public safety tool in appropriate fire-dependent natural communities within the reserve's leased uplands. GTMNERR's Prescribed Fire Plan, recently revised, includes 20 acres of mesic flatwoods, 45 acres of freshwater marsh, 15 acres of oak scrub, two acres of sand pine scrub and 677 acres of coastal strand. The reserve's coastal strand community presents a particular challenge for prescribed fire implementation due to: (1) the close urban interface with residences across State Route A1A; and (2) a new residential development within a privately-owned outparcel two miles south of the reserve's entrance on State Route A1A.

An important element of GTMNERR's Prescribed Fire Plan is public outreach. Workshops are held annually to inform the local community of details for the plan and to address any related concerns. The Stewardship Program also works with local media, homeowners and law enforcement to provide advanced notice of specific burn dates.

Invasive and Nuisance Species Control: An increasing number of exotic and invasive species of fauna and flora have been observed at GTMNERR. Many exotic species at the reserve are of Neotropical or Old World Tropics origin. These species have been detected on GTMNERR's uplands and submerged lands. The Stewardship Program monitors the spread of invasive species and implements control measures when practical.

Non-listed Species Protection: The Stewardship Program has confirmed isolated cases of harm or harassment of non-listed plant and wildlife species within reserve boundaries, particularly on the leased uplands of the Guana River Marsh Aquatic Preserve. Addressing the unauthorized taking of natural resources, such as armadillo or palmetto berries, is a cooperative effort among the Stewardship Program and local law enforcement. It also requires public outreach to educate visitors about the laws protecting common species and to encourage respect for and protection of the reserve's resources.

Habitat Protection: The primary threat to habitat at GTMNERR is erosion and damage from unauthorized vehicle access in remote areas of the reserve. The Stewardship Program installs signage and engages in cooperative efforts with local law enforcement to reduce these threats.

Land Acquisition: Recent property acquisitions have added several parcels of land to GTMNERR. Parcels on the east shore of the Matanzas River one mile north of Matanzas Inlet were acquired by fee simple purchase. The National Park Service agreed to manage a seven-acre parcel immediately north of Fort Matanzas National Monument that was obtained through a conservation easement. Two smaller parcels to the north of the seven-acre parcel were purchased, and St. John's County has agreed to manage them. All three parcels provide physical buffers to the Matanzas River and its marshes. They also provide added protection to Fort Matanzas National Monument's viewshed.

Cultural Resource Protection: Current records indicate at least 25 known archaeological sites at GTMNERR, located primarily on the Guana Peninsula's managed uplands. Among the more significant sites are Sanchez Mound, Wright's Landing and Shell Bluff

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Landing. The Stewardship Program recently replaced 400 feet of fencing around Sanchez Mound, a pre-Columbian burial mound, to protect it from feral hog damage.

Shoreline Erosion Control: In 2006, the Stewardship Program completed a shoreline stabilization and restoration project along 900 feet of eroding shoreline on the Guana River adjacent to the EEC. This project includes a demonstration garden of native coastal plants used to revegetate the stabilized area.

Shoreline erosion continues to be a problem in other areas of GTMNERR. Most significantly, shoreline erosion along the eastern shore of the Tolomato River is undermining natural and cultural resources on the western bank of the Guana Peninsula. This shoreline includes two significant known archaeological sites at Wright's Landing and Shell Bluff Landing. Rising sea levels and wakes from recreational boat traffic appear to be the primary factors contributing to erosion.

3. Public Access Management

Public access to the recreational area at GTMNERR's northern section is managed to support public recreation consistent with resource protection. During the review period, the Stewardship Program completed a year-long visitor use survey to document the relative frequencies of various types of recreational public use. The survey allowed visitors to provide recommendations for improving the visitor experience at the reserve. Recommendations such as adding benches and picnic tables at the dam and on the trail system as well as adding interpretive kiosks on the trail system were implemented once they were determined to be consistent with the reserve's resource protection goals. The survey also identified the need for additional signage, including interpretive signage regarding the northern right whale, nesting shorebirds, and general public information, at the reserve's four beach dune crossovers. The Stewardship Program is working to meet these needs.

The visitor survey indicated that fishing is the single most frequent public use of the surveyed areas. The Guana Dam is the most popular location for fishing, crabbing and shrimping and is open to the public from 4:00 a.m. to 11:00 p.m. daily. Fishing pressure at the dam can be intense during peak conditions. Guana Lake is managed by the Florida Fish and Wildlife Conservation Commission, but access to the dam and lake shore is managed by the Stewardship Program. Staff have occasionally received requests from the public for overnight access to the dam. These requests are primarily from fishermen and shrimpers, but they also come from astronomy clubs. At this time, the reserve does not allow overnight access to the dam.

