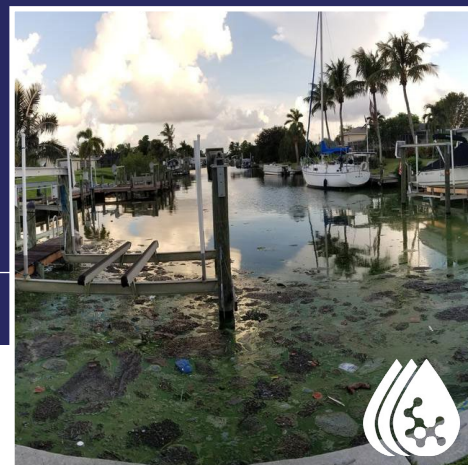




Cataloging the Case for Intervention for Unprecedented Harmful Algal Blooms

CALUSA WATERKEEPER



 Harmful algal blooms shuttered beaches, docked fishing boats, and triggered catastrophic fish kills and marine mammal stranding events in Southern Florida in 2018. While these blooms often happen naturally, a perfect storm of anthropogenic-driven activities had escalated the frequency and severity of these toxic events. Only with careful qualitative and quantitative monitoring can scientists confirm the relationship between the human activity and blooms. Calusa Waterkeeper has trained dozens of Rangers to traverse their waterways to document possible HABs and report repercussions of their presence. This information has been folded 

Can community engagement through monitoring motivate legislative action to mitigate HABs?

In 2018 a perfect storm of conditions led to massive algae blooms across Florida, shuttering beaches and causing massive fish kills. HABs, a naturally occurring phenomenon, are exacerbated by agricultural and urban nutrient pollution, warming water from climate change, and poor water infrastructure management. The presence and frequency of HABs has skyrocketed at the same time ~~at~~ rapid urban development has doubled the local resident population.

The increased population density has strained the already stressed natural ecosystem through increased water consumption, destroyed habitat, and emptied more nutrient dense runoff into the Caloosahatchee River, creating a perfect storm for HAB occurrences.

This ecosystem is no stranger to human manipulation. The Army Corps of Engineers manages Lake Okeechobee levels - the main waterbody emptying into the Caloosahatchee River. Flow levels inevitably impact downstream ecosystem health and the Calusa Waterkeeper sued the Army Corps of Engineers in 2019 for neglecting the downstream effects on wildlife, public health, and even South Florida's economy.

Monitoring for algal blooms requires sampling for cyanobacteria and the dinoflagellate *Karenia brevis*, also known as red tide, two organisms that release toxins capable of killing wildlife and creating hazardous public health conditions. Community scientists volunteer to monitor the vast network of canals, lakes, and other water bodies, filling resource gaps across the monitoring network.

Using geo-located observational data, 82 Water Rangers documented potential harmful algal blooms, documented secchi depths, and provided qualitative information on the impact blooms have on the local ecosystem and economy. The collected data deepened the understanding of the issue and reinforced the conversations playing out in court about how to regulate use of local water resources.



Role of the Calusa Ranger Program

Volunteers with Calusa Waterkeeper attend a two day training session on how to monitor and the frequency with which they should head out to take their water quality samples. The monitoring program provides irrefutable visible evidence of potential harmful algal blooms and the repercussions of their presence in southern Florida. The monitoring program fills a critical gap by closing holes and broadening the monitoring network as well as building an atlas of verifiable data on the extent of the problem. Furthermore, the monitoring program engaged community members harmed by the presence of these HABs, giving them a sense of purpose for contributing to the solution to the preventable problem.



About Calusa Waterkeeper

Calusa Waterkeeper, Inc. is a non-profit organization dedicated to the protection of the Caloosahatchee River & Estuary, Lake Okeechobee, Nicodemus Slough, Charlotte Harbor, Estero Bay, the near-shore waters of Lee County, and their watersheds, through education and promotion of responsible use and enjoyment by all people.

Calusa Waterkeeper monitors the health of the regional waters – the Caloosahatchee River and Estuary, Estero Bay, Lake Okeechobee, Charlotte Harbor and our beaches in collaboration with dedicated volunteers. Government agencies fail to monitor adequately and address water quality issues. The data collected informs the public and government officials on water quality issues.

Nexus to WDC

Technical services produced for water monitoring efforts elevated the impact of the Calusa monitoring network. Volunteers using a geo-located application could feed their observations directly to the Calusa Waterkeeper as they also appeared immediately on a portable map. With less time coordinating the data management and collection of the data, the Waterkeeper could spend more time in Tallahassee and with partners using the data to advocate for better management of the lake and river flows.



Distributed Data
Management

photo credit: Ranger Monitoring by Bradley Quandt via Water Reporter

Use Case Summarized by

Erin Hofmann, Project Strategy & Outreach

The Commons, WDC Steering Committee Member



WATER DATA COLLABORATIVE