

Guana Tolomato Matanzas National Estuarine Research Reserve K-12 Education Needs Assessment Report

Prepared by:
Peter H. Taylor
Waterview Consulting
waterviewconsulting.com

June 2011

EXECUTIVE SUMMARY

This report presents the results of the K-12 Education Needs Assessment survey conducted by the Guana Tolomato Matanzas National Estuarine Research Reserve (GTMNERR) and Waterview Consulting in 2011.

Located in northeast Florida, GTMNERR is one of 28 sites designated by the U.S. National Oceanic and Atmospheric Administration (NOAA) as National Estuarine Research Reserves (NERRs). The NERR System was established to conduct long-term estuarine research and monitoring, estuarine education, and resource management and to provide a basis for more informed coastal management decisions. GTMNERR is a federal/state partnership of NOAA and the Florida Department of Environmental Protection.

Each NERR site establishes a management plan with priorities and goals for research, stewardship, and education. At GTMNERR, the goals of the Education Program are to

- engage and excite people about estuaries and the animals and plants that inhabit them,
- promote awareness of the Reserve and its management goals and objectives,
- translate scientific findings from Reserve projects so the public has current information to help them make informed decisions, and
- increase knowledge about living sustainably within the watershed of the Reserve.

The target audience for the GTMNERR Education Program consists of K-12 students, K-12 teachers, and members of the general public, all of whom make decisions in their daily lives that can impact coastal resources. The Education Program offers formal K-12 programming for school groups that visit the Reserve and informal education for the public through on- and off-site programming.

In 2011, the GTMNERR conducted a K-12 Education Needs Assessment to gather information for planning future activities of the Education Program. The findings will be used to focus program development efforts and to project realistic programmatic targets. The Needs Assessment process is intended to help ensure that the Education Program's efforts are tailored effectively to its target audiences and help to accomplish GTMNERR's management goals. The Needs Assessment is part of a national initiative by the NERR System to enhance estuary-related education in support of coastal stewardship.

The online Needs Assessment survey was distributed to teachers in three counties in northeast Florida: St. Johns, Duval, and Flagler. The survey included multiple-choice and open-ended questions designed to provide data on the respondents' educational settings, teaching approaches, professional development, and interactions with the GTMNERR. The survey was conducted from April 28 to June 15, 2011. Two hundred teachers from 49 schools submitted survey responses.

Among the survey findings were the following:

- 32% of survey respondents said their students did not receive any instruction on estuaries during the school year.
- 91% of respondents said they gave heavy or moderate emphasis to scientific inquiry skills.
- 78% of respondents wanted to incorporate more outdoor education into their teaching.
- 62% of respondents wanted to incorporate more discussion about the effects of climate change on coastal areas, especially how it affects Florida.
- 26% of respondents had used educational services or products from GTMNERR. Many teachers were unaware of GMTNERR's educational offerings.
- 76% of respondents wanted educational materials on adaptations of animals and plants.
- More than 50% of the survey respondents had taught estuary topics for 0-2 years.
- 67% had received no training in estuary sciences in the prior three years.

- 64% said high registration fees were a major barrier to professional development.
- Teachers need standards-based lesson plans, activities, and ideas provided at low or no cost.
- 86% said they needed training in conducting hands-on activities.

Based on the survey data, the following set of recommendations was developed for the GTMNERR Education Program:

1. Ensure that GTMNERR's K-12 educational programs are clearly aligned with state standards and county curriculum requirements and that the programs explicitly help teachers to meet these benchmarks.
2. Within the context of state standards, provide teachers with ready-to-use lesson plans, easy-to-prepare classroom activities, and affordable field trips that increase and enhance the estuary-related instruction received by students.
3. Emphasize the topics of (a) plant and animal adaptations and (b) habitats and land conservation and the skills of (c) scientific inquiry, (d) data collection, and (e) data analysis.
4. Offer K-12 educational services and products at low or no cost to teachers, students, and schools.
5. Determine whether the topic of climate change's effects on coastal systems can be taught in alignment with state standards. If so, provide lesson plans, professional development, guest speakers, and background informational resources with a focus on the local effects of climate change in northeast Florida.
6. Provide teacher professional development trainings focused on conducting hands-on activities in the classroom and outdoors. Keep registration fees as low as possible, and offer CEUs or PLUs.
7. Conduct a strategic marketing campaign to raise teachers' awareness of the GTMNERR Education Program and how it can help them.

METHODOLOGY

The survey questions were designed to provide data on the respondents' educational settings, teaching approaches, professional development, and interactions with the GTMNERR. The online survey was created with SurveyMonkey.

The target population for the needs assessment was K-12 teachers at schools in Duval, St. Johns, and Flagler Counties, which encompass GTMNERR in northeast Florida. During the planning stages of the needs assessment, the GTMNERR Education Director contacted the science curriculum coordinators in each county and determined that the most effective method for distributing the survey to teachers would be through the curriculum coordinators.

On April 28, 2011, the survey invitation was emailed to the science curriculum coordinators to be forwarded to the teachers in their districts. The invitation included a brief explanation of the survey and its purpose, a link to the online survey, and a description of the survey incentives. The incentives to be awarded to randomly selected survey participants were a \$100 gift card to Target and a \$50 gift card to Black Creek Outfitters in Jacksonville. In addition, the invitation stated that the first 200 people to submit survey responses would receive a free, reusable water bottle with the GTM Reserve logo.

The original deadline for survey responses was May 20, which provided for a three-week response period. A reminder email was distributed midway through that period. By the final week, however, a very small number of responses had been submitted. We contacted the science curriculum coordinators and determined that the teachers likely were not responding due to the length of the survey. We also determined that some of the survey questions could be answered with readily available data provided by the science coordinators based on other data sources. In response, we reduced the number of questions in the online survey, extended the survey deadline to June 15, and sent a revised survey invitation reflecting these changes. In addition to sending the revised invitation through the science curriculum coordinators, we distributed the invitation through school principals and teacher email lists.

Following these efforts, a total of 200 teachers from the three counties submitted survey responses.

RESULTS*

Section 1: Educational Setting

1. In what education setting(s) do you teach? Check all that apply.

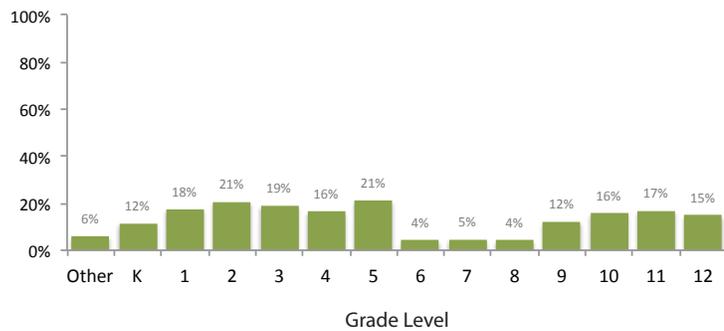
100% of survey respondents were teachers in public schools.