The Stewardship Program also concluded a pilot project for expanded horseback riding opportunities. Based on the lack of evidence of bacteriological contamination, horseback riding on the reserve's trail system is allowed seven days a week. Horseback riding on the beach is permitted only below mean high tide within three hours of daily low tide. In the interest of resource protection, including nesting sea turtle habitat, horses are not permitted above mean high tide.

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V. CONCLUSION

For reasons stated herein, I find that Florida is adhering to the programmatic requirements of the National Estuarine Research Reserve System in the operation of the federally-approved Guana Tolomato Matanzas National Estuarine Research Reserve (GTMNERR).

The reserve has made notable progress in the following areas: administration, staffing, facilities, grants management, friends group, visibility and partnerships, research priorities and projects, education and outreach, K-12 and professional teacher development, adult and community education, volunteer program and geographic information system.

These evaluation findings also contain seven recommendations. The recommendations are in the form of one Necessary Action and six Program Suggestions. The state must address the Necessary Action by the date indicated. The Program Suggestions should be addressed before the next regularly-scheduled program evaluation, but they are not mandatory at this time. Program Suggestions that must be repeated in subsequent evaluations may be elevated to Necessary Actions. Summary tables of program accomplishments and recommendations are provided in Appendix A.

This is a programmatic evaluation of GTMNERR that may have implications regarding the state's financial assistance awards. However, it does not make any judgment about or replace any financial audits.

/s/ David M. Kennedy
David M. Kennedy
Director, Office of Ocean and
Coastal Resource Management

November 28, 2007
Date

VI. APPENDICES

Appendix A. Summary of Accomplishments and Recommendations

The evaluation team documented a number of GTMNERR’s accomplishments during the review period. These include:

Issue Area	Accomplishment
Administration	The Administrative Operations Team supports GTMNERR and CAMA’s east coast region with efficient administrative and fiscal services. The team not only successfully implements a range of department, state and federal administrative systems, but also is proactive in developing and improving the reserve’s internal procedures.
Staffing	CAMA and GTMNERR successfully increased the reserve’s staff, improving both the quality and quantity of reserve programming and services. CAMA and the reserve also converted three temporary positions to permanent positions, enhancing the likelihood of retaining those staff.
Facilities	In 2005, GTMNERR opened the EEC, which serves as a platform for hands-on environmental education and natural resource interpretation in northeast Florida. The Facilities Team has provided successful operations and maintenance for the EEC and is pursuing opportunities to improve the building using “green” practices.
Grants Management	GTMNERR has successfully resolved grants management and performance reporting issues. The reserve is preparing all grants in accordance with NOAA guidelines and submitting informative and timely performance reports.
Friends of the Reserve	The Friends of GTM Reserve provides strong financial and community support to the reserve, enhancing its operations and management.
Visibility and Partnerships	GTMNERR increased its visibility and regularly engages in many diverse partnerships. The reserve successfully coordinates with federal, state, local, academic and private agencies and organizations. Increased visibility and strong partnerships facilitate the reserve’s ability to carry out its mission.
Research Priorities and Projects	The Research and Monitoring Program actively participates in integrated ocean observing systems at the state and regional level.
Education and Outreach	Education and outreach at GTMNERR has evolved into a proactive, strategic program that targets diverse audiences.
K-12 and Professional Teacher Development	The Education and Outreach Program offers high-quality K-12 education and professional teacher development that are closely correlated with state education standards. The program is also an active partner in LIFE, which engages underserved and underrepresented students in science through field study.

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Adult and Community Education	The Education and Outreach Program provides a wide range of innovative and engaging adult and community educational programming. Events such as “Meet the Artist” receptions bring nontraditional audiences to the reserve.
Volunteer Program	The Volunteer Program has successfully recruited and retained a strong core of volunteers that provides critical support to each of the reserve’s programs. The program is well-run, organized and efficient and is an excellent model for other volunteer programs.
GIS	The application of GIS at the reserve has enhanced the precision and usefulness of data produced for ongoing projects such as invasive species mapping and prescribed fire planning.

In addition to the accomplishments listed above, the evaluation team identified several areas where GTMNERR could be strengthened. Recommendations are in the forms of one Necessary Action and six Program Suggestions. Areas for improvement include:

Issue Area	Recommendation
Staffing	#1. PS: OCRM strongly encourages DEP to provide consistent, long-term support for the reserve’s core staff positions.
Management Plan	#2. PS: GTMNERR should complete revision of its management plan no later than December 2007.
Research Priorities and Projects	#3. PS: The Research and Monitoring Program should develop a biological monitoring strategy that should be a systematic and integral component of GTMNERR’s overall monitoring strategy.
Research Priorities and Projects	#4. PS: The Research and Monitoring Program should develop systematic methods of: (1) encouraging external research; (2) tracking all research projects within the reserve; and (3) disseminating the results of research projects through collaboration with the reserve’s Education and Outreach Program.
Site Profile	#5. NA: The Research and Monitoring Program must submit a final draft of GTMNERR’s site profile to OCRM no later than June 2008.
Adult and Community Education	#6. PS: The Education and Outreach Program should reinstate adult and community educational programming at the southern portion of the reserve as resources allow. The program should explore the possibility of volunteers running programs such as nature walks in Marineland.
Coastal Training Program	#7. PS: CTP should meet with its Advisory Committee and assess whether its membership should be expanded to include additional partners. CTP should also update its program strategy as it moves toward becoming a more mature program that addresses the reserve’s priority issues and serves as a point of integration for the reserve’s core programs.

