11TH U.S. SYMPOSIUM ON HARMFUL ALGAE

UPDATES FROM A COASTAL MAINE BIOTOXIN FORECASTING SYSTEM WITH INSIGHTS INTO PATTERNS OF ALEXANDRIUM AND PSP OVER SPACE AND TIME

Coastal Maine faces annual shellfish harvesting closures due to paralytic shellfish poison (PSP) outbreaks. Strong predictive power has been found by training a machine-learning based classifier to predict PSP toxicity with a one-week lead time using prior consecutive measurements. Toxicity classification predictions are site-specific, and uncertainty is provided in the form of probability of closure-level toxicity. The forecast system was first piloted during the 2021 season with a small group of stakeholders including shellfish industry members and managers. During the 2022 season, the forecast has been made available to the public, still in an experimental mode. Through the development of this forecasting system, relationships between Alexandrium abundance and PSP toxicity have been found. Annual variation in the severity of PSP is also seen, in addition to toxicity distribution across the Maine coast.

JOHNATHAN EVANILLA, RESEARCH TECHNICIAN | BIGELOW LABORATORY FOR OCEAN SCIENCE

Johnathan Evanilla is a forecasting researcher at Bigelow Laboratory for Ocean Sciences in East Boothbay, ME. He graduated from Connecticut College in 2019 with a dual BA in Computer Science and Biological Sciences. Johnathan now enjoys collaborating with stakeholders to develop a useful early-warning system for PSP in Maine. Outside of work he also loves spending time on the water fishing, with a little bit of surf and snow mixed in as well.

JEVANILLA@BIGELOW.ORG

Co-Authors:

Nicholas R. Record1, Benjamin Tupper1, Stephen D. Archer2, Kohl Kanwit3, Bryant Lewis3, Craig Burnell2, Carmen Cartisano2, David W. Miller3.

1Tandy Center for Ocean Forecasting, Bigelow Laboratory for Ocean Sciences;

2Bigelow Analytical Services, Bigelow Laboratory for Ocean Sciences;

3Bureau of Public Health, Maine Department of Marine Resources.