

Final Evaluation Findings

Guana Tolomato Matanzas National Estuarine Research Reserve

August 2015 to September 2022

February 2023



Office for Coastal Management
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Summary of Findings

The Coastal Zone Management Act (CZMA) requires the National Oceanic and Atmospheric Administration (NOAA) to conduct periodic evaluations of the performance of state programs participating in the National Estuarine Research Reserve System. This evaluation examined the operation and management of the Guana Tolomato Matanzas National Estuarine Research Reserve by the Florida Department of Environmental Protection, the designated lead agency, for the period from August 2015 to September 2022. The evaluation focused on two target areas: 1) science, impacts, and partnerships for estuary health, and 2) understanding growth: past, present and future.

The findings in this evaluation will be considered by the NOAA Office for Coastal Management in making future financial award decisions concerning the reserve. The evaluation came to these conclusions:

Accomplishment: The Office for Coastal Management applauds the completion of the new federally approved boundary expansion, which unites the northern and southern parts of the Guana Tolomato Matanzas Reserve and enhances partnerships with the City of St. Augustine.

Accomplishment: The Office for Coastal Management commends the Guana Tolomato Matanzas Reserve on numerous cross-sector collaboration efforts that have led to more effective and efficient reserve operations during the review period.

Accomplishment: The Office for Coastal Management commends Florida Department of Environmental Protection and the Guana Tolomato Matanzas Reserve for their support of the long-term partnership and contract with the University of North Florida that has resulted in significant benefits for the reserve and its core programs, including hosting university faculty, graduate students, and interns, while supporting multiple reserve staff through the contract.

Accomplishment: The Office for Coastal Management recognizes the Guana Tolomato Matanzas (GTM) Reserve for its long-term and very successful partnership with its Friends group, Friends of the GTM Reserve, which has been invaluable to sustaining and expanding the capabilities of the reserve to conduct research, monitor habitats and species, and support outreach and education.

Accomplishment: The Office for Coastal Management applauds the Guana Tolomato Matanzas Reserve for its “State of the Reserve” event, which is highly valued by researchers, land managers, and other stakeholders. This event was a catalyst for the collaboration program to ensure that all publications coming out of the reserve are itemized and available to interested parties, providing a useful compendium of relevant information to partners and stakeholders.

Accomplishment: The Office for Coastal Management recognizes the stewardship staff of the Guana Tolomato Matanzas Reserve for its contributions to statewide and regional advancements in Uncrewed Autonomous Systems (UAS) technology (both aerial and aquatic). The reserve has been a pioneer in this field, has set up a framework and developed guidance for using UAS in reserve data collection, and helped establish a community of practice so that UAS practitioners can share best practices and challenges related to the application of the technology.

Accomplishment: The Office for Coastal Management commends the Guana Tolomato Matanzas Reserve on its continued efforts to sustain and evolve the Oyster and Water Quality Task Force. This was noted by partners and stakeholders as an important contribution by the reserve to the research community both locally and regionally. Future plans to transition the task force into a technical advisory committee will allow for broader topics relevant to the reserve and its partners and audiences to convene and collaborate.

Accomplishment: The Office for Coastal Management recognizes the Guana Tolomato Matanzas Reserve is valued for its institutional knowledge, extensive data sets and collaborative nature. Research and monitoring conducted by the reserve directly supports local resource management actions. As a key member of the research community, the reserve is able to identify priority research needs, build effective partnerships, and successfully compete for external funding.

Accomplishment: The Office for Coastal Management commends the Guana Tolomato Matanzas Reserve for its effort to expand opportunities for educating stakeholders through novel approaches to outreach that increases awareness and promotes preserving the reserve's natural and cultural resources.

Accomplishment: The Office for Coastal Management recognizes the Guana Tolomato Matanzas (GTM) Reserve for developing a program focused on making the reserve and its benefits more accessible; GTM for All is expanding opportunities for underserved communities within Northeast Florida to engage in experiential activities to make learning more impactful.

Accomplishment: The Office for Coastal Management commends the Guana Tolomato Matanzas Reserve on the development of a strong volunteer program to increase the capacity of the reserve by supporting citizen science, education, and outreach, as well as resource management.

Recommendation: The Office for Coastal Management recommends that the Florida Department of Environmental Protection and Guana Tolomato Matanzas Reserve support professional development opportunities for reserve staff, including participation in the reserve system's Annual Meeting, professional organizations, conferences, and site visits at other research reserves inside and outside Florida. Conducting site visits and providing opportunities to encourage cross-research reserve coordination allows for the vital exchange of information around specific reserve projects, state-level management issues, and national initiatives.

Recommendation: The Office for Coastal Management encourages the Florida Department of Environmental Protection and Guana Tolomato Matanzas Reserve staff to cross-train department central office and reserve staff to provide staff with enhanced understanding that enables them to better navigate Florida Department of Environmental Protection policies and processes that impact the effective implementation of the reserve.

Recommendation: The Office for Coastal Management recommends that the Guana Tolomato Matanzas Reserve consider proactive coordination with other programs operating in the state regarding issues and constraints that arise due to the State of Florida's spending authority for federal grants. Explore separating federal spending authority into capital and operations, or use other division's spending authority, so the reserve can fully take advantage of external funding opportunities, including the national reserve system's Procurement, Acquisition and Construction funds, National Fish and Wildlife Foundation funds, and Infrastructure Investment and Jobs Act funds.

Recommendation: The Office for Coastal Management encourages the Guana Tolomato Matanzas Reserve to support the continued development of climate vulnerability monitoring, including constructing a National Water Level Observation Network (NWLON) station in partnership with the City of St. Augustine, installing additional surface elevation tables and groundwater/porewater monitoring wells, and conducting elevation surveys.

Recommendation: The Office for Coastal Management recommends that the Guana Tolomato Matanzas Reserve enhance the connection between research and education sector activities, including considering new opportunities to use the education marsh at the visitor center and incorporating more reserve-specific research and monitoring data into existing K-12 programming.

