Charlotte Harbor Estuaries Volunteer Water Quality Monitoring Network (CHEVWQMN) Program; 1998-2020

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ABSTRACT

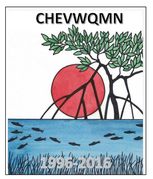
Water quality in the Charlotte Harbor Aquatic Preserve complex is influenced by a wide variety of factors. Each estuarine region has a unique watershed with varying bathymetry, hydrological regimes, and freshwater sources. Water quality data from the CHEVWQMN program is graphed by region, season (wet vs dry), and parameter of interest. The 1998-2020 data show higher mean values for color, total nitrogen, and phosphorous in the Upper Charlotte Harbor area than the other regions. These values are consistently elevated in the wet season due to freshwater influences from the Peace and Myakka rivers. The data also shows higher turbidity levels in Estero Bay compared to other estuaries. Significant turbidity values during the dry season are attributed to wind re-suspending the fine sediments in Estero Bay's shallow waters. Upper Lemon Bay and its tributaries exhibit high levels of chlorophyll, phosphorous, and nitrogen, as well as the highest mean value of fecal coliform bacteria within the study area during both dry and wet seasons. All estuarine regions show higher levels of chlorophyll and nitrogen in the rainy season. Estero Bay is the only region with slightly higher phosphorous values during the dry season.

BACKGROUND

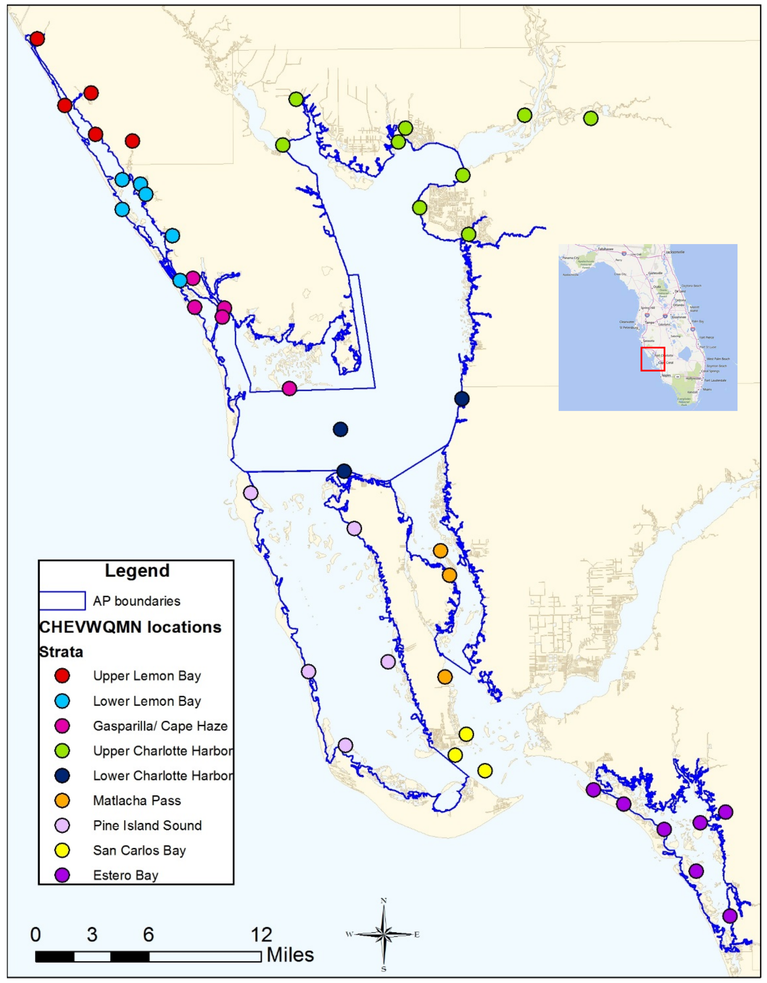
Citizen scientists with the Charlotte Harbor Estuaries Volunteer Water Quality Monitoring Network (CHEVWQMN) have been collecting technically-sound water quality data since 1998. Each month, more than 80 volunteers sample for nineteen field and lab parameters at 46 locations. This provides a snapshot look at water quality across three counties and six aquatic preserves. Managed by the FDEP Charlotte Harbor Aquatic Preserves (CHAP) office, this program provides high quality, invaluable data for regulatory and educational purposes and for the management of six local aquatic preserves. The data is uploaded into the federal STORET/WIN database for use in the state's Total Maximum Daily Load program, impaired waterbody status determinations, and the FDEP numeric nutrient criteria. The data is available online through the Water Atlas and by request through the CHAP office. The volunteers, DEP's Tallahassee Laboratory, Estero Bay Aquatic Preserve, Charlotte Harbor Environmental Center and the Charlotte Harbor National Estuary Program are invaluable partners contributing to the success of the program.

