NOAA'S NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE
FY21 HARMFUL ALGAL BLOOM PROGRAM AWARDS

PCMHAB: Application of Clay Flocculation for Removal of *Karenia brevis* Cells and Toxins in Southwest Florida Coastal Waters

Institutions: Woods Hole Oceanographic Research Institution, Florida Fish and Wildlife Commission, Mote Marine Laboratory, University of Central Florida, and University of South Florida

Project Period: September 2021 - August 2025

Location: Florida

FY21 Funding: $449,750

Total Anticipated Funding: $2,249,325

Project Summary: The goal of this project is to demonstrate the effectiveness and value of clay flocculants as a technology to control *Karenia brevis* blooms in the coastal environment of Southwest Florida by removing algal cells from the water column. The method is used often in other countries that also suffer from HABs. The team will first use both laboratory and mesocosm field experiments to demonstrate how efficient the clay particles are at binding with the target cells. These experiments will also look into the impact the clay particles may have on non-target organisms and the ecosystem as a whole. Finally, the researchers will test the scalability and cost efficiency of the technique at larger (≥ 1 acre) spatial scales. [Learn more](#).

PCMHAB: Enhancing the Capabilities of the 3rd Generation Environmental Sample Processor (3G ESP) for HAB Toxin Detection Through Integration with an Uncrewed Surface Vehicle (USV) and Uncrewed Aircraft Systems (UASs)

Institutions: NOAA GLERL, Cooperative Institute for Great Lakes Research, NOAA AOML, Louisiana State University, Monterey Bay Aquarium Research Institute

Project Period: September 2021 - August 2024

Location: Ohio and Louisiana

FY21 Funding: $234,754

Total Anticipated Funding: $1,499,482

Project Summary: The goal of this project is to solve the depth limitation (> 5 m) of sampling for HAB toxins in traditional autonomous underwater vehicles. The team will develop and test a coupled monitoring system utilizing both an uncrewed surface vehicle (USV) and an uncrewed aircraft system (UAS). The USV will provide continuous autonomous sampling in the nearshore as shallow as 1 m. Because often HAB toxicity is not correlated to HAB biomass, the UAS will use single point spectrometers and hyper- spectral cameras to determine HAB biomass. The coupled system will be tested in the Western Basin of Lake Erie, Ohio and Lake Pontchartrain, Louisiana. The coupled system will provide near real-time information for effective decision making to resource managers on beach recreation safety and to water treatment plant operators on drinking water quality. [Learn more](#).

MERHAB: Shellfish Killers - An Optimized Early Warning Program for the Mitigation of HAB Impacts on Shellfish in the Pacific Northwest

Institutions: Washington State Sea - Grant University of Washington, Northwest Indian College, and Washington Department of Fish and Wildlife

Project Period: September 2021 - August 2025

Location: Washington

FY21 Funding: $149,974

Total Anticipated Funding: $449,919

Project Summary: The project will identify and characterize the distribution of phytoplankton species that produce yessotoxins and other shellfish-killing toxins; establish and validate a tiered early warning system, including a web-based mapping system for toxic events and routine microscopy by SoundToxins and Olympic Region Harmful Algal Bloom Monitoring (ORHAB) partners and rapid toxin screening protocols in seawater; determine threshold levels of shellfish-killing HABs that harm or kill bivalve shellfish; inform and educate growers and managers about risks from these HAB events; and transition the HAB early warning enhancements to state funding. [Learn more](#).