Recommendation: The Office for Coastal Management encourages the Guana Tolomato Matanzas Reserve to sustainably expand upon its popular education programming for which the demand exceeds the current capacity.

Recommendation: The Office for Coastal Management recommends that the Guana Tolomato Matanzas (GTM) Reserve consider developing a comprehensive outreach strategy, inclusive of the Friends of the GTM Reserve, with common messaging to benefit the reserve's programs.

Recommendation: The Office for Coastal Management encourages the Guana Tolomato Matanzas Reserve to build a sustainable volunteer program by encouraging experienced, longtime volunteers to train/mentor new volunteers for popular opportunities. The reserve may consider learning from local and other reserve volunteer programs to gain additional insight about how the volunteer program can be leveraged to build capacity across reserve programs.

Program Review Procedures

The Coastal Zone Management Act of 1972 (CZMA, 16 U.S.C. 1451 et seq.), as amended, requires that state coastal zone management programs and national estuarine research reserves (reserves) that are developed under the CZMA and approved by the secretary of the Department of Commerce be evaluated periodically. Section 315 of the CZMA and implementing regulations at 15 CFR part 921, subpart E, require that the National Oceanic and Atmospheric Administration (NOAA) periodically evaluate reserves with regard to 1) their operation and management, including education and interpretive activities; 2) the research being conducted within the research reserve; and 3) adherence to the requirements of section 315(b)(2) of the CZMA.

NOAA evaluated the Guana Tolomato Matanzas Reserve in fiscal year 2022. The evaluation team consisted of Susie Holst Rice, evaluation team lead, Office for Coastal Management; Jenna Harper, program administrator, Apalachicola Research Reserve, Florida Department of Environmental Protection; Matt Chasse, federal program officer and coastal management specialist, Office for Coastal Management; and Stephanie Robinson, senior management coastal specialist, Lynker, on contract with the Office for Coastal Management. The support of the reserve program's staff members was crucial in conducting the evaluation, and their support is most gratefully acknowledged.

NOAA sent a notification of the scheduled evaluation to the Secretary of the Florida Department of Environmental Protection, and published a notice of "Request for Comments" in the *Federal Register* on November 2, 2022 (87 FR 66162). The reserve posted a notice of the public meeting and opportunity to comment in *The Beaches Leader* on August 4, 2022.

The evaluation process included a review of relevant documents, a survey of stakeholders, the selection of two target areas, and discussions with staff members and stakeholders about the target areas. In addition, a public meeting was held Wednesday, September 21, 2022, at 6:00 p.m. to provide an opportunity for members of the public to express their opinions about the implementation of the reserve program. Stakeholders and members of the public were also given an opportunity to provide written comments; however, no written comments were received. NOAA then developed draft evaluation findings, which were provided to the reserve program for review, and the program's comments were considered in drafting the final evaluation findings.

Final evaluation findings for the research reserves highlight each reserve's accomplishments in the target areas and include recommendations, which are of two types:

Necessary Actions address programmatic requirements of the Coastal Zone Management Act (CZMA) and its implementing regulations. These must be carried out by the date specified. 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(c).

Recommendations are actions that the office believes would improve the program, but which are not mandatory. The state is expected to have considered the recommendations by the time of the next evaluation or dates specified.

Evaluation Findings

The Guana Tolomato Matanzas National Estuarine Research Reserve is managed by the Florida Department of Environmental Protection within the Office of Resilience and Coastal Protection. It also encompasses two of 42 aquatic preserves managed by the Office of Resilience and Coastal Protection, with support from the Florida Coastal Management Program, and it was a state park up until 1999 when it was officially designated as a reserve. The reserve has demonstrated that it is a trusted and valued partner in Northeast Florida, St. Augustine, and the coastal region to provide important data and information. The reserve also serves as a neutral convener to bring together partners, stakeholders, and local and municipal officials to share the results of the work going on across Northeast Florida and provide opportunities for collaboration.

Since 2015, when the reserve was last evaluated, the reserve has experienced the global COVID-19 pandemic (2020-2022), which had an uneven impact across the sectors of the reserve, hitting the education sector hardest. Despite the challenges of the pandemic, the reserve has maintained close collaborations with the local communities and existing partners, established new partnerships through multiple National Science Collaborative awards and the contract with the University of North Florida, and continues to be a trusted steward of the lands managed by the reserve. Notably, during the review period, the reserve successfully completed a federally approved boundary expansion in 2020. The expansion solidified the reserve's partnership with the City of St. Augustine, and provides more opportunities for collaboration, research, monitoring, and education programs.

Accomplishment: The Office for Coastal Management applauds the completion of the new federally approved boundary expansion, which unites the northern and southern parts of the Guana Tolomato Matanzas Reserve and enhances partnerships with the City of St. Augustine.

A common theme we heard during the evaluation was that the staff of the reserve are outstanding. The value of the staff was mentioned numerous times during stakeholder meetings, conveyed via emails from multiple stakeholders, and was repeated at the public meeting many times. As a longtime volunteer noted, "Attribution happens, but doesn't convey the value added of the reserve's support." Many of the core staff of the reserve have been there since 2013, so there was minimal turnover during the evaluation period, allowing the team to work together and mature professionally. The result is highly integrated, cross-sector collaboration, which exemplifies the model that the research reserve system strives to achieve. Even in the occasional event of staff turnover, the transition has been seamless from partners' perspectives, since multiple staff from the reserve are on projects, allowing for continuity over time. The stewardship (including upland management), collaboration, research, and education leads for the reserve work hand in hand to leverage their expertise to better understand the estuary and provide the results to the surrounding community of partners, managers, and the public. Examples include prescribed fire management actions within the reserve, thanks to collaboration between the resource management team and stewardship; field maps developed

by stewardship for other sectors, including resource management, research, and monitoring teams to improve the efficiency of their work in the reserve; and the effective work of the research and collaboration programs to identify research needed for management applications and to plan how research findings and data can be shared with various audiences, including decision makers, visitors, and the general public.

Accomplishment: The Office for Coastal Management commends the Guana Tolomato Matanzas Reserve on numerous cross-sector collaboration efforts that have led to more effective and efficient reserve operations during the review period.

The contract with University of North Florida has provided many reserve staff with benefits they did not have as state employees and is a major reason why staff turnover has dramatically decreased during the review period. Overall, the evaluation team heard the contract has been mutually beneficial and continues to grow with the potential for future collaboration with new faculty, and since the University of North Florida has been designated as an R2 institution with more research activities, additional collaboration may be possible. Recognizing that the reserve is a leader in research and education opportunities on the coast, the reserve's prior manager had the foresight to leverage the benefits of the partnership with the University of North Florida for them to support the execution of a sublease on land adjacent to the reserve for future facility development. This action demonstrated strategic thinking and dedicated effort to position the reserve for long-term success. The vision of this joint venture is to provide additional infrastructure, including research labs, offices, dorms, and education facilities, which will support future growth and increase beneficial impacts to both the university and the reserve. Additionally, the executed sublease provided an opportunity for cost-savings by allowing the reserve to negotiate and lock in a lower indirect rate with the university on the contract.

Accomplishment: The Office for Coastal Management commends Florida Department of Environmental Protection and the Guana Tolomato Matanzas Reserve for their support of the long-term partnership and contract with the University of North Florida that has resulted in significant benefits for the reserve and its core programs, including hosting University of North Florida faculty, graduate students, and interns, while supporting multiple reserve staff through the contract.

Another strategic effort conducted by the reserve during the review period is the successful redirection of revenue from the parking lots of the northern portion of the reserve to the Friends of the GTM Research Reserve. The popularity of the beaches of the reserve has generated additional operating funds to support and enhance the salary of rangers working with the upland management team for the reserve. Originally, much of this funding did not come back to benefit the reserve, but through dedicated leadership the reserve has been able to leverage the successful partnership with their nonprofit Friends group to manage this revenue stream. In addition, the Friends group is a key partner to the reserve and has strengthened its contributions by supporting key reserve events (e.g., "State of the Reserve"),

funding student researchers, enhancing outreach, and supporting the successful volunteer program.

Accomplishment: The Office for Coastal Management recognizes the Guana Tolomato Matanzas (GTM) Reserve for its long-term and very successful partnership with its Friends group, Friends of the GTM Reserve, which has been invaluable to sustaining and expanding the capabilities of the reserve to conduct research, monitor habitats and species, and support outreach and education.

To support the continued success of research reserves in Florida, the evaluation team heard that there are some areas where operations could be optimized to benefit not only this reserve, but also its sister reserve sites in Apalachicola and Rookery Bay. For example, supporting opportunities at the staff level to exchange ideas between the reserves in Florida could be useful for standardizing the monitoring of mangrove habitat expansion occurring across the three sites and in Florida more broadly. By coming together to see how each site approaches mangrove monitoring, common methods can be adopted to integrate mangrove monitoring into the existing vegetation monitoring protocols for all three sites, and allow for cross-site comparisons to understand the phenomenon at a statewide scale. Similar opportunities regionally and nationally exist for exchanging ideas and sharing best practices with reserves outside of Florida as well, such as improving volunteer programs or participating in national initiatives.

Recommendation: The Office for Coastal Management recommends that the Florida Department of Environmental Protection and Guana Tolomato Matanzas Reserve support professional development opportunities for reserve staff, including participation in the reserve system's Annual Meeting, professional organizations, conferences, and site visits at other research reserves inside and outside Florida. Conducting site visits and providing opportunities to encourage cross-research reserve coordination allows for the vital exchange of information around specific reserve projects, state-level management issues, and national initiatives.

In recent evaluations, NOAA has recognized a pattern of extended review times or delays in approvals for reserve announcements to the public and community members. Sometimes this leads to missed opportunities to engage with partners and the community, and reduces the impact and effectiveness of the reserve. To help address this pattern, Florida Department of Environmental Protection should consider providing training for its central office staff and reserve staff on topics that include communications, administrative processes, and leadership development. For example, it could encourage more collaboration and training between the department's communications team and local staff to allow for more autonomy for the reserve and an expedited approval process. Also, in support of reserve administration, continued Department of Environmental Protection supervisory and leadership training would improve reserve operations, adherence to departmental policies, and aid in succession planning. Department support for staff participation in LEAPS (Leading, Engaging, Advancing, Promoting and Sustaining) and NRLI (Natural Resource Leadership Institute) professional development opportunities, as well as any other local leadership programs, could provide reserve staff with

additional insights and awareness of the processes and considerations necessary at the department level.

Recommendation: The Office for Coastal Management encourages the Florida Department of Environmental Protection and Guana Tolomato Matanzas Reserve staff to cross-train department central office and reserve staff to provide staff with enhanced understanding that enables them to better navigate Florida Department of Environmental Protection policies and processes that impact the effective implementation of the reserve.

Over the last several years, the reserve has been very successful in securing National Estuarine Research Reserve System Science Collaborative awards from NOAA to support high-quality research, science translation, education, and outreach. They have also been very successful in securing reserve system Procurement Acquisition and Construction funding to upgrade portions of the reserve's infrastructure to improve visitor services and accessibility. However, to utilize federal funds, agencies in the State of Florida must first have sufficient spending authority to use Florida's federal grants trust fund to cover all of the federal grants for that year. The amount of needed spending authority is estimated a year ahead of the fiscal year when the funds are needed and must be approved by the Florida legislature. Funding competitions typically occur six to nine months before the beginning of the fiscal year, so often the availability of funds is not known until after the spending authority request has been made. The reserve and the other federally funded programs within Florida's Office of Resilience and Coastal Protection have been very flexible and accommodating to share spending authority where needed, but more frequently, the requested amount of federal funding far exceeds the spending authority of the office.