OBJECTIVES

- Collect and report on current water quality status and trends by each strata.
- Make data available to stakeholders, agencies, general public and elected officials through the federal STORET/WIN database and the CHNEP Water Atlas: http://www.chnep.wateratlas.usf.edu/chevwqmn
- Involve the public by training citizens to collect consistent and technically-sound water quality data.
- Generate an awareness of water quality throughout the CHAP area and educate others about how they can help preserve and protect water quality.



SAMPLING LOCATIONS



METHODS

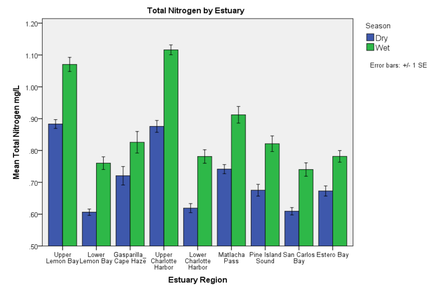
Field parameters collected on site:

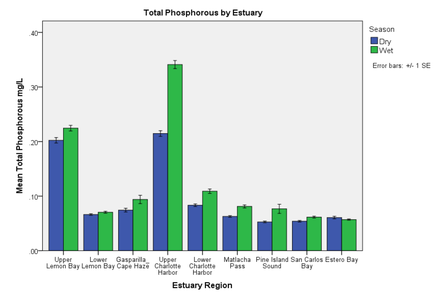
- Water clarity and total depth
- Weather and water conditions
- Temperature
- Dissolved oxygen
- pH
- Salinity and Conductivity

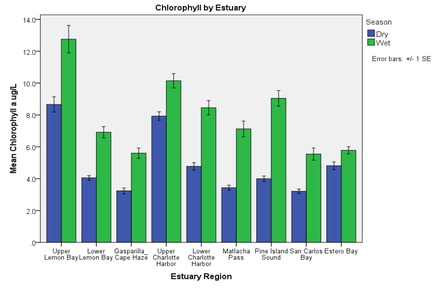
Samples collected for lab analysis:

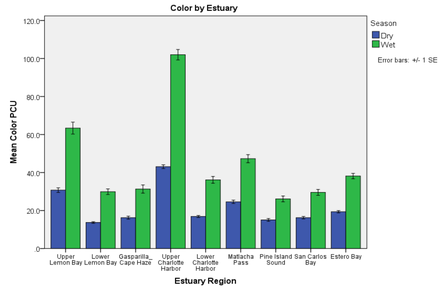
- Chlorophyll a (corrected)
- Turbidity
- Color
- Phosphorous
- Total nitrogen
- Fecal coliform bacteria

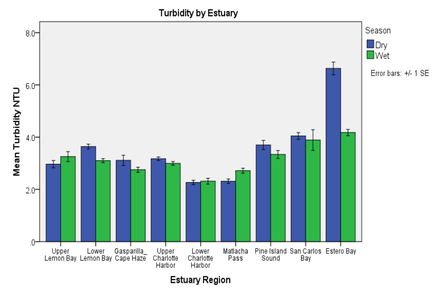
RESULTS

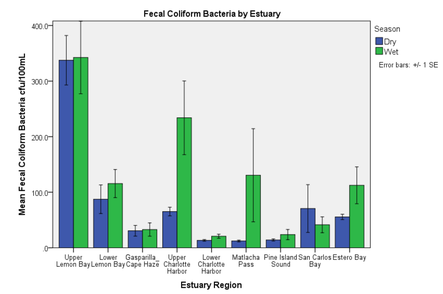












- Dry Season= November-May
- Wet Season= June-October

CONCLUSIONS

- Coordinating and training volunteers to collect water quality samples has produced high quality, valued data while engaging citizen scientists in stewardship of the aquatic preserves.
- The data is used for a variety of purposes, including providing background health and status of the estuaries for education and management, scientific research, and for consideration regulatory criteria implementation.
- This program would not be possible without the continued support of the following partners: