Print

Northeast PSP: Current Status and History

New England Harmful Algal Bloom / Red Tide information

Donald M. Anderson

Purpose

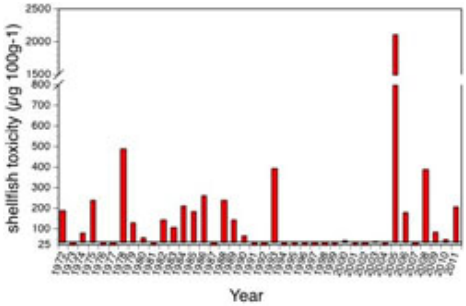
This website is intended to provide background information as well as current observations and commentary on the status of Paralytic Shellfish Poisoning (PSP) outbreaks in the northeast United States. The content is provided for informational purposes only, and should not be used to guide recreational or commercial decisions regarding the harvesting of shellfish or other fisheries products within the region.

Enlarge Image

Deploying ESPdon in the WHOI deep well for testing prior to deployment in the Gulf of Maine. (Bruce Keafer, WHOI)

2014 Seasonal Forecast

Models predict a modest bloom, similar in magnitude to 2007. However, recent oceanographic observations from sensors deployed on a buoy in the middle of the Gulf of Maine suggest that the bloom may be even smaller than those predicted by the model, similar to 2010.



Enlarge Image

Maximum shellfish toxicity in Massachusetts Bay, 1972-2011. (WHOI / D. Anderson laboratory)

History of PSP in New England

Prior to 1972, PSP toxicity was historically restricted to the far eastern sections of Maine near the Canadian border, with the first documented PSP in Maine in 1958. In 1972, a massive, visible red tide of *Alexandrium fundyense* stretched from southern Maine through New Hampshire and into Massachusetts, causing toxicity in southern areas for the first time. Virtually every year since the 1972 outbreak, western Maine has experienced PSP outbreaks, and on a less-frequent basis, New Hampshire and Massachusetts have as well. This pattern has been viewed as a direct result of *Alexandrium* cysts being retained in western Gulf of Maine waters once introduced there by the 1972 bloom. Between 1994 and 2004 there was virtually no toxicity in Massachusetts Bay (see figure).

Significant regional-scale *Alexandrium fundyense* blooms occurred in both 2005 and 2006. The 2005 event was longer, extended further to the south and had higher cell concentrations and shellfish toxicities. In 2007, toxicity was restricted to sections of Eastern and Western Maine. A large, offshore bloom was documented on Georges Bank as well. In 2008, a significant regional-scale *Alexandrium fundyense* bloom occurred. Toxicity was particularly high in eastern Maine but also extended south to Massachusetts Bay and parts of Cape Cod. An offshore bloom of the species was also detected on Georges Bank. It is noteworthy that this bloom was predicted several months in advance based on the abundance of *A. fundyense* cysts in Gulf of Maine sediments (see press release). The 2009 bloom began with the "typical pattern" of toxicity in and near Casco Bay, expanding to western Maine, New Hampshire, and Massachusetts with a subsequent decrease in early June. However, mid to late June showed a dramatic increase in cell abundance in the Bay of Fundy, and shortly thereafter in eastern Maine. Toxicity then spread rapidly along the entire Maine coast, which had very high levels of toxicity through much of the summer. A "red water" bloom of *A. fundyense* was observed in early July near Portsmouth, NH. The 2010 bloom season was marked by low toxicity and low numbers of cells throughout the region. 2011 proved to be a moderate year, with closures in western Maine to the south shore of Boston, while eastern Maine saw closures in the easternmost regions, bordering Canada. 2012 was also a moderate year with toxicity throughout most of eastern Maine and western Maine down to the New Hampshire / Massachusetts border. Parts of Massachusetts Bay were also closed. 2013 was marked by low toxicity thorughout the region.

Details on these bloom events are provided in separate sections, accessed through the navigation buttons to the left.

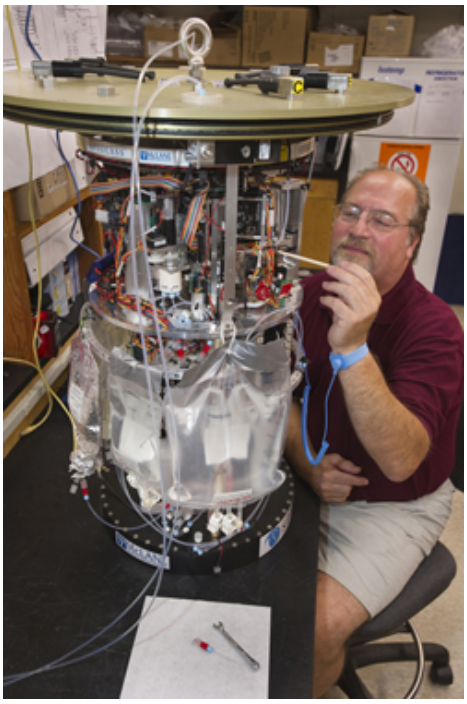
Enlarge Image

2 liters of a sample of 'red water' poured through a 20 ?g sieve. (WHOI / B. Keafer)

Acknowledgements

This work was funded in part by grants from the National Science Foundation, the National Institute of Environmental Health, and the National Oceanic and Atmospheric Administration. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of these funding agencies.

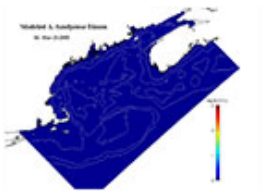
Last updated: April 7, 2014



Enlarge Image

Bruce Keafer works with the Environmental Sample Processor (ESP). (T. Kleindinst)

Related Multimedia



Modeled Alexandrium bloom
An example of a simulation of the 2005 New England Alexandrium bloom. *Credit to Ruoying He, NCSU and Dennis McGillicuddy, WHOI*

» View Video (Quicktime)

Copyright ©2007 Woods Hole Oceanographic Institution, All Rights Reserved.
Mail: Woods Hole Oceanographic Institution, 266 Woods Hole Road, Woods Hole, MA 02543, USA.
E-Contact: info@whoi.edu; press relations: media@whoi.edu, tel. (508) 457-2000
Problems or questions about the site, please contact webdev@whoi.edu