Recommendation: The Office for Coastal Management recommends that the Guana Tolomato Matanzas Reserve consider proactive coordination with other programs operating in the state regarding issues and constraints that arise due to the State of Florida's spending authority for federal grants. Explore separating federal spending authority into capital and operations, or use other division's spending authority, so the reserve can fully take advantage of external funding opportunities, including the national reserve system's Procurement, Acquisition and Construction funds, National Fish and Wildlife Foundation funds, and Infrastructure Investment and Jobs Act funds.

Science, Impacts, and Partnerships for Estuary Health

Through 30 reserves around the country, the National Estuarine Research Reserve System strives to bring together the latest science and the coastal resource management community to improve understanding of coastal ecosystems and guide management decisions. At the Guana Tolomato Matanzas Reserve, this mission is brought to life and is a model for connecting research and monitoring information with the resource managers who need it. The construct of the Coastal Training Program, which is intended to provide training on coastal management

topics to local decision makers, has evolved to become the “collaboration program” at the Guana Tolomato Matanzas Reserve, where it successfully facilitates connections between the research and management communities around priority resource management needs. This approach effectively created partnerships around water quality issues affecting the estuary during the evaluation period and may serve as a model for other topics that impact the reserve.

The State of the Reserve is a highly successful symposium, with its 12th annual event in 2022, and exemplifies the shift from training to collaboration described above. The collaboration program leads planning, execution, and evaluation of the symposium each year, building on successes and lessons learned over time in convening researchers working within the reserve. Bringing together collaborators from multiple disciplines, from natural sciences to archaeology, provides not only a forum for disseminating data and information, but also allows invaluable networking opportunities for new partnerships to be forged. Projects of every kind, from high school interns to university research labs, are featured through panel discussions, presentations, and poster sessions. During the COVID-19 pandemic, the reserve also successfully pivoted to hosting the State of the Reserve virtually in 2021, and hosted a hybrid event in 2022, with virtual presentations and an in-person poster session and networking event. In addition, the collaboration program recognized the need for various audiences to have access to not only the presentations from the symposium, but also the many scientific publications and other resources that have resulted from work carried out at the reserve. In response, staff have compiled a repository of these publications and resources, dating as far back as the designation of the reserve, and made them publicly available on the State of the Reserve website. Both the symposium and the publication repository are a great success that should be shared with other reserves for how to highlight the value of reserves as research platforms and as mechanisms for fostering increased collaboration among researchers.

Accomplishment: The Office for Coastal Management applauds the Guana Tolomato Matanzas Reserve for its “State of the Reserve” event, which is highly valued by researchers, land managers, and other stakeholders. This event was a catalyst for the collaboration program to ensure that all publications coming out of the reserve are itemized and available to interested parties, providing a useful compendium of relevant information to partners and stakeholders.

Reserve staff have been early implementers of Uncrewed Autonomous Systems (UAS) technology, and have been instrumental participants in two reserve system Science Collaborative projects: the “Drone the SWMP” project, which helped test and develop protocols for using UAS to enhance System-Wide Monitoring Program (SWMP) monitoring; and the new “Drone the Oysters” project, which aims to apply UAS methodologies for assessing oyster reef status and health. In addition to these regional and national efforts, reserve stewardship staff have provided key coordination on UAS policy development at the state agency level, and have also provided valuable assistance to local partners to implement UAS technology in a number of applications, such as prescribed fire and general best practices for drone operations. Because of its success with aerial applications of UAS technology, the reserve is also serving as a testbed for a new aquatic observation system, the HYCAT, and how resulting data can improve understanding of various estuarine environments.

Accomplishment: The Office for Coastal Management recognizes the stewardship staff of the Guana Tolomato Matanzas Reserve for its contributions to statewide and regional advancements in Uncrewed Autonomous Systems (UAS) technology (both aerial and aquatic). The reserve has been a pioneer in this field, has set up a framework and developed guidance for using UAS in reserve data collection, and helped establish a community of practice so that UAS practitioners can share best practices and challenges related to the application of the technology.

In response to data gaps and other needs from a number of local stakeholders, including aquaculture professionals, researchers, and regulatory decision makers, the reserve's collaboration program re-engaged the Oyster and Water Quality Task Force beginning in 2014. This cross-disciplinary group has continued meeting during the entire evaluation period to work towards establishing baseline data on the status of local oyster reefs, as well as potential impacts of various coastal management practices to this important economic resource. The task force opened doors to many new partnerships, and facilitated dialogue that led to successful project outcomes for both decision makers and residents. Now that these important needs are being addressed, the reserve is working with this group of stakeholders to transform the group into a technical advisory committee that can continue to identify emerging research needs and data gaps for the local coastal management community.

Accomplishment: The Office for Coastal Management commends the Guana Tolomato Matanzas Reserve on its continued efforts to sustain and evolve the Oyster and Water Quality Task Force. This was noted by partners and stakeholders as an important contribution by the reserve to the research community both locally and regionally. Future plans to transition the task force into a technical advisory committee will allow for broader topics relevant to the reserve and its partners and audiences to convene and collaborate.

One of the foundational purposes of the reserve system is to provide a platform for estuarine research to inform coastal management. At the Guana Tolomato Matanzas Reserve, the research program is recognized by researchers across the state and internationally for providing high-quality data that is easily accessible to researchers and students. However, the reserve is also an example of the effective communication and application of data to local resource management, thanks to the strong cross-sectoral relationship between the research program and the collaboration program. A number of stakeholders cited examples of the application of the reserve's data, for example, how water quality data was used to designate aquaculture use zones, and to identify impaired water bodies within the reserve.

Accomplishment: The Office for Coastal Management recognizes the Guana Tolomato Matanzas Reserve is valued for its institutional knowledge, extensive data sets, and collaborative nature. Research and monitoring conducted by the reserve directly supports local resource management actions. As a key member of the research community, the reserve is able to identify priority research needs, build effective partnerships, and successfully compete for external funding.