2. What grade level(s) do you teach? Check all that apply.

Check all that apply.

Teachers of all grades from kindergarten through grade 12 participated in the survey. Grades K-5 and 9-12 were each represented by 12-21% of the survey respondents. Grades 6, 7, and 8 had the lowest representation with only 4-5% of survey respondents teaching each of those grades. The total of the percentages in Figure 1 exceeds 100% because some respondents taught multiple grade levels.

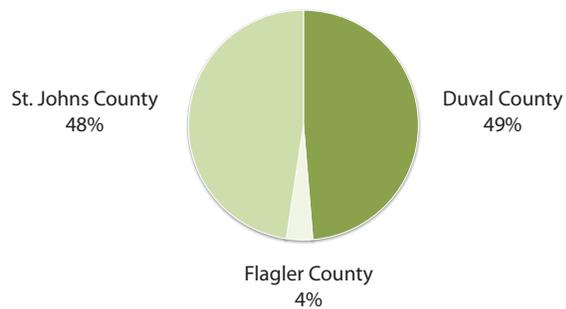
Figure 1: Percentage of Survey Respondents by Grade Level



3. In what county do you teach?

The survey included approximately equal numbers of responses from teachers in St. Johns (48%) and Duval (49%) Counties and fewer from Flagler County (4%).

Figure 2: Percentage of Survey Respondents by County

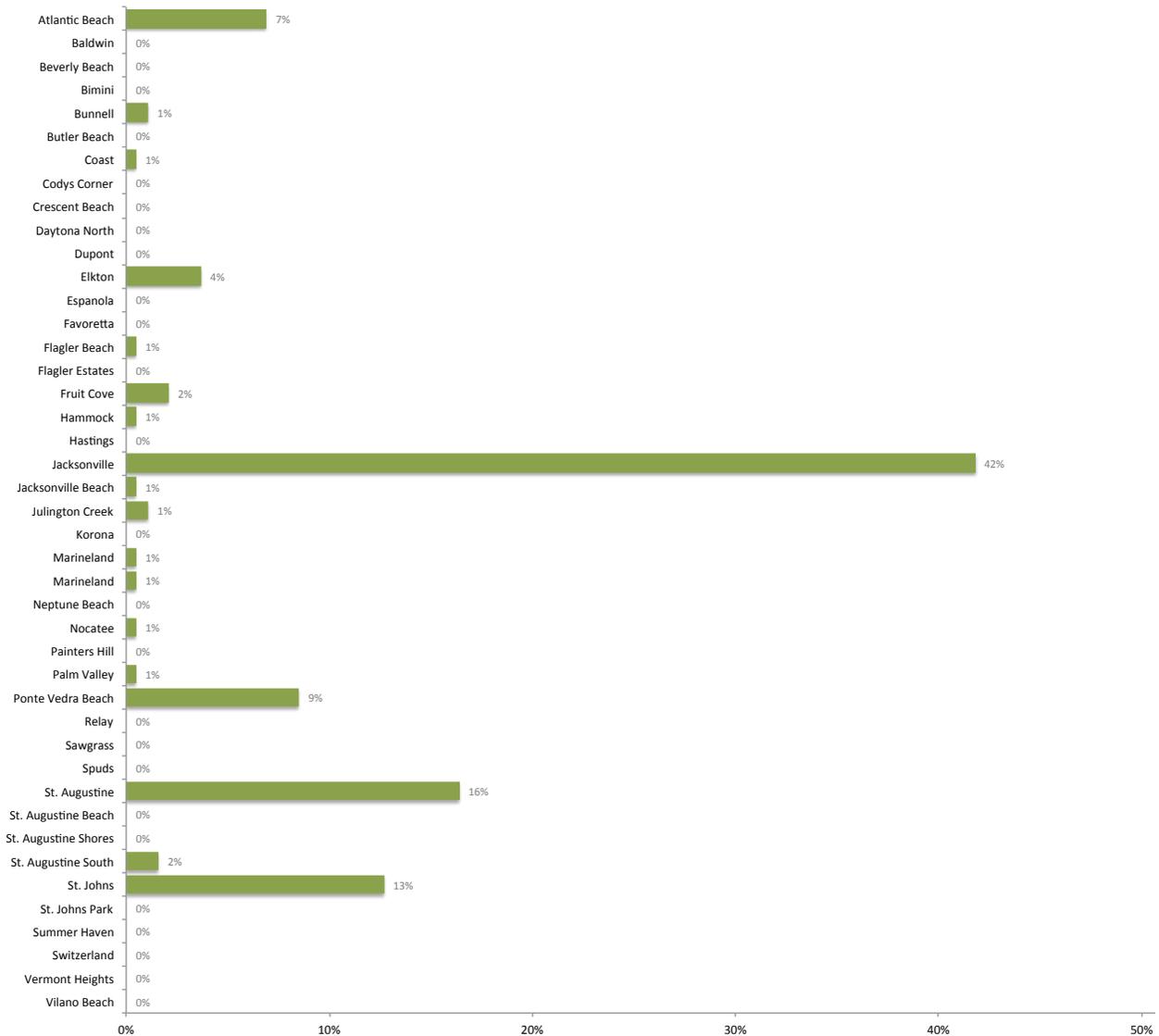


* Throughout the Results section, percentages may not sum to 100% because of rounding.

4. In what town do you teach?

The survey included responses from teachers in 18 towns in Duval, Flagler, and St. Johns Counties. The most responses came from Jacksonville (42%), St. Augustine (16%), and St. Johns (13%). Between 1% and 9% of survey respondents were from each of 15 other towns.

Figure 3: Towns in Which Survey Respondents Taught



5. At what school do you teach?

Teachers from 49 schools participated in the survey. School names are provided in the survey data set.