Appendix B. GTMNERR's Response to 2005 Evaluation Findings

1. Necessary Action: Immediately upon receipt of the final findings, the Florida Department of Environmental Protection must submit grant applications for OCRM funding that specifically identify the source of match funds and allocates those funds to the appropriate object class category (Standard Form 424A).

Since the evaluation site visit, GTMNERR has prepared and submitted all grants according to OCRM's desired methods of describing match. Sources of match funds are identified and allocated to the appropriate object class category.

2. Program Suggestion: A timeline and strategy for revising the GTMNERR management plan should be produced within six months of receipt of final findings. This strategy should establish realistic deadlines for product development which would include timeframes for the development of education, stewardship and research strategies in concert with the overall management of the reserve. Activities and progress in meeting this suggestion should be documented in future progress reports.

GTMNERR's management plan is currently under revision and the draft plan is expected to be submitted to OCRM ahead of schedule.

3. Program Suggestion: GTMNERR should develop a memorandum of agreement with the Division of Forestry for properties within the reserve as well as review the existing memoranda of agreement to ensure their effectiveness.

The memorandum of agreement between CAMA and the Division of Forestry for the cooperative management of GTMNERR was signed on September 27, 2004. Other memoranda of agreement will be reviewed and, if necessary, updated to reflect the strategic priorities of the reserve's updated management plan.

4. Program Suggestion: GTMNERR should continue to use its resources and its education and coordination mechanisms to stress appropriate land stewardship within and adjacent to its boundaries.

The Coastal Training Program and the Stewardship Program serve as the reserve's link to public use, landuse permitting, water quality and dredging issues. GTMNERR staff have also been actively engaging with local officials and their staff on a number of issues, participating in public meetings and sitting on committees such as the Flagler County Blue Ribbon Wetlands Committee.

GTMNERR staff have also:

- Assisted in amending the Comprehensive Landuse Plan for the Town of Marineland, Florida;

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- Coordinated a River to Sea Preserve Coastal Scrub Restoration Meeting; and
- Attended a Sea Turtle Nesting Seminar and Volunteer Orientation Workshop.

GTMNERR hosted the following workshops:

- Prescribed Fire
- Native Landscaping
- Erosion and Sedimentation Inspector Training
- NPDES Phase II Stormwater Education
- Right Whale Monitoring
- Sea Turtle Stranding
- Submerged Lands and Environmental Resources Program

In addition, GTMNERR continues to serve as a host for the Southeastern Estuarine Research Society Evening Science Seminars. Topics of this series have included: invasive species of Florida, Guana's history during the British period, and studies of the diamondback terrapin in Florida.

In May 2006, the current CTP Coordinator was hired. Some recent accomplishments of this program are:

- GTMNERR in coordination with the Rookery Bay and Apalachicola NERRs completed a needs assessment of elected officials. An end product of this cooperative effort was launching a website called *floridacoastalstrategies.org*.
- CTP has also sponsored, co-sponsored or hosted the following events:
 - Small Dock and Pier Workshop
 - Green Lodging Workshop
 - Law Enforcement Cultural Resource Training
 - Cultural Resource Volunteer Training
 - GIS Training
 - Inaugural Northeast Florida Underwater Cultural Resource Symposium

CTP has provided technical assistance to:

- City of St. Augustine's Planning and Zoning Board
- St. Augustine Port, Waterway and Beach District
- St. Johns County
- Flagler County Manatee Protection Plan Committee

GTMNERR staff met with St. John's County Planning Department and the developer of a 10-acre out parcel adjacent to the reserve's boundary in September 2005 to recommend appropriate measures to protect reserve resources and the ability of the reserve to manage those resources. Recommendations included stormwater management, buffer zones to reserve properties, and "Florida Firewise" construction methods.

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GTMNERR staff are also working cooperatively with landowners and law enforcement to curtail damage to the reserve's marshes associated with unauthorized vehicle access in remote locations.

GTMNERR staff have also:

- Served on the Sea Grant Advisory Committee for the regional Sea Grant Agent;
- Provided service club presentations on GTMNERR programs (e.g., Flagler County Audubon Society and Flagler Beach Rotary Club);
- Assembled an article about the reserve for the NOAA on-line magazine; and
- Served as a "coastal decision maker" (i.e., Port District Commissioner) through 2006.

