

Some HAB toxins are a thousand times more potent than cyanide, and toxin levels contained in a single shellfish can be fatal to humans.



Nimilchik Charters



Ron Bader / Moss Island Oyster Farm



Corey Arnold

HABs and PSP – “Hot” Topics

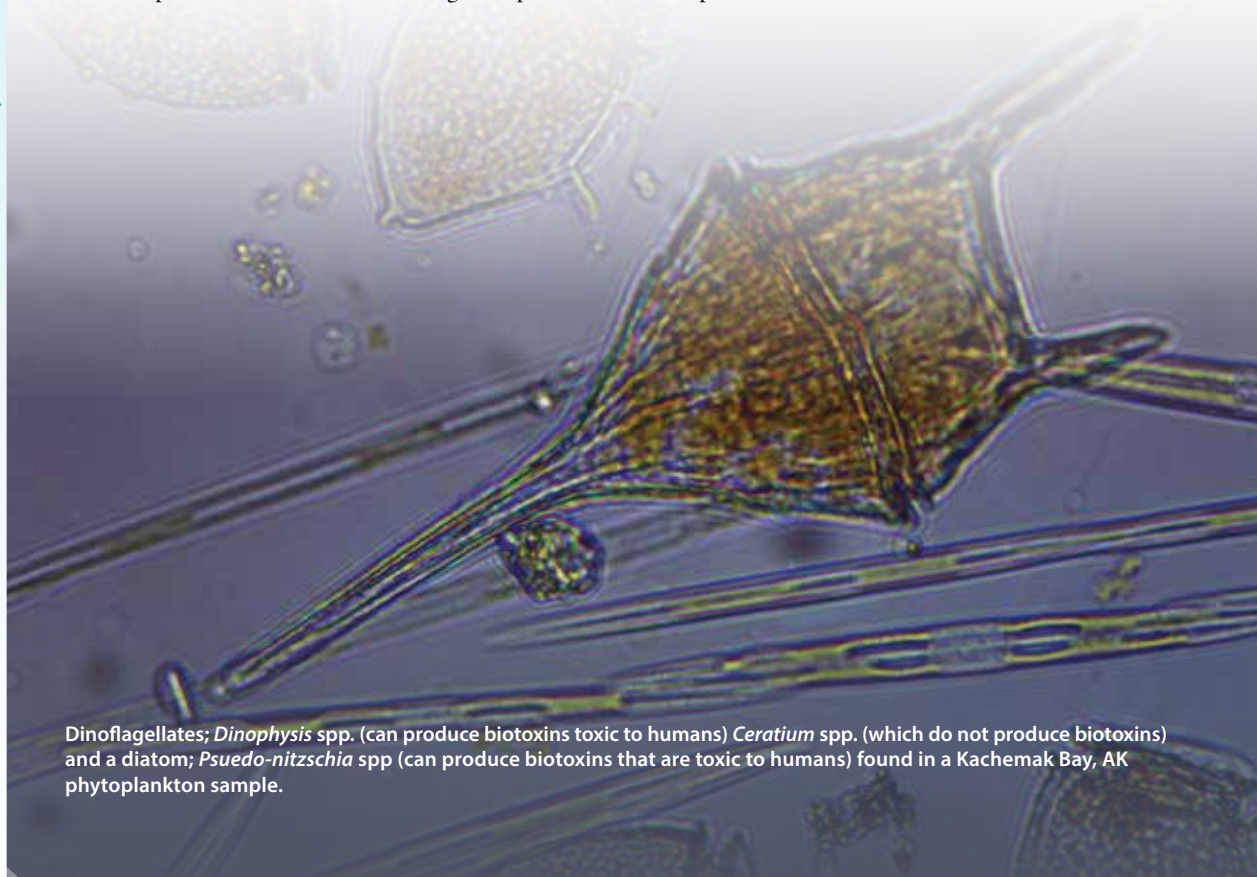
What are HABs and why are they a “hot” topic these days in Alaska?

Harmful algal blooms, or HABs, occur when small algae (also called phytoplankton) grow rapidly to large numbers in the water (a “bloom”), while producing toxic or harmful effects on people, fish, shellfish, marine mammals, and birds. Several environmental conditions may contribute to excessive growth of these organisms. Most species that cause harmful effects grow slower at colder temperatures and faster in warmer temperatures.

Alaska oceans have experienced an increasing number of HAB events in recent years, raising concerns among coastal communities for whom clams, mussels, oysters and other shellfish have long been a staple food through either commercial or recreational harvest. HABs can occur in site specific locations resulting in toxic shellfish in one bay and unaffected shellfish in another. Sustained warm surface water temperatures are thought to be a contributing factor to blooms.

To help address the need for information sharing with existing HABs monitoring efforts in Alaska, AOOS worked with partners Kasitsna Bay Lab and the Kachemak Bay National Estuarine Research Reserve to create a webpage titled Harmful Algal Bloom Information System for Kachemak Bay, Alaska. This page provides current water temperatures in Kachemak Bay and diagrams indicating how the temperatures may establish ideal conditions for the development of HABs. Localized efforts like this have been initiated in other parts of the state including a network in Southeast called SEATOR (Southeast Alaska Tribal Ocean Research).