6. Approximately what percentage of students in your school or program identify with the following racial/ethnic groups?

Table 1: Student Racial/Ethnic Identities

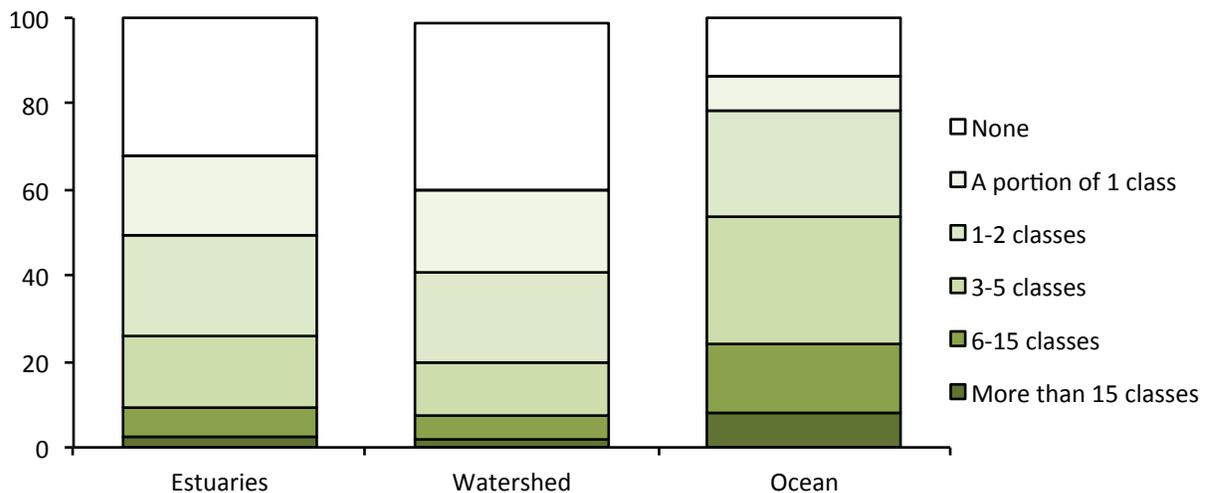
	0%	1-20%	21-40%	41-60%	61-80%	81-100%
White	0	15	20	50	48	62
Black or African American	2	94	46	22	15	9
Hispanic, Latino, or Spanish Origin	7	156	11	1	0	0
American Indian or Alaska Native	69	72	0	0	0	0
Asian	18	137	2	0	0	0
Native Hawaiian or Other Pacific Islander	60	85	0	0	0	0

Section 2: Teaching Approach and Needs

7. How many class or activity periods of estuary, watershed, and/or ocean instruction do your students receive in a typical school year?

The data indicated that teachers devoted less class time to instruction about estuaries and watersheds than they did to instruction about the ocean. 32% of survey participants indicated that their students did not receive any instruction on estuaries, while 39% said their students received no instruction on watersheds. In contrast, only 11% said their students received no instruction on the ocean. Only 49% said that their students received at least 1 class per year of instruction on estuaries, compared to 79% for the ocean. Few survey respondents said their students received at least six classes of instruction on estuaries (10%) or watersheds (8%), whereas that figure was much higher for instruction on the ocean (25%).

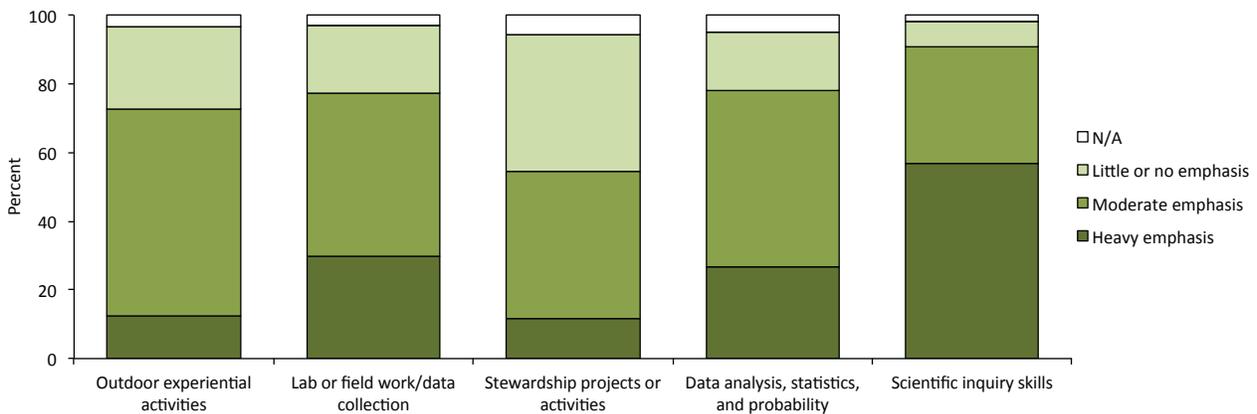
Figure 6: Number of Classes per Year of Estuary, Watershed, or Ocean Instruction



8. Think about your plans for your class for the entire year. How much emphasis did you or will you give each of the following?

91% of respondents said they gave heavy or moderate emphasis to scientific inquiry skills. The second highest-ranking response was data analysis, statistics, and probability (78% heavy or moderate emphasis), followed by lab or field work/data collection (77%) and outdoor experiential activities (72%). Stewardship projects or activities ranked last with only 55%.

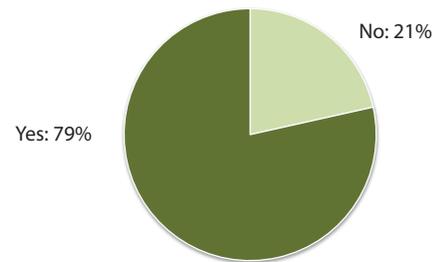
Figure 7: Emphasis Placed by Teachers on Skills and Activities



9. In the last 2 years, have you incorporated opportunities for outdoor exploration activities into your curriculum?

79% of respondents had incorporated outdoor exploration into their curriculum in the past 2 years, and 21% had not.

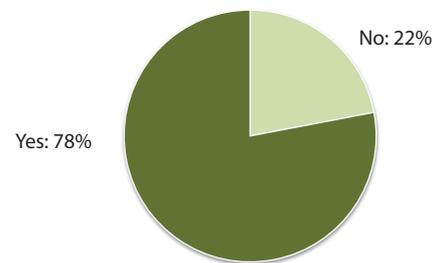
Figure 8: Inclusion of Outdoor Education in Curriculum



10. Do you want to incorporate more outdoor education in your classroom? If yes, please specify what assistance you need to do so.

78% of respondents wanted to incorporate more outdoor exploration, and 22% did not. 147 respondents also provided written responses regarding their needs for assistance. Key themes emerging from the responses were that teachers needed standards-based lesson plans, activities, and ideas for outdoor education provided at low or no cost. They stated a need for field trips and expressed interest in bringing students to GTMNERR. The following examples illustrate the main themes of the responses:

Figure 9: Interest in Increasing Outdoor Education



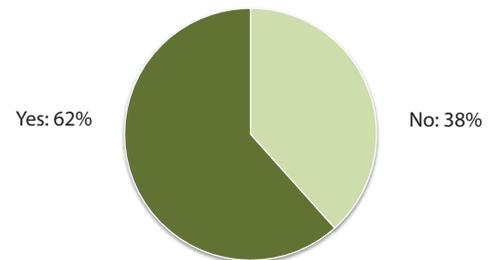
- “Access to relevant labs and activities that can be done at my school with limited resources, Also assistance with finding available resources to supplement the outdoor education to make sure that all activities and instruction meet state mandated benchmarks”
- “Ideas for Standards based activities and materials for the projects.”
- “lesson plans gear to the 5th grade state standards”
- “lesson ideas, standards based”
- “Ideas, materials, and a method of assessment”
- “travel to sites to provide hands on activities”
- “Trip to NERR”
- “Locations to go to”
- “I’d love to have the opportunity to spend time at Guana with the students.”

11. Do you want to incorporate more discussion in your classroom about the effects of climate change on coastal areas? If yes, please specify what assistance you need to do so.

62% of respondents wanted to incorporate more discussion about the effects of climate change on coastal areas, and 38% did not. 115 respondents also provided written responses regarding their needs for assistance. The key themes in the responses were that teachers needed professional development to become knowledgeable about this topic, guest speakers to come to their classes, and age-appropriate, standards-aligned lesson plans and materials, such as data, visuals, and readings. Several comments indicated that the educational information and materials should focus specifically on how climate change affects Florida. The following examples illustrate the main themes of the responses:

- “Materials and lesson ideas”
- “General information aligned with sunshine state standards”
- “Only if that is a specified Benchmark in the new 2.0 Standards due to time constraints”
- “Lesson plan support”
- “I need more background knowledge on this topic before I can teach it.”
- “any data or visuals to use to teach for understanding”
- “use of regional data”
- “lesson plans appropriate for K-5 to include in our units of instruction, sample photographs and videos as concrete examples”
- “Lessons for me so I can translate into lessons/experiments/discussions for the students”
- “Professional development/specific information to become current on the coastal conditions, specifically in Florida”
- “resources that show how the climate changes are affecting us here in Florida”
- “Duval County Public Schools stresses the importance of following the Learning Schedule designed and created by the county science dept. which follows the Sunshine State Standards and have built the curriculum around the concept of a Calendar Map. Each grade level teaches certain topics.”
- “I’d love to have someone come and speak to the students about this topic.”

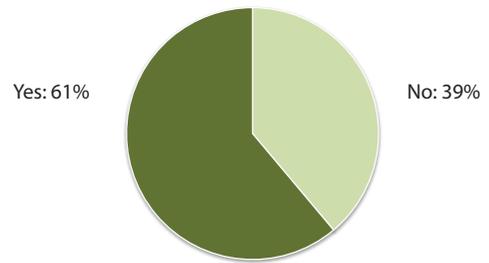
Figure 10: Interest in Teaching More About Climate Change



12. There is a National Estuarine Research Reserve (NERR) located in Northeast Florida called the Guana Tolomato Matanzas NERR, which is one of 28 Reserves around the country protected for the purposes of education, research, water-quality monitoring and coastal stewardship. Were you aware that your state has a National Estuarine Research Reserve?

61% of respondents were aware that Florida has a NERR, and 39% were not aware.

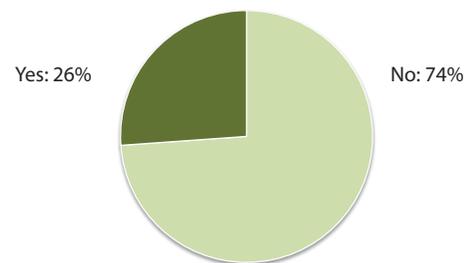
Figure 11: Awareness of GTMNERR



13. Have you ever used any of the Guana Tolomato Matanzas Reserve’s educational services or products? If no, why not? If yes, which ones?

26% of respondents had used educational services or products from GTMNERR, and 74% had not used them. 135 respondents also provided written comments, which indicated that lack of awareness about GTMNERR and its educational programs is a major reason why teachers have not used its services and products. Several indicated concern about whether the GTMNERR educational resources were appropriate for their grade level. A few respondents stated that cost and logistics were reasons for not going on field trips to the Reserve. Of those who were aware of GTMNERR educational resources, most indicated that they were aware of field trips and some indicated awareness of professional development. The following examples illustrate the key themes of the responses:

Figure 12: Use of GTMNERR Educational Services and Products

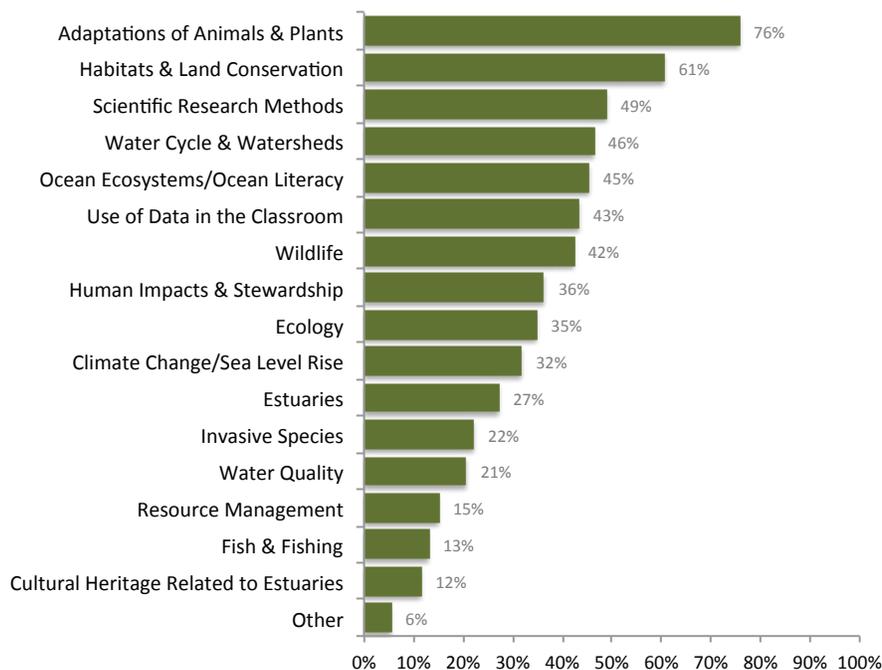


- “Not aware of your reserve or products.”
- “I have never heard of it.”
- “I wasn’t aware of the educational aspect of the reserve. I have been to the reserve for my personal outdoor experiences.”
- “no funds to get there with my school district”
- “concern about age appropriateness”
- “I teach Kindergarten. Not much in our curriculum.”
- “A week of our summer professional development will be held there. Dr. Maia McGuire is the presenter.”
- “Have not received any educational materials.”
- “Field trips, seining, beach transects, water quality, bird watching, trails, etc.”
- “I attended a wonderful inservice last summer at GTMR”
- “Field trip”
- “trip only allows a small number of students to participate so numerous classes can’t go at once which means bus fee will be higher since less students are going”
- “cost of transportation, very low budget”
- “All our second graders attended the program (for second graders) last fall, and plan to go next year.”
- “Not sure what is available for high school level.”
- “I wasn’t aware of their existence”
- “unaware of what services or products are available.”
- “The peolpe are wonderful, the facility is great!”
- “I have taken my classes there on numerous field trips. We have done seining and geomorphic lab. We have also spent time in the exhibit hall.”

14. Which of the following topics would you like developed into educational materials that you could utilize to help you meet existing curriculum needs? Please select your top 5 choices.

Adaptations of animals and plants (76%) was the highest-ranking topic. The second highest was habitats and land conservation (61%). The next 5 highest-ranking topics were clustered between 40-50%: scientific research methods (49%), water cycle and watersheds (46%), ocean ecosystems/ocean literacy (45%), use of data in the classroom (43%), and wildlife (42%). Topics related to human impacts ranked in the middle or low in the list, including human impacts and stewardship (36%), climate change/sea level rise (32%), invasive species (22%), water quality (21%), resource management (15%), and fish and fishing (13%).

