



**Community Workshop Case Study  
Naples, Florida – June 10, 2005  
Rookery Bay National Estuarine Research Reserve**

**Presenter:** Craig Seibert, Coordinator of Science and Environmental Education for Collier County Public Schools

**How do you define this issue with respect to the health of the Gulf of Mexico?**

The job of the Science and Environmental Education Department is to provide science education that meets Florida's Sunshine State Standards. These standards are the minimum level of understanding for students and they are measured in various ways. The focus of this case study is on education that relates to the Gulf of Mexico, but our department is responsible for all science and environmental education.

Educating students about the Gulf of Mexico is an important job. These students are future leaders. In a short time, they will make decisions about the use of our natural resources. They will help us keep a thriving economy in Southwest Florida and they will hopefully see the Gulf of Mexico as an asset to be carefully managed. The education they receive about the Gulf of Mexico and its environmental and economic significance will shape their perceptions, and their sense of buy-in, to the importance of a healthy Gulf of Mexico.

Over 42,000 students attend elementary, middle and high school in the Collier County system in a given school year. Only approximately 15% or 6000 go on field trips organized by the Science and Environmental Education Department. Student sometimes attend other field trips related to other disciplines. We provide many classroom programs, but research shows that the best way to increase understanding is to provide students with first hand experience with the Gulf, the watershed, and the methodology and technology to understand and analyze real-time data. I know from teaching, that the field experiences made a greater impact on my students than any text book assignment.

Some of the problems with educating this number of students for consecutive years about the Gulf of Mexico and providing adequate field experiences include:

- The Sunshine State Standards do not require Oceanography. There is a greater focus on reading and math.
- Inadequate funding and support for transportation, materials, teachers & fees at field sites.
- Time on field trips is time away from other subjects. Curriculum is not fully integrated.

**Where do you go for information and assistance on this issue?**

At every level and every grade we leverage our funding with partnerships and the work of talented teachers to provide the best science education within our means. The following is a summary of the resources, experiences and tools that we use to educate children of all ages. Field trips relate to water and they follow the watershed and analyze data, looking for changes.

- **District Level-** The school district will spend at least \$250,000 on environmental education next year during our textbook adoption process. The instructional materials are on a 6 year cycle.
- 1. **Partnerships include:** All the members of the Collier Environmental Education Consortium (CEEC) help in one way or another to advance the environmental issues in the school system. This organization is an excellent network of local agencies. Big Cypress Basin-South Florida Water Management District (BCB-SFWMD), Conservancy of Southwest Fl., Rookery Bay National Estuarine Reserve, Corkscrew Swamp Sanctuary, Naples Preserve, 4H, Corkscrew Regional Ecosystem Watershed (CREW Marsh), and Solid Waste Management.
- **Elementary Level-**Field trip opportunities for 800-1000 students/year.

1. The Field Trip Specialist Program now has a water theme and covers how the watershed in Southwest Florida is affected by human interaction.
  2. Water quality sampling is taken on every field trip and placed on an excel spreadsheet for all the teachers to access during the year.
  3. Each field trip now has pre and post site activities which encourage the students to delve deeper into problems that are occurring in nature.
  4. The CEEC organization was instrumental in making the field trip guides and teacher guides for the program.
- **Middle School Level-** Field trip opportunities for CCPS students 1200-1500 students/year.
    1. We currently have one major field trip at 6<sup>th</sup> grade level in the Everglades and are looking to add more trips at different middle school grade levels. This trip is very popular with students and teachers. The students experience the Everglades ecosystem first hand.
    2. Collier County Public Schools are going to go through a science textbook adoption K-12 next year and we will add Marine Science into the curriculum for middle school.
    3. We have added Graphing Calculators and Calculator Based Labs (CBLs) into the curriculum to improve technology in the science classroom. We can monitor almost any environmental condition with these tools. (pH, salinity, dissolved oxygen, temperature, humidity, pressure, turbidity, sound, voltage, carbon dioxide and light).
    4. Four schools have weather station capabilities and are listed on the local TV stations as sites for weather information. (GVMS, IMS, CMS, and LOE)
    5. We are currently involved in two national programs: NASA Explorers School and the JASON Project.
  - **High School Level-** Field trip opportunities for CCPS students 1000-1200 students/year.
    1. Environmental Science was started 6 years ago in the high school and since that time we have also added Advanced Placement Environmental Science.
    2. Field trip opportunities include: Water treatment plants, Landfill, Big Cypress Natl. Preserve and the CREW Marsh.
    3. Marine Science was started in 1990 and all high schools have this program and have expanded to include Honors Marine Science. All the Marine Science classes attend field trips to Rookery Bay. They perform hands on activities on the boats and do water quality sampling, seining and using otter trawls.

**What constraints have kept you from helping to resolve this issue?**

- The transportation budget for field trips county wide in our public schools are \$16,000 and we receive another \$8000 from South Florida Water Management District. This money is used to cover the costs of High School Marine and Environmental Science classes, Middle School SWAMP trips for 6<sup>th</sup> grade, and four field trips in the elementary schools in grades 3 and 4. The elementary trips are located at the following locations: 3<sup>rd</sup> grade at Conservancy and CREW, 4<sup>th</sup> grade at Tiger Tail Beach and Rookery Bay. This year the budget was exceeded by \$3000. The budget continues to be a problem as we grow in student population.
- Some of the private local agencies need to charge for services and our district does not pay for entrance fees to any agency.
- We need more time devoted to science in the curriculum to cover the Sunshine State Standards. (SSS)
- We need to have Oceanography added to the SSS in Florida.

**What role should the public play in helping to resolve this issue?**

Support science programs that help improve science literacy such as, Science Fairs, Invention Conventions, Envirothons, and individual school based science projects. Help can come in many ways that are not financial in nature. Judging, mentoring, writing grants, and classroom visitations that involve your area of expertise.

