



## PSA-014-Red Tide Warning System-World's Oceans

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Vic Ferguson

The World Federation for Coral Reef Conservation 281.971.7703 P.O. Box 311117 Houston Texas 77231

12.12.15

# GCOOS Plan Lays Framework for Red Tide Warning System



09 DECEMBER 2015

Photo credit: NOAA

The Gulf of Mexico Coastal Ocean Observing System Regional Association (GCOOS-RA) has released a new plan that, when fully implemented, will help protect humans and marine life from the negative impacts caused by harmful algal blooms, or HABs.

The goal of the Harmful Algal Bloom Integrated Observing System (HABIOS) Plan is to establish a sustained observing system as part of the U.S. Integrated Ocean Observing System (IOOS®) to support and enhance HAB management and monitoring and reduce and mitigate the negative impacts that HABs have on human health, marine organisms and coastal communities.

At normal levels, marine algae support healthy ecosystems by forming the base of the food web and producing oxygen. Most species are beneficial to the ecosystem and to humans. However, there are some algal species that produce toxins. When these



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species bloom, meaning they reproduce or accumulate far beyond their normal levels, their toxins can harm humans, other animals and the environment.

HAB outbreaks in coastal U.S. waters have resulted in staggering economic losses to recreational and commercial fisheries, recreation and tourism. They've been known to send people to hospitals, cause massive fish kills, kill or sicken protected or endangered sea turtles, sea birds, dolphins and manatees and result in increased costs for coastal managers dealing with their effects.

"The Gulf of Mexico has multiple existing systems that monitor and forecast the development and movement of HABs," said Dr. Barbara Kirkpatrick, Executive Director of GCOOS-RA, who is also Co-Chair of the National Harmful Algal Bloom Committee. "The systems are operated by state, federal and local agencies and research universities and laboratories and they tend to operate independently of each other -- meaning that we're not taking full advantage of the capabilities we currently have Gulf wide.

"In the Gulf of Mexico, it's impossible to control where and when blooms will develop, how long they will last or to stop them once they develop. But by developing a comprehensive plan to better deploy the tools we currently have, know where we need to add tools, continue to develop new technologies and methods to identify the causes and effects of harmful algal blooms and develop standardized reporting methods, we can help people stay healthy and help coastal communities be better prepared for red tide impacts. That's what HABIOS will do when it's fully operational."

The Gulf's most well-known species of harmful algae is *Karenia brevis*, which causes red tides in Texas, Florida and other Gulf states and is currently impacting Florida's Panhandle and communities in Florida's central and south west coast. Climate change is also expected to increase the frequency and severity of HAB outbreaks, as well as bring outbreaks of additional harmful species, like *Dinophysis*. *Dinophysis* can cause diarrhetic shellfish poisoning in humans and was identified in Texas by the Imaging Flow CytoBot (IFCB) for the first time in 2008. It has been identified as an emerging threat.

This instrument, developed by Woods Hole Oceanographic Institution, maintained by Texas A & M University and housed at the University of Texas, combines high-resolution video and a flow cytometer to capture images of plankton species and identify harmful varieties. By feeding real-time data to the GCOOS data portal, the IFCB has provided an early warning for numerous toxic blooms since 2008.

"In Texas, this imaging tool gave us an early warning about a harmful algal bloom in 2008, allowing us to temporarily close oyster harvesting and keep affected oysters out of the marketplace," said Kirk Wiles, Manager, Seafood & Aquatic Life Group, Texas Department of State Health Services. "It's a valuable public health tool that has absolutely stopped illness outbreaks."

The HABIOS plan was developed following several HAB workshops attended by hundreds of stakeholders and system managers and sponsored by GCOOS and the Gulf of Mexico Alliance. During these meetings, user communities and managers identified critical deficiencies that can be improved through the development of a more comprehensive and integrated approach that will improve the ability to detect HABs more quickly and provide more accurate and timely predictions of potential impacts, which will allow coastal communities to better prepare.

"Harmful algal blooms can wreak havoc on coastal communities and coastal economies," said Zdenka Willis, IOOS Director. "We have limited funding nationally to develop and implement new systems to protect residents and deal with the effects of HABs on the environment. Working together under the framework laid out in the HABIOS plan, we will address this issue through collaboration, data sharing, public outreach and education among all agencies and organizations.

To read the plan, click [here](#).

Photo Credit: NOAA



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*The World Federation for Coral Reef Conservation 281.971.7703 P.O. Box 311117 Houston Texas 77231*  
*Vic Ferguson*

*The World Federation for Coral Reef Conservation*

*Executive Director*

*P.O. Box 311117*

*Houston, Texas 77231*

*vic.ferguson@wfcrc.org*

*www.wfcrc.org*

*281.886.7428 (office)*

*281.309.1201 (cell)*

*The only thing necessary for the triumph of evil is that good men do nothing"....Edmund Burke*