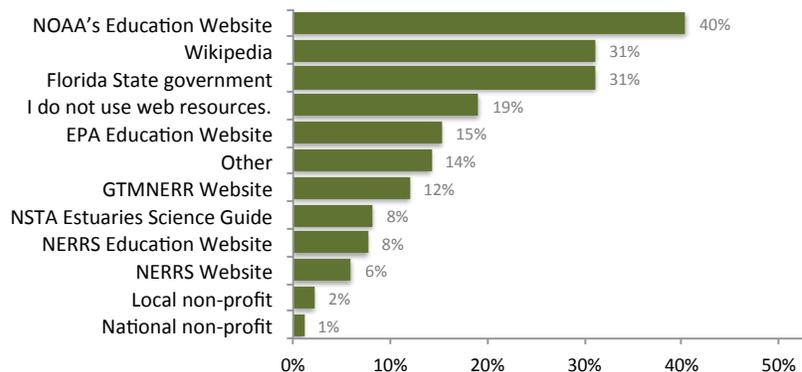
Figure 13: Topics to Be Developed into Educational Materials



15. From which web resources do you currently obtain estuary, watershed, and ocean information for use in your classroom? Check all that apply.

The NOAA Education website was the most-used web resource, with 40% of respondents indicating that they use it. The next most used were Wikipedia (31%) and the Florida state government website (31%).

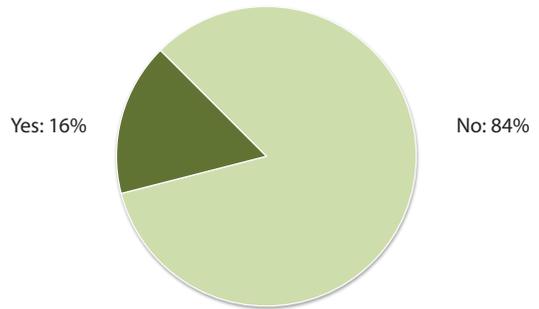
FIGURE 14: Use of Web Resources for Estuary, Watershed, and Ocean Information



16. Do you foresee a need for new estuary/ocean/watershed related educational materials in languages other than English?

84% of survey respondents said they did not foresee a need for materials in languages other than English, and 16% said they did foresee a need. Of the 31 individuals who provided written comments, 24 specified Spanish as the language in which materials were needed.

Figure 15: Need for Educational Materials in Other Languages



17. (a) Which of the following real-time/archived data sets do you currently use in your teaching? (b) Which of the following real-time/archived data sets would you need synthesized into age-appropriate learning materials and visualizations for your teaching? Check all that apply.

(a) Air temperature (42%) and water temperature (32%) data sets were used by the largest percentages of the survey respondents. Several other data sets were used by 10–20% of respondents, and the remainder were used by less than 10%. 23% of the respondents had used none of the listed data sets. (b) Waves (32%), fish species and abundance (30%), and animal tag/tracking (30%) data sets ranked highest as needing to be synthesized into educational materials. Thirteen other data sets were needed by 20-28% of respondents, and three data sets were needed by less than 20%. 10% of respondents did not need any of the listed data sets.

Figure 16: Data Sets Currently Used in Teaching

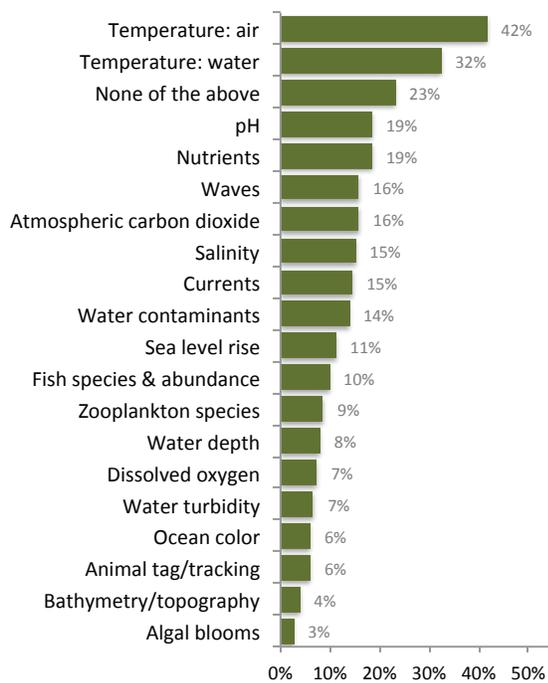
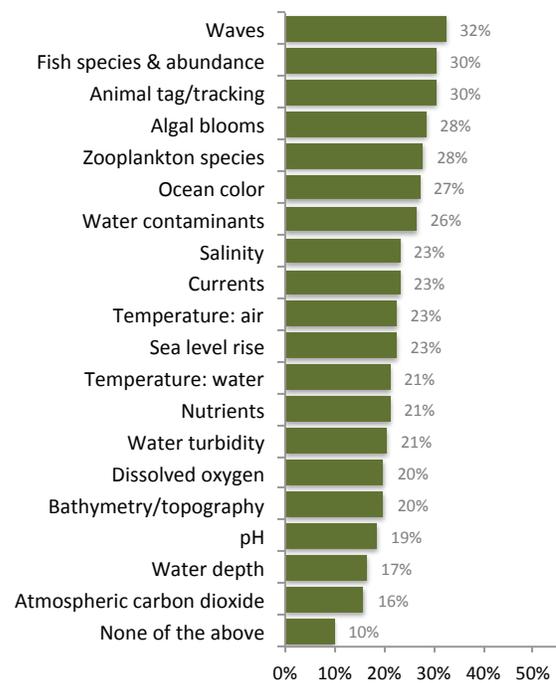


Figure 17: Data Sets Needed to Be Synthesized into Educational Materials

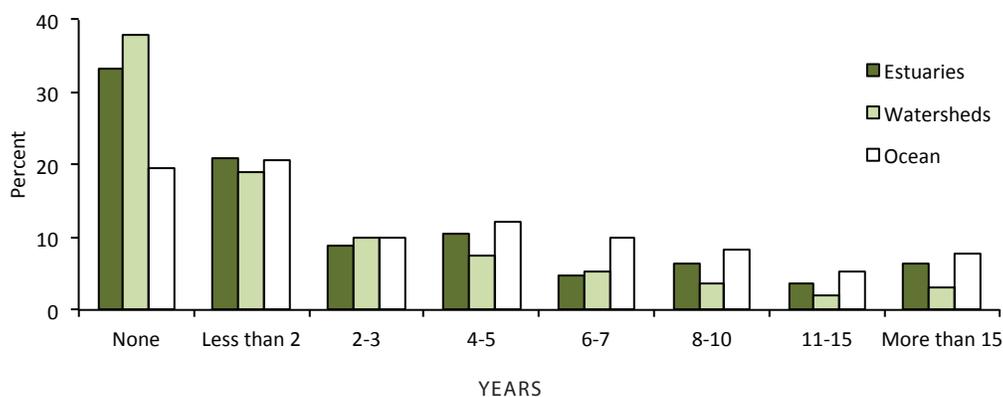


Section 3: Professional Development

18. How many years have you been teaching estuary, watershed and ocean related topics?

The data indicated that most teachers had little or no experience teaching estuary, watershed, and ocean related topics, although there were some teachers with several or many years of experience. More than 30% of the survey respondents had no experience teaching estuary and watershed topics, and 19% had never taught ocean-related topics. Another 20% had taught these topics for less than two years. Approximately 10% had taught these topics for 2-3 or 4-5 years. 10% or less of survey respondents selected each of the other responses (6-7, 8-10, 11-15, or more than 15 years).

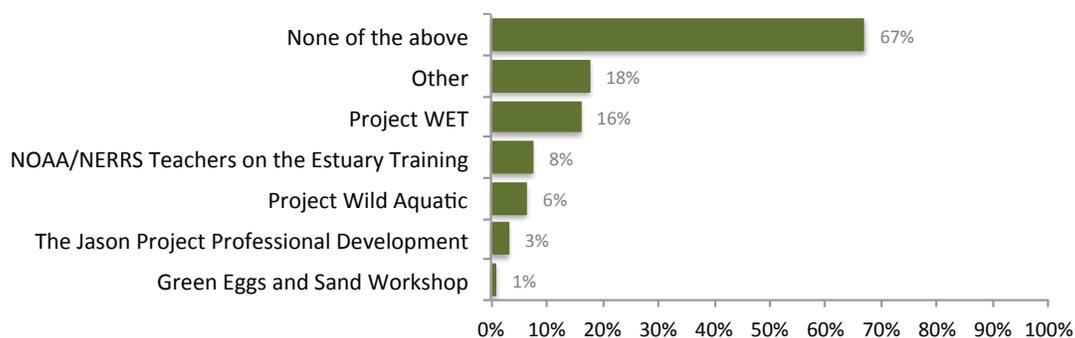
Figure 18: Years of Experience Teaching Estuary, Watershed, and Ocean Topics



19. Which professional development trainings have you taken to supplement your estuary/watershed/ocean education? Check all that apply.

Two-thirds of the survey respondents (67%) had not taken any of the listed trainings, although 18% percent had taken other trainings. Among the listed trainings, Project WET ranked first with 16% of survey respondents having taken it. NOAA/NERRS Teachers on the Estuary Training (8%) ranked second, and Project Wild Aquatic (6%) ranked third.

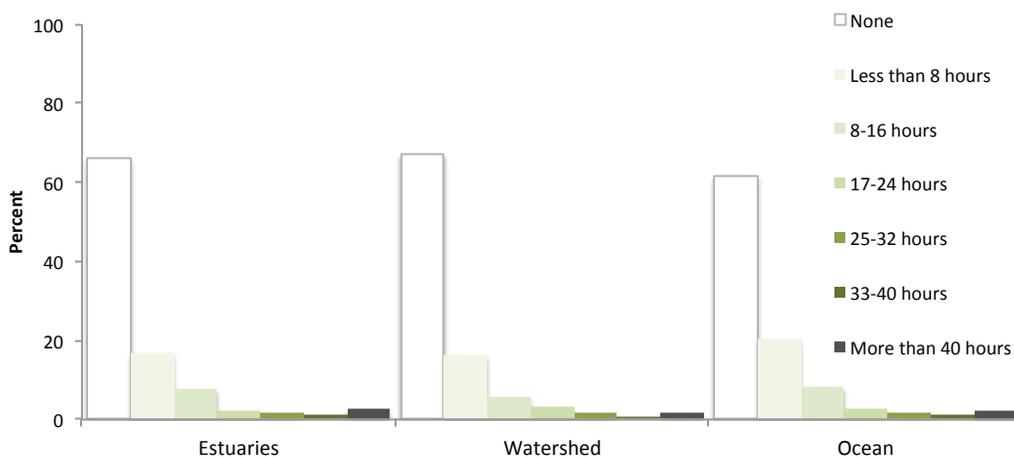
Figure 19: Participation in Professional Development Trainings



20. In the last three years, how many hours of professional development training in science have you obtained related to estuaries, watersheds and the ocean?

Two-thirds of the survey respondents had received no training in estuary (66%) and watershed (67%) sciences in the prior three years. A slightly smaller percentage had received no training in ocean science (61%) during the three prior years. 16-20% of the survey respondents had received less than 8 hours training in each of the three subject areas, and 6-8% had received 8-16 hours. A small percentage (1-3%) had received more than 16 hours of training in any of the three subject areas.

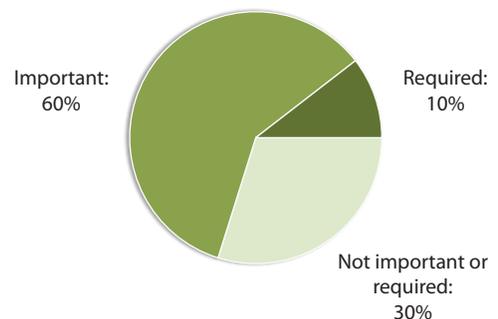
Figure 20: Hours of Professional Development in Estuary, Watershed, or Ocean Science



21. Professional development opportunities for teachers sometimes provide CEUs (continuing education units) and/or PLUs (professional learning units). Are these important or required in determining which professional development opportunities you select?

60% of survey respondents indicated that CEUs and/or PLUs were important in their choice of professional development opportunities, and 10% indicated that CEUs and/or PLUs were required in order for them to participate in a training. 30% indicated the CEUs and/or PLUs were not important or required.

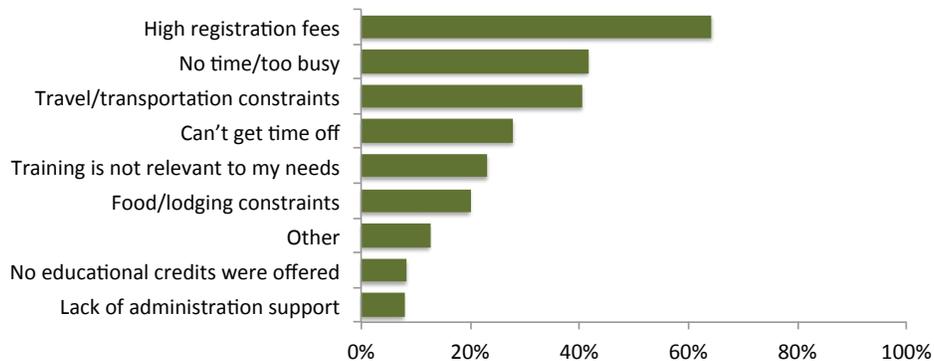
Figure 21: Importance of CEUs and PLUs



22. What factors prevent you from attending professional teacher development? Please check the three that most commonly occur.