Researchers, Tribes, shellfish growers and recreational harvesters are hoping to establish a statewide network to share information and data, streamline education and outreach and systematize responses to HAB events. Over 80 stakeholders attended a workshop on December 8-9 hosted by AOOS and Alaska Sea Grant to discuss existing HAB-related programs and develop ideas for an action plan related to monitoring and event response. AOOS will be working with partners to develop a network in 2017. ■



Dinoflagellates; *Dinophysis* spp. (can produce biotoxins toxic to humans) *Ceratium* spp. (which do not produce biotoxins) and a diatom; *Pseudo-nitzschia* spp (can produce biotoxins that are toxic to humans) found in a Kachemak Bay, AK phytoplankton sample.

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Alaska Ocean Acidification Shares the Latest Science at Statewide Workshop

In late November, more than 250 people from around the state convened in person or by webinar to focus on one of the most serious issues facing the Alaska marine environment: ocean acidification (OA). This “State of the Science” workshop was organized by the Alaska Ocean Acidification Network, a collaboration launched by AOOS in 2016, which includes university and agency researchers, coastal managers, the fishing and shellfish industries, Tribes, and other concerned stakeholders.

Workshop participants learned about current monitoring & research, impacts to species, future forecasting, and adaptation strategies. Smaller group sessions provided an opportunity to discuss and brainstorm ideas.

“I liked that the first day was on the ‘state of the science’, but that the second day was run from the community perspective,” noted one attendee. “This allowed stakeholders to take ownership of their own interests and potential for action.” An interactive audience polling system was also used to get audience opinions in real-time, providing insight into interests and concerns.

The take-home message from the workshop was that Alaska waters are already more susceptible to OA, and human-generated CO² is tipping the threshold. Model forecasts show the trend continuing for the foreseeable future, generating concern about growth and survival for shellfish, crab and other shell-building species, and the effect on the food chain. Research on impacts to species is a young but expanding field, and lab-based projects in Seward and Kodiak are working through the challenge of trying to simulate the conditions creatures may experience in the wild. Meanwhile, agencies, research institutes, and Tribes are involved in ocean and coastal monitoring, ranging from shore-based stations to research buoys, to ship and glider transects.

The Alaska Ocean Acidification Network was established to help converge these efforts and leverage interest and support across the state. The network mission is to educate the Alaska community on the processes and consequences of OA, create connections between researchers and stakeholders, and develop new ideas and partnerships to enhance monitoring and community engagement. It is the fourth regional network of its kind to emerge in the US, and the steering committee includes members from nine communities across the state as well as NOAA’s Ocean Acidification Program.

Slide and video presentations from the State of the Science workshop are available on the Alaska OA Network website, which also includes background on OA, links to data and articles, descriptions of monitoring projects, and a database of experts. A workshop report will be available in early 2017. If you have questions, would like to get involved, or are interested in having an OA scientist present in your community, contact Network Coordinator Darcy Dugan, dugan@aos.org. ■

Cook Inlet Wave Buoy Swap Successful



The AOOS Cook Inlet waves and currents Data Information Program (CDIP) operated by Scripps Institute of Oceanography and supported by the US Army Corps of Engineers has provided real-time sea state conditions to boaters near Homer since 2013. Earlier this winter the buoy was due for scheduled

maintenance. Working with AOOS partners, an “understudy” buoy was shipped from California to fill in while the AOOS buoy gets serviced. Waves and current data for lower Cook Inlet, which mariners have come to depend on, will continue uninterrupted through 2017.

AOOS would like to give a big thanks to the following partners for successfully and safely switching out the buoys in December 2016 despite cold temperatures and pan ice in Cook Inlet:

- Julie Thomas, Andrew Gray, Vicki Kellis and Sean Nix | University of California at San Diego
- Kris Holderied | NOAA’s Kasitsna Bay Lab
- Angie Doroff and James Schloemer | Kachemak Bay Research Reserve
- Ted Jewell | Alaska Department of Fish and Game
- Captain Scott Hulse and Shay Hulse | Alaska Dream Ventures
- Dan McNulty and Dave Webber | US Fish and Wildlife Service ■



New and Updated Datasets on the AOOS Ocean Data Explorer

The AOOS data managers at Axiom Data Science have been working hard to update and add datasets to the AOOS portal. Some highlights:

- 2014 and 2015 sea ice interpretations from the Shell Ice & Weather Advisory Center (SIWAC), with AOOS now serving over five years of historical, high-resolution sea ice maps covering the Alaska Beaufort and Chukchi seas.
- The Alaska Department of Fish and Game’s Anadromous Waters Catalog data layers, now updated for 2016.
- Data visualizations from the Chukchi Offshore Monitoring in Drilling Areas (COMIDA) project - a collaboration between AOOS and the Bureau of Ocean Energy Management (BOEM). The COMIDA dataset includes offshore and nearshore subsistence hunting and gathering information to inform BOEM of possible impacts related to offshore oil and gas leases. ■