Going beyond the standard System-Wide Monitoring Program parameters, the reserve has also been collaborating on 14 reserve system Science Collaborative awards within the evaluation period, all focused on important local, regional, and national management issues. In particular, the Guana Tolomato Matanzas Reserve is a lead for eight of the awards, successfully securing funding for projects to study living shorelines and other nature-based solutions to shoreline change, as well as working to understand the ecological implications of salt marsh transition to mangroves.

In order to better understand the changes that are occurring within the reserve's marshes, the research staff noted the need to expand existing monitoring infrastructure. In particular, staff have experienced obstacles related to surveying and installing groundwater wells, and calculating datums. It would be beneficial for the reserve to partner with other reserves in the system to explore how to overcome these challenges. Also, as the reserve is located in a long-recognized tide gauge data gap, staff have pursued various means to fund the installation of a new National Water Level Observation Network (NWLON) station in St. Augustine. Since those proposals have not been successful to date, the reserve is encouraged to continue to work with partners, such as the Southeast Coastal Ocean Observing Regional Association, to identify potential solutions.

Recommendation: The Office for Coastal Management encourages the Guana Tolomato Matanzas Reserve to support the continued development of climate vulnerability monitoring, including constructing a National Water Level Observation Network (NWLON) station in partnership with the City of St. Augustine, installing additional surface elevation tables and groundwater/porewater monitoring wells, and conducting elevation surveys.

The reserve is recognized for conducting high-quality research to inform local resource management, and it does this through the strong cross-sector collaboration across the reserve programs. This includes the research and education programs; however, during the evaluation meetings it became apparent that a disconnect exists between the intended audiences for these sectors. Education primarily focuses on the K-12 audience, while the research program is aimed at the graduate level. There is an opportunity to make a more deliberate effort to connect these programs at the reserve and build upon the existing success of the education marsh located at the visitor center. The research and monitoring work conducted at the reserve could be incorporated into this exhibit with the potential for connections to the Teachers on the Estuary (TOTE) program and other education programming as well.

Recommendation: The Office for Coastal Management recommends that the Guana Tolomato Matanzas Reserve enhance the connection between research and education sector activities, including considering new opportunities to use the education marsh at the visitor center and incorporating more reserve-specific research and monitoring data into existing K-12 programming.

Understanding Growth: Past, Present, and Future

Similar to the ecosystems it strives to protect, the reserve serves a broad and diverse population of stakeholders locally and throughout the watershed. The reserve utilizes a variety of outreach and communication techniques to reach its audiences, including formal classes, informal gatherings and seminars, and one-on-one interactions. The collaboration and education programs at the reserve have done an excellent job identifying and addressing the needs of their various audiences and have demonstrated a tireless energy to meet these needs. With assistance from volunteers and the Friends of the GTM Reserve, the reserve staff has creatively and intentionally thought about ways to communicate the mission of the reserve, increase the stewardship ethic of the reserve's visitors, and lay the foundation for behavior change.

Visitor use is very high within the reserve, including the beaches (parking at access points), Guana River Preserve (dam and trails), and waters. Hundreds of thousands of people visit these special areas every year to enjoy the recreational opportunities they provide. Sustainable public use and access includes several considerations. Foremost is the protection of natural and cultural resources on the managed lands. The reserve has done a tremendous job mapping and monitoring important resources, providing interpretation as needed, and making adjustments to management to ensure proper preservation of resources. For example, the reserve has moved trails and installed living shorelines to reduce erosion in sensitive habitats. The reserve has improved the safety of the public areas by adding Wi-Fi to the reserve property (cell service is spotty) and improving the design of the dune walkovers for better accessibility and resilience to storm events.

The reserve has also increased its staff to improve visitor services. With revenue generated by the beach parking lots, the reserve was able to hire additional rangers. The extra staff has helped reduce the amount of litter and vandalism at these areas, as well as providing a constant presence every day. The reserve has dedicated one of its dorm facilities to housing a Florida Fish and Wildlife Conservation (FWC) Commission Law Enforcement Officer. This is a great asset to the reserve as the FWC officers are the primary point of contact for reporting natural resource violations, as well as any other criminal infractions on state lands. The dorm is immediately adjacent to the main visitor center, the dam, and reserve property, so there is additional security for these areas by having the on-site law enforcement presence.

The reserve has taken advantage of unique opportunities for connecting with the public in informal ways, including "Dambassadors," where volunteers share coffee and donuts with visitors fishing at the dam; Saturday programs such as guided explorations, family seining, guided beach walks, and coastal cleanups; and "Sip and Science" events to share technical information in layperson's terms and in an informal setting. A stewardship ethic is built through understanding and appreciation of the resource that you are trying to protect. The reserve staff and volunteers have been able to engage with the public through various field programs where people are allowed to learn about their surroundings and experience them in a new way. While

visitors are enjoying themselves, the staff are able to discuss the most current coastal management issues and research the reserve is using to address those issues.

Accomplishment: The Office for Coastal Management commends the Guana Tolomato Matanzas Reserve for its effort to expand opportunities for educating stakeholders through novel approaches to outreach that increases awareness and promotes preserving the reserve's natural and cultural resources.

The reserve has built strong partnerships over the last several years with key members within the education community, particularly the St. Johns County School District. The reserve has been able to provide high-quality educational experiences for thousands of students throughout the year on-site at the reserve (called Estuary Explorers), in schools, and through the Adventures in the Estuary Summer Camp program. Recognizing the disparity between schools within the district, the district administration has consciously worked to facilitate new opportunities for students within their school system. The reserve accommodates as many of these groups as possible and is recognized by the schools as a valued source of marine and estuarine education.

The reserve has also recognized the need to expand educational opportunities for the diverse groups that make up its local population. The GTM for All initiative was started as a commitment from the staff, volunteers, and the Friends to reduce barriers to participating in educational programs at the reserve. The initiative encompasses everything from identifying specific underserved groups, understanding their needs to participate in programming, and designing innovative ways to address those needs. The reserve has been able to broaden its educational offerings to accommodate those with learning or physical disabilities, blind/low vision, deaf/low hearing, and autism. The reserve has also been very creative to expand the opportunities for economically disadvantaged populations or those that have challenges with transportation to the reserve.