64% of survey respondents indicated that high registration fees commonly prevented them from participating in professional development. No time/too busy (42%) and travel/transportation constraints (41%) were the second and third highest-ranking factors.

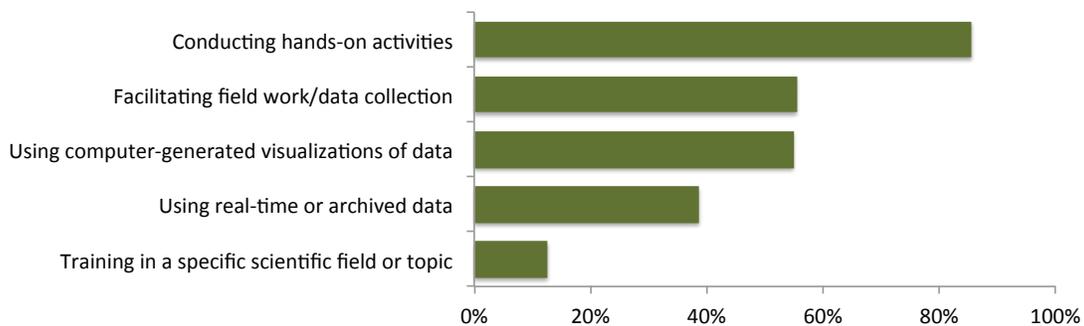
Figure 22: Factors that Prevent Participation in Professional Development



23. What type of professional development training related to estuaries do you need? Check all that apply.

86% of survey respondents said they needed training in conducting hands-on activities. 55% of respondents selected each of the next two highest-ranking types: facilitating field work/data collection and using computer-generated visualizations of data. Using real-time or archived data (39%) ranked fourth, and only 13% said they needed training in a specific scientific field or subject.

Figure 23: Types of Professional Development Needed



RECOMMENDATIONS

Based on the survey data, the following set of recommendations was developed for the GTMNERR Education Program:

1. Ensure that GTMNERR's K-12 educational programs are clearly aligned with state standards and county curriculum requirements and that the programs explicitly help teachers to meet these benchmarks.
2. Within the context of state standards, provide teachers with ready-to-use lesson plans, easy-to-prepare classroom activities, and affordable field trips that increase and enhance the estuary-related instruction received by students.
3. Emphasize the topics of (a) plant and animal adaptations and (b) habitats and land conservation and the skills of (c) scientific inquiry, (d) data collection, and (e) data analysis.
4. Offer K-12 educational services and products at low or no cost to teachers, students, and schools.
5. Determine whether the topic of climate change's effects on coastal systems can be taught in alignment with state standards. If so, provide lesson plans, professional development, guest speakers, and background informational resources with a focus on the local effects of climate change in northeast Florida.
6. Provide teacher professional development trainings focused on conducting hands-on activities in the classroom and outdoors. Keep registration fees as low as possible, and offer CEUs or PLUs.
7. Conduct a strategic marketing campaign to raise teachers' awareness of the GTMNERR Education Program and how it can help them.

Appendix A: Survey Instrument

K-12 Education Needs Assessment



Located in Northeast Florida, the Guana Tolomato Matanzas National Estuarine Research Reserve (GTM Reserve) is one of 28 Reserves within the National Estuarine Research Reserve System (NERRS), which is dedicated to estuary education, research, and stewardship.

The GTM Reserve is conducting a needs assessment to determine what types of K-12 environmental education and teacher professional development programs are most needed by the teachers and students in Northeast Florida. Your input is valuable to us and will allow us to tailor our programs to better meet your needs where appropriate. It is also part of a national effort by NERRS to evaluate education needs.

Thank you for taking the time to complete the survey, which should take about 5 minutes. All survey participants will be entered into a drawing to win one of two prizes:

- **\$100 gift card to Target** or
- **\$50 gift card to Black Creek Outfitters** in Jacksonville.

Survey responses must be received by **Wednesday, June 15**. The first 200 survey participants will be eligible to receive a free, high-quality, reusable water bottle with the GTM Reserve logo.

All of us at the GTMNERR and the National Estuarine Research Reserve System greatly appreciate your valuable input.

If you have questions or need assistance with this survey, please contact Peter Taylor ([Waterview Consulting](mailto:peter@waterviewconsulting.com)) at 207-847-6000 or peter@waterviewconsulting.com. Waterview Consulting is conducting this needs assessment for the GTM Reserve.

K-12 Education Needs Assessment

SECTION 1: EDUCATIONAL SETTING

1. In what education setting(s) do you teach? Check all that apply.

- Public school
- Charter school
- Parochial school
- Non-parochial private school
- After-school program
- Other (please specify):

2. What grade level(s) do you teach? Check all that apply.

- | | | |
|----------------------------|----------------------------|-----------------------------|
| <input type="checkbox"/> K | <input type="checkbox"/> 5 | <input type="checkbox"/> 10 |
| <input type="checkbox"/> 1 | <input type="checkbox"/> 6 | <input type="checkbox"/> 11 |
| <input type="checkbox"/> 2 | <input type="checkbox"/> 7 | <input type="checkbox"/> 12 |
| <input type="checkbox"/> 3 | <input type="checkbox"/> 8 | |
| <input type="checkbox"/> 4 | <input type="checkbox"/> 9 | |
- Other (please specify):

3. In what county do you teach?

4. In what city/town do you teach?

5. At what school do you teach?

6. Approximately what percentage of students in your school or program identify with the following racial/ethnic groups?

	0%	1-20%	21-40%	41-60%	61-80%	81-100%
White	<input type="radio"/>					
Black or African American	<input type="radio"/>					
Hispanic, Latino, or Spanish Origin	<input type="radio"/>					
American Indian or Alaska Native	<input type="radio"/>					
Asian	<input type="radio"/>					
Native Hawaiian or Other Pacific Islander	<input type="radio"/>					

SECTION 2: TEACHING PRACTICES

Please note the following definitions for terms used in the survey.

- *Estuary*: An estuary is a semi-enclosed coastal body of water where fresh and salt water meet and mix.
- *Watershed*: An area of land where all the water drains to a common place.
- *Ocean*: Related to a system of open-ocean habitats, characterized by exposure to wave action, tidal fluctuations and ocean currents.

7. How many class or activity periods of estuary, watershed, and/or ocean instruction do your students receive in a typical school year?

	None	A portion of 1 class	1-2 classes	3-5 classes	6-15 classes	More than 15 classes
Estuaries	<input type="radio"/>					
Watershed	<input type="radio"/>					
Ocean	<input type="radio"/>					

8. Think about your plans for your class for the entire year. How much emphasis did you or will you give each of the following?

	Little or no emphasis	Moderate emphasis	Heavy emphasis	N/A
Outdoor experiential activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lab or field work/data collection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Stewardship projects or activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Data analysis, statistics, and probability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scientific inquiry skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. In the last 2 years, have you incorporated opportunities for outdoor exploration activities into your curriculum?

