Recent Alaska HABs

Toxic algae bloom arrives in Southeast Alaska
- Tribal Toxins Partnership warns against harvesting shellfish on Sitka beach; DEC to begin testing samples for neurotoxin • Bloom has

PSP sickness prompts health warning for wild clams

Dead Fish, Wildlife In Aleutians May Be Victims Of Toxic Algae Outbreak

By John Ryan, KUCB - Unalaska | July 27, 2015

PSP found in mussels tested in Kachemak Bay
Homer News Posted: August 24, 2016 - 2:26pm | Updated: August 25, 2016 - 7:53am
Toxic shellfish have been found in Pacific blue mussels in the Homer harbor, according to an alert from the Alaska Department of Health and Social Services. Mussels sampled by the