The connection with the Local Initiatives Support Corporation (LISC) has provided the means for expanding educational opportunities for underserved youth from the Jacksonville area. The reserve staff developed curriculum, provided accommodations, and engaged additional instructors to provide the students with a unique and enriching experience. Following their visit to the reserve, students have remained engaged and are applying their knowledge to better understand their environment. This partnership has been so fruitful that a representative from LISC expressed a desire to expand coordination efforts with other reserves in the system.

Accomplishment: The Office for Coastal Management recognizes the Guana Tolomato Matanzas (GTM) Reserve for developing a program focused on making the reserve and its benefits more accessible; GTM for All is expanding opportunities for underserved communities within Northeast Florida to engage in experiential activities to make learning more impactful.

Over the last seven years, the reserve has built a very robust volunteer group led by a full-time volunteer coordinator and many dedicated, long-term volunteers. It is apparent that volunteers

contribute to the capacity of each of the reserve's programs by providing their energy, expertise, and genuine commitment to protecting the reserve. Some of their efforts consist of participation in the NOAA Phytoplankton Monitoring Network and Harmful Algal Bloom monitoring for the state, and listed species monitoring, including marine turtles, gopher tortoises, shorebirds, and butterflies. The volunteer program has been particularly supportive of the education program by embracing the GTM for All initiative through all of their work. In fact, the increased accessibility promoted by the GTM for All initiative serves as an umbrella for the reserve's education work and is applied across all of the reserve's programs to the greatest extent possible.

In the last year, the reserve has worked with more than 200 volunteers, who have donated more than 12,000 hours of service. The reserve has been very successful at retaining volunteers during the evaluation period, allowing for continued support to the vast array of reserve programs. This has been achieved through a variety of means, including volunteer awards, luncheons, appreciation dinners, and the diversity of opportunities available to volunteers.

Accomplishment: The Office for Coastal Management commends the Guana Tolomato Matanzas Reserve on the development of a strong volunteer program to increase the capacity of the reserve by supporting citizen science, education, and outreach, as well as resource management.

The reserve has persevered through COVID and its aftermath by providing support to schools to continue bringing students to the reserve and accommodating larger group sizes. At the same time, schools are changing, evolving, and continuing to face many challenges that have limited or impeded students from connecting with the reserve. Basic challenges such as teacher and support staff shortages are compounded by more complex challenges such as accessibility, equity, and inclusion. Through the GTM for All initiative, the education program has redesigned curriculum and changed delivery methods to make estuarine science more available to diverse audiences, and they continue to build strong partnerships to support these efforts. Acknowledging that the reserve education program is near to or at capacity for programming, and that the demand for high-quality programs will continue to increase, the Office for Coastal Management recommends developing a growth strategy for the education program to expand its educational offerings in a sustainable and meaningful way.

The reserve may benefit from a strategic planning session with local educational leaders, or may be able to use the recent St. Johns Educational Consortium's needs assessment to determine the reserve's niche in county-wide marine and estuarine education. Additionally, the education and collaboration programs could host a reserve-led stakeholder meeting to brainstorm on broader educational needs and solutions, including how to reach underserved communities.

The reserve could build capacity by partnering with other educational institutions and organizations in the area to collaborate on program delivery. Field trips could be co-hosted with partner groups at certain locations, allowing for larger groups to be subdivided into

manageable numbers. Likewise, partners could be used to provide additional support and additional content for school visits.

Since not all schools or audiences are able to travel to the reserve, targeting schools with natural or human-made wetland features nearby would allow the reserve staff or volunteers to travel to these locations and work with teachers to bring students outside for instruction. Natural features such as marshes would be useful in explaining ecology and coastal processes; however, human-made features offer another opportunity in that they were designed to respond similarly to the natural areas and serve specific functions in protecting coastal areas.

The reserve could consider building instructional capacity by creating a training program for education program content so that volunteers or area education partners can become docents and expand capacity in the education sector. The Teachers on the Estuary (TOTE) program may be another avenue to forge closer connections to local teachers and build more reciprocity into programming. Given the national support for TOTE, the reserve should explore how the program is valued by teachers across Northeast Florida and understand barriers to participation. One option discussed was to hold a TOTE “camp” at Princess Place to take advantage of the availability of housing, but also the proximity to nature and learning resources.

Recommendation: The Office for Coastal Management encourages the Guana Tolomato Matanzas Reserve to sustainably expand upon its popular education programming for which the demand exceeds the current capacity.

The reserve lands and waters are very popular with visitors; however, there are varying levels of engagement with these visitors and varying levels of understanding of the value of the reserve’s natural areas. Visitors who participate in the reserve’s programs receive information about the purpose of the reserve and its mission. However, there are limited opportunities for passive visitors (those not participating in reserve-hosted events) to receive information about the reserve and its mission. To help address this concern, a focus on more consistent messaging throughout the reserve including any in-person interactions, signage, or online materials could help convey the core messages that the reserve wants the public to know about its purpose and mission.

The reserve staff want to encourage visitors to come to the reserve, and with more visitors educated about the reserve, the more likely they will advocate for the protection of its natural and cultural resources. Currently the reserve is advertised through a variety of means, including the Visitors Bureau/Chamber of Commerce as part of their Ponte Vedra Naturally campaign. The St. Johns County Parks and Recreation department has historically had a robust public relations department, but unfortunately, recently there has been quite a bit of staff turnover. In the past, they have been strong partners to the reserve, focused on campaigning outdoor recreation and other opportunities at the reserve.