- No
- Yes

10. Do you want to incorporate more outdoor education in your classroom?

- No
- Yes. Please specify what assistance you need to do so:

11. Do you want to incorporate more discussion in your classroom about the effects of climate change on coastal areas?

- No
- Yes. Please specify what assistance you need to do so:

SECTION 3: EDUCATIONAL MATERIALS/PREPARATION

12. There is a National Estuarine Research Reserve (NERR) located in Northeast Florida called the Guana Tolomato Matanzas NERR, which is one of 28 Reserves around the country protected for the purposes of education, research, water-quality monitoring and coastal stewardship. Were you aware that your state has a National Estuarine Research Reserve?

- No
- Yes

13. Have you ever used any of the Guana Tolomato Matanzas Reserve's educational services or products?

- No. Why not? Please specify in comments box below.
- Yes. Which ones? Please specify in comments box below.

Comments:

14. Which of the following topics would you like developed into educational materials that you could utilize to help you meet existing curriculum needs? Please select your top 5 choices.

- Adaptations of Animals & Plants
- Climate Change/Sea Level Rise
- Cultural Heritage Related to Estuaries
- Ecology
- Estuaries
- Fish & Fishing
- Habitats & Land Conservation
- Human Impacts & Stewardship
- Invasive Species
- Ocean Ecosystems/Ocean Literacy
- Resource Management (e.g., prescribed fire or planting native dune vegetation)
- Scientific Research Methods
- Use of Data in the Classroom
- Water Cycle & Watersheds
- Water Quality
- Wildlife
- Other (please specify):

15. From which web resources do you currently obtain estuary, watershed, and ocean information for use in your classroom? Check all that apply.

- NOAA's Education Website: www.education.noaa.gov
- National Estuarine Research Reserve System's Website: nerrs.noaa.gov
- National Estuarine Research Reserve System's Education Website: www.estuaries.gov
- Guana Tolomato Matanzas Reserve's Website: www.dep.state.fl.us/coastal/sites/gtm/
- Florida State government: www.myflorida.com
- NSTA Estuaries Science Guide: sciquides.nsta.org
- EPA Education Website: www.epa.gov/enviroed/
- Wikipedia: www.wikipedia.org
- National non-profit. Which one(s)? _____ (Specify in comments box below)
- Local non-profit. Which ones(s)? _____ (Specify in comments box below)
- Other _____ (Specify in comments box below)
- I do not use web resources.

Comments:

16. Do you foresee a need for new estuary/ocean/watershed related educational materials in languages other than English?

- No
- Yes. Please specify:

17. (a) Which of the following real-time/archived* data sets do you currently use in your teaching? (b) Which of the following real-time/archived data sets would you need synthesized into age-appropriate learning materials and visualizations for your teaching? Check all that apply.

	Currently use	Need synthesized
Algal blooms	<input type="checkbox"/>	<input type="checkbox"/>
Animal tag/tracking	<input type="checkbox"/>	<input type="checkbox"/>
Atmospheric carbon dioxide	<input type="checkbox"/>	<input type="checkbox"/>
Bathymetry/topography	<input type="checkbox"/>	<input type="checkbox"/>
Currents	<input type="checkbox"/>	<input type="checkbox"/>
Dissolved oxygen (DO)	<input type="checkbox"/>	<input type="checkbox"/>
Fish species & abundance	<input type="checkbox"/>	<input type="checkbox"/>
Nutrients	<input type="checkbox"/>	<input type="checkbox"/>
Ocean color	<input type="checkbox"/>	<input type="checkbox"/>
pH	<input type="checkbox"/>	<input type="checkbox"/>
Salinity	<input type="checkbox"/>	<input type="checkbox"/>
Sea level rise	<input type="checkbox"/>	<input type="checkbox"/>
Temperature: air	<input type="checkbox"/>	<input type="checkbox"/>
Temperature: water	<input type="checkbox"/>	<input type="checkbox"/>
Water depth	<input type="checkbox"/>	<input type="checkbox"/>
Water contaminants	<input type="checkbox"/>	<input type="checkbox"/>
Water turbidity (clarity/cloudiness)	<input type="checkbox"/>	<input type="checkbox"/>
Waves	<input type="checkbox"/>	<input type="checkbox"/>
Zooplankton species	<input type="checkbox"/>	<input type="checkbox"/>
None of the above	<input type="checkbox"/>	<input type="checkbox"/>

Other (please specify):

**Note: We're defining real-time data streams as data that you can access as the data are being collected by scientific instruments, or shortly thereafter, to study current conditions or events. Archived data are defined as older data that are still important and necessary for future reference, but are stored and indexed so that they can be easily located and retrieved.*

SECTION 4: TEACHER PROFESSIONAL DEVELOPMENT

18. How many years have you been teaching estuary, watershed and ocean related topics?

	None	Less than 2	2-3	4-5	6-7	8-10	11-15	More than 15
Estuaries	<input type="radio"/>							
Watershed	<input type="radio"/>							
Ocean	<input type="radio"/>							

19. Which professional development trainings have you taken to supplement your estuary/watershed/ocean education? Check all that apply.

- NOAA/NERRS Teachers on the Estuary Training
- Project WET
- Project Wild Aquatic
- Green Eggs and Sand Workshop
- The Jason Project Professional Development
- None of the above
- Other (please specify):

20. In the last three years, how many hours of professional development training in science have you obtained related to estuaries, watersheds and the ocean?

	None	Less than 8 hours	8-16 hours (1-2 days)	17-24 hours (2-3 days)	25-32 hours (3-4 days)	33-40 hours (4-5 days)	More than 40 hours
Estuaries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watershed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ocean	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. Professional development opportunities for teachers sometimes provide CEUs (continuing education units) and/or PLUs (professional learning units). Are these important or required in determining which professional development opportunities you select?

- Not important or required
 Important
 Required

Notes or comments:

22. What factors prevent you from attending professional teacher development? Please check the three that most commonly occur.

- High registration fees
- Travel/transportation constraints
- Food/lodging constraints
- Can't get time off
- No time/too busy
- Lack of administration support
- Training is not relevant to my needs
- No educational credits were offered
- Other (please specify):

23. What type of professional development training related to estuaries do you need? Check all that apply.

- Conducting hands-on activities
- Facilitating field work/data collection
- Using computer-generated visualizations of data
- Using real-time or archived data
- Training in a specific scientific field or topic. Please specify:

SECTION 5: SURVEY CONCLUSION

24. Thank you for completing the survey. Would you like to provide any other information, feedback, or ideas?

25. To be entered to win one of the "thank you" gifts for survey participants, please provide your name and email address. We will not use your email address for any purpose except to contact you regarding "thank you" gifts for this survey, and we will not distribute your email address to anyone.

Name:

Email Address:

Thank you for participating in the K-12 Education Needs Assessment Survey. **Please be sure to click the Submit button below.** We will notify you by email if you are a winner of a gift certificate or water bottle.

We greatly appreciate your input, which we will use to provide the best possible educational programs. We welcome you to make use of our Education Program offerings and to come visit the GTM Reserve.