As new education programs have been developed and old programs revised, the reserve is adding a stewardship component so that the program is more than just interpretation.

5. Program Suggestion: A timeline and strategy for developing the GTMNERR site profile should be produced within six months of receipt of final findings. Progress in meeting this suggestion should be documented in future progress reports.

The reserve has included the site profile with a timeline as a grant deliverable for the FY07-08 funding cycle. A draft topic outline will be provided to OCRM before the end of August 2007.

6. Program Suggestion: GTMNERR participation at national meetings should be encouraged by the Florida Department of Environmental Protection.

The GTMNERR sector coordinators have attended all national sector meetings as well as national NERRS meetings since 2004. The GTMNERR Stewardship Coordinator currently serves as the sector representative to the Coastal Training Oversight Committee.

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Appendix C. People and Institutions Contacted

State of Florida Representatives

Name	Title	Affiliation
Joseph Burgess	Facilities Manager	GTMNERR
Cat Eastman	Environmental Educator	GTMNERR
Diana Eissing	Public Information Specialist	GTMNERR
Katie Flynn	Volunteer Coordinator	GTMNERR
Rick Gleeson	Research Coordinator	GTMNERR
Angie Golubovich	Environmental Educator	GTMNERR
Marty Healey	CTP Coordinator	GTMNERR
Carroll Kissam	Operations Management Consultant	GTMNERR
Annette Odom	Administrative Assistant	GTMNERR
Forrest Penny	Stewardship Coordinator	GTMNERR
Katie Petrinc	Research Assistant	GTMNERR
Michael Shirley	Reserve Manager	GTMNERR
Dayton Wilson	Facilities Specialist	GTMNERR
Stephanie Windham	Secretary	GTMNERR
Janet Zimmerman	Education Coordinator	GTMNERR
Stephanie Bailenson	Director	DEP CAMA
Gary Carpenter		FDACS Division of Forestry
Justin Ellenberger		Florida Fish and Wildlife Conservation Commission
Mark Crosley		Florida Inland Navigation District

Local Government Representatives

Name	Affiliation
Paul Haydt	St. John's River Water Management District
Jim Netherton	Mayor, Town of Marineland
Ben Rich	Commissioner, St. John's County
Billy Zeits	St. John's County Department of Parks and Recreation

Federal Government Representatives

Name	Affiliation
Thomas Cheyne	USDA Natural Resources Conservation Service

Academic Representatives

Name	Affiliation
Peter Anderson	Whitney Lab

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Nongovernmental Organization Representatives

Name	Affiliation
Bill Coleman	Friends of the GTM Reserve, Inc.

Other Representatives

Name	Affiliation
Mary Hayford	GTMNERR Volunteer
Janet Koehler	GTMNERR Volunteer
Harry Odum	GTMNERR Volunteer
Pat Hamilton	Citizen
Paul Johnson	Paul G. Johnson and Associates Environmental Consulting
David Miles	GTMNERR MAG – City of St. Augustine

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Appendix D. People Attending the Public Meeting

Name	Affiliation
Gary Burdette	
Tom Harding	Coastal Conservation Association
Jack Pitman	

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Appendix E. OCRM's Response to Written Comments

OCRM received four sets of written comments regarding the Guana Tolomato Matanzas National Estuarine Research Reserve (GTMNERR). The comments are summarized below and followed by OCRM's response.

Neil Rashba

Ponte Vedra Beach, Florida

Comment: Mr. Rashba writes about his concern regarding weed control in the area. He states that managers used to flood the marsh with salt water occasionally which worked much better than the current method of spraying chemicals from helicopters. He questions why an ineffective, expensive approach has replaced an effective, no-cost approach.

OCRM's Response: Mr. Rashba's concerns regarding weed control in the area have been provided to GTMNERR.

Joan and Ron Gordon

Palm Coast, Florida

Comment: Mr. and Mrs. Gordon write that they appreciate receiving GTMNERR's newsletter.

OCRM's Response: No response necessary. A description of GTMNERR's adult and community education efforts is located in section IV-C-3.

Jay and Valerie Mueck

St. Augustine

Comment: Mr. and Mrs. Mueck write that they highly value the programs and learning opportunities offered by GTMNERR. They note that the staff is knowledgeable and welcoming, and that programs are diverse, affordable and interesting. They also provide a few recommendations for improving the reserve's newsletter and for increasing the reserve's visibility.

OCRM's Response: No response necessary. Mr. and Mrs. Mueck's recommendations have been provided to GTMNERR.

Gail Rowles

Comment: Ms. Rowles writes that the reserve is fantastic and encourages staff to keep up the good work.

OCRM's Response: No response necessary.