The Friends of GTM have built a strong social media presence, which has supported the reserve by providing information about upcoming programs, service activities, and special events. Maintaining the various platforms requires quite a bit of time and often the Friends rely on the staff of the reserve for content. The Friends feel like their Facebook, Instagram, and Twitter presence is good, although each platform has unique content and is tailored to different audiences, depending on the content or expected response. The Friends have committed to ensuring that the content of social media is on-brand, timely, and correct; however, they often turn to the staff to ensure that the direction of the messaging is correct and that the content is purely informational and not considered advocacy. The Friends have also created timed social media posts, which allows content to be published once it is finalized. Often social media is cyclical and some of it can be automated, but the cycle would be a whole year, so it will take time to build the content.

In addition to the efforts by the Friends, the new Department of Environmental Protection website will be coming out soon, which may be an opportunity to build and expand general awareness of the reserve within local communities. This may also be good timing to work with Department of Environmental Protection Communications to leverage their resources on “brand recognition” at the reserve level (not always just the Department of Environmental Protection level). At the same time, there could be a rebranding effort for the Coastal Training Program to be known going forward as the “collaboration” program.

The reserve could take advantage of opportunistic outreach done by rangers and volunteers. Outreach may be more effective through the development of common messaging for these groups to use in their interactions with resource users and visitors. A regular or quarterly outreach training could benefit staff and volunteers, including training on engaging with the public, general information, and stock answers. The reserve staff and the Friends have been testing a “Speakers Bureau,” which would utilize confident and knowledgeable volunteers to convey key stewardship messaging. While this has been used for formal presentations, this could be further developed to encompass other volunteer activities.

Recommendation: The Office for Coastal Management recommends that the Guana Tolomato Matanzas (GTM) Reserve consider developing a comprehensive outreach strategy, inclusive of the Friends of the GTM Reserve, with common messaging to benefit the reserve’s programs.

The reserve has a well-established volunteer program, as demonstrated through the many accomplishments outlined above, and is fortunate to have a pool of engaged citizens, some of whom are retired professionals that are passionate about supporting the reserve. Volunteers were identified several times as a key asset that could be utilized to grow existing programs and opportunities at the reserve. To harness this potential and to keep volunteers engaged, it might be advantageous for the reserve to prioritize which existing or new volunteer opportunities would most benefit the reserve. The reserve may then consider recruiting volunteers for their specific abilities, knowledge, and skills to address priority issues or reserve needs that could be met by volunteers with appropriate expertise or skill sets.

Adding new volunteers or service groups will also require additional staff oversight, since volunteers need to be constantly managed. This could be addressed by using senior (i.e., experienced) volunteers to mentor or train the new volunteers. As the volunteer program expands, the reserve could develop a more thorough volunteer training program and empower a core team of volunteers for specialized programs and standardized training for outreach programs (such as festivals, events) and education (such as going into classrooms, education tenets) that aligns with the outreach strategy recommended above.

The volunteer opportunity calendar is a great way to organize opportunities with volunteers, but it fills up quickly for the most popular activities. This can be discouraging for new volunteers. One solution could be to hold back a certain number of spots for new or “in-training” volunteers. Senior volunteers could serve as mentors for the newer volunteers, allowing new volunteers to participate but also learn from the experience of the senior volunteers.

To expand its educational offerings, the reserve could develop and offer training to current volunteers so that they could deliver educational programs at schools or other offsite locations, since the ability to fulfill requests is often limited by education staff capacity. The reserve could also partner with existing volunteer networks, such as the Whitney Lab docents, to co-deliver education programs, and they could also connect with service-oriented organizations like the Conservation Corps and AmeriCorps groups to learn more about how volunteers are trained and used for program delivery. The reserve has had student volunteers from the local schools who have connected with the reserve through science clubs, STEM clubs, and reserve programs. They have also hosted college-aged interns/volunteers, and they have been very beneficial for the Summer Camp; however, it has been challenging to recruit education majors for that program and other education-focused opportunities.

As the reserve builds the volunteer program under the new volunteer coordinator, it might be beneficial to conduct a survey of the current and exiting volunteers to better understand any barriers to volunteering at the reserve. Fresh perspectives can help identify ways to address any of the barriers identified, and the volunteer coordinator should engage with other reserves in the national research reserve system to learn from successful volunteer programs at other sites and bring back ideas to implement.

Recommendation: The Office for Coastal Management encourages the Guana Tolomato Matanzas Reserve to build a sustainable volunteer program by encouraging experienced, longtime volunteers to train/mentor new volunteers for popular opportunities. The reserve may consider learning from local and other reserve volunteer programs to gain additional insight about how the volunteer program can be leveraged to build capacity across reserve programs.

Evaluation Metrics

Beginning in 2012, reserves began tracking their success in addressing three evaluation metrics specific to their programs. The evaluation metrics include a five-year target and provide a quantitative reference for each program about how well it is meeting the goals and objectives it has identified as important to the program. In 2017, reserves began a new five-year period and set targets specific to their programs based on measures from existing National Estuarine Research Reserve System performance measures.

Evaluation Metrics 2017-2022

The following metrics are proposed for the 2017-2022 evaluation period. Source of goals and objectives is the reserve's 2017 Draft Management Plan.

Metric 1

Goal: Improve natural biodiversity throughout the reserve.

Objective: Management Plan Objective 1.1, Knowledge and awareness of natural biodiversity is increased within the GTM NERR and adjacent communities in the next five years.

Strategy: Management Plan Strategy 1.1.1, Monitor status and trends of keystone, sentinel, foundation, endangered, and threatened species and communities.

The research and stewardship sectors will lead efforts to collect long-term data on species and communities by developing or designating protocols for use by staff, volunteers, and students. Consistent monitoring provides valuable baseline data for measuring ecosystem change. These projects represent a subset of monitoring projects and do not include abiotic elements like water quality and weather monitoring. In 2017, reserve staff and volunteers collected long-term data on six projects: emergent vegetation (through SWMP), oysters, phytoplankton, sea turtles, birds, and butterflies. The plan is to add four more projects by 2022. Additional information regarding the existing projects can be found in the stewardship and research sections of the draft management plan. This performance measure is tracked by calendar year (not cooperative agreement cycle) and will cover 2018-2022.