**What role should the government play at the local, state, and/or federal level in helping to resolve this issue?**

- Increase science education funding. (Federal and State) Local funding is based on federal and state funding.
- Increase high cost lab money given to each district.

- Place importance on science education by mandating equal time spent in the elementary classroom on science just as it has for reading and math.
- Increase the time spent on science during the daily schedule.



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**Presenter:** Mike Bauer, Ph.D., Natural Resource Manager, City of Naples

**What are your issues of concern with respect to the health of the Gulf of Mexico?**

Naples, as all cities on the Gulf Coast, contributes to the pollution of the Gulf of Mexico in the form of stormwater runoff. Pesticides, fertilizers, metals, bacteria, and other materials wash off the land and enter the water from lawns, golf courses, streets, parking lots and other impervious surfaces. The City has 28 stormwater retention lakes and ponds, some of them more than 50 years old. While they still hold back water, they no longer have the capacity to filter pollutants and likely create bacteria and algae problems that exacerbate pollution and decrease dissolved oxygen. Delivery systems from these lakes go either directly into the Gulf or into Naples Bay and then into the Gulf. The city needs to redesign its stormwater system, clean up the lakes, and filter the water through either filter marshes or other structures prior to its entry into our two natural water bodies. This will require a significant capital expenditure.

Naples Bay, which feeds directly into the Gulf, has an additional problem. Its watershed has changed from a pre-development 10 square miles to a current 120 square miles as a result of freshwater entering it from the Golden Gate Canal system. The Bay thus has two major concerns: freshwater stratification and the previously mentioned stormwater runoff. With the growing need for freshwater, governments are now beginning to talk about utilizing the freshwater in the Golden Gate Canal. While that will eliminate the stratification issue, it will also reduce the current flushing effect that water has on the pollutants running into the bay. Thus, the concentrations of pollutants in the bay will increase.

**Where do you go for more information (e.g. technical, financial, etc.) about these issues?**

- Big Cypress Basin Board
- South Florida Water Management District
- Collier County Stormwater
- City of Naples – Storm Water Dept.
- Lee County Hyacinth Control
- EPA
- Rookery Bay National Estuarine Research Reserve

**What constraints have kept you from helping to resolve these issues?**

- Money
- Need for design and engineering applications
- May be constraints from homeowners who live on the lakes and are not aware that they are retention ponds in need of restoration
- Lack of physical space in Naples

**What role should the public play in helping to resolve these issues?**

- Political support
- Educating themselves and their neighbors

**What role should the government play at the local, state, and/or federal level in helping to resolve these issues?**

- Local government should do the work – their expertise of labor and technology support
- Locals government should do the education
- State government could be a potential funding source and also for expertise since they have done this work in other locations
- Federal government could be a potential funding source and also support in terms of what has been done in other locations



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**Presenters:** Jack Wert, Executive Director, Collier County Convention & Visitors Bureau and Gary McAlpin, PE, Coastal Projects Manager for Collier County

**What are your issues of concern with respect to the health of the Gulf of Mexico?**

It is the job of Collier County Convention and Visitors Bureau to attract visitors to Naples, Marco Island and the Everglades through advertising, public relations, trade shows and sales missions. These visitors expect clean and safe beaches, excellent Gulf water quality, navigable waterways, and a lush tropical landscape with European charm and Caribbean-style flair. Visitors seek out opportunities to snorkel, scuba dive, boat and fish. In addition, they may also go birding, kayaking, or shelling. In short, visitors expect and deserve a quality experience on our beaches and in our Gulf waters. An estimated \$1.1 billion tourism economic impact in Collier County includes purchases by visitors of fuel, hotels and restaurants and includes all associated jobs, including expenditures made by these employees. Besides jobs, residents also depend heavily on tourism for a myriad of business opportunities and to offset the costs of many community services.

Tourism in Collier County faces many challenges. For example, beach erosion, inlet filling, nutrient runoff and red tide affect both the health of the Gulf and our appeal to tourists. Visual appeal of the beaches and waters are very important and visitors expect the Gulf to look as appealing in person, as it does in advertising. When faced with an unattractive site at the beach or on the water and a lack of accurate information, the visitor will infer the worst. Negative visitor experiences can result in less tourism, which would have a significant negative impact on the economic health of our area.

**Where do you go for more information (e.g. technical, financial, etc.) about these issues?**

The responsibility for tourists' positive Gulf experiences and marketing to visitors lies with many groups, for example:

- Local governments
- Stakeholder groups
- Regulatory agencies
- Destination marketing organizations
- Tourism industry
- Citizens
- Visitors
- Coastal Advisory Committee

- City Beach Committees
- Tourist Development Council
- Convention & Visitors Bureau
- Parks & Recreation Advisory Committee
- Environmental Services Department
- County Commission

**What constraints have kept you from helping to resolve these issues?**

- Lack of control of environmental events such as hurricanes and Red Tide
- Lack of access to beaches and waterways in some parts of the County
- Misunderstanding by visitors of natural environmental occurrences such as Red Tide or rip tides
- Misunderstanding of environmental regulations designed to protect resources

**What role should the public play in helping to resolve these issues?**

- Funding from user fees such as parking and boat launch fees
- Be kind to tourists and educate them when possible
- Support tourism efforts to maintain a sound local economy

**What role should the government play at the local, state, and/or federal level in helping to resolve these issues?**

- State and federal funding from tourist development taxes and special taxing districts (MSTU) should be continued
- Continued support from local government for tourism initiatives such as advertising and marketing to get tourists to the area and also for events and festivals once tourists arrive
- Continued support for beach re-nourishment and inlet dredging when needed to support tourism
- Support for visitor access to certain sites