Performance Measure: Total number of cumulative long-term biotic monitoring projects being carried out within the reserve in 2022.

Target: By the year 2022, there will be 10 cumulative long-term monitoring projects being carried out within the reserve.

Results:**Year 1:** 22**Year 2:** 20**Year 3:** 19**Year 4:** 21**Year 5:** 20**Discussion:**

The reserve doubled the target for this metric in all but one year of this review period. Guana Tolomato Matanzas Reserve is a clear leader with a very strong research program that supports numerous monitoring projects within the reserve. Many of these projects feed into National Science Collaborative efforts, making this work significant beyond the boundary of the reserve.

Metric 2**Goal: Improve water quality within the reserve.**

Objective: Management Plan Objective 3.1, Watershed management is improved by identifying point source and non-point source pollution, determining the severity of negative impacts, and recommending protective or remedial actions.

Strategy: Management Plan Strategy 3.1.4,* Continue professional workshops on water quality. and

Strategy: Management Plan Strategy 3.1.5, Continue to coordinate, demonstrate, and provide workshops on low impact development options such as mitigation banking, payment of ecosystem services, conservation easements, bioswales, composting toilets, and rain gardens.

Water quality impacts on ecosystem services are continually assessed by staff at the GTM Research Reserve via SWMP and other water quality data collection, oyster condition assessments and monitoring, and involvement with groups like the Oyster and Water Quality Task Force of the Guana, Tolomato, and Matanzas Rivers. Coastal Training Program (CTP) staff will facilitate and coordinate efforts of the task force and identify community and regional training needs on water quality subjects with this group and the CTP Advisory Committee. CTP staff will facilitate additional trainings and workshops for local stakeholders on water quality and low impact development as directed by needs assessments, reserve system Science Collaborative grants, and knowledge gained through education, research, and stewardship programs. Participants reporting an increase in knowledge will be measured through participant surveys.

Performance Measure: From 2017-2022, percent of water quality workshop participants reporting increase in knowledge or skills.

Target: From 2017-2022, 95% of water quality workshop participants report an increase in knowledge or skills.

Results:**Year 1:** 100% of participants**Year 2:** 99.4% of participants**Year 3:** 100% of participants**Year 4:** 100% of participants**Year 5:** 100% of participants**Discussion:**

The reserve has demonstrated outstanding results of the training and workshops they have provided to participants during the evaluation period. The workshops held by the reserve are clearly having an impact with all but one participant in the 5-year review period, indicating they came out of the workshops with increased knowledge or skills.

Metric 3

Goal: Enhance the understanding of estuarine ecosystems and impacts from global processes using science-based information.

Objective: Management Plan Objective 5.1, The people of Northeast Florida will recognize the GTM Research Reserve as an important source for information on estuarine topics, including impacts from global processes, in the next five years.

Strategy: Management Plan Strategy 5.1.1, Continue to disseminate information about the GTM Research Reserve through various communication channels such as up-to-date websites, social media, newspaper articles, and press releases, and

Strategy: Management Plan Strategy 5.2.6,* Provide information and outreach on global processes, e.g., sea level rise and global climate change through interpretive exhibits.

In 2017, the exhibit hall of the GTM Research Reserve Environmental Education Center began transitioning from static to dynamic interactive exhibits. As part of an interpretive master plan developed under a Procurement, Acquisition, and Construction award, education and facilities staff began adding computer-based interactive screens and additional live animal exhibits. These updates are expected to continue, with the majority complete by the end of 2018. The interactive screens will allow education staff to regularly update information with results provided by reserve staff, encouraging visitors to return and learn new things. There is also a plan to update entry signs to the Environmental Education Center to entice more people to stop by when they are visiting the dam, trails, and beaches of the reserve. As a result, staff hope to increase walk-in visitors to the education center by 2022. The average annual number of walk-in visitors from January 1, 2014, to December 31, 2017, was approximately 5,100. We hope to increase this number by a minimum of 10% for the last two years of the five years.

*This is an excerpt of this management plan strategy that pertains directly to this metric. The full strategy is, *“Provide information and outreach on global processes, e.g., sea level rise and global climate change, through workshops, technical assistance, interpretive exhibits and web-*

based tools that serve as a clearinghouse for information for professional audiences, as identified through the needs assessment.”

Performance Measure: From July 1, 2020, through June 30, 2022, number of walk-in visitors at the GTM Research Reserve Environmental Education Center exhibit hall.

Target: From July 1, 2020, through June 30, 2022, 11,200 walk-in visitors at the GTM Research Reserve Environmental Education Center exhibit hall.

Results:

Year 1: 5,620 visitors

Year 2: 6,280 visitors

Year 3: 4,457 visitors

Year 4: 843 visitors

Year 5: 4,148 visitors

Discussion:

The target of 11,200 walk-in visitors to the reserve’s Environmental Education Center was surpassed during the first 2 years of the evaluation period with 11,900 visitors; however, these visitor numbers were from 2018 and 2019. The following 3 years, 2020-2022, were the time window identified for the target of this metric and were during the unforeseen global COVID-19 pandemic. The total for these years was 9,448 and fell short of the written target, because much of the world hunkered down during the pandemic. Given the visitors counted during the beginning of this evaluation period, if the pandemic had not occurred, it’s highly likely that the reserve would have hosted more visitors than the 11,200 target.

Conclusion

For the reasons stated herein, I find that the Florida Department of Environmental Protection is adhering to the programmatic requirements of the Coastal Zone Management Act and its implementing regulations in the operation of its approved Guana Tolomato Matanzas National Estuarine Research Reserve.

These evaluation findings contain eight recommendations. Recommendations must be considered before the next regularly scheduled program evaluation but are not mandatory at this time. Recommendations that must be repeated in subsequent evaluations may be elevated to necessary actions.

This is a programmatic evaluation of the Guana Tolomato Matanzas National Estuarine Research Reserve that may have implications regarding the state's financial assistance awards. However, it does not make any judgment about or replace any financial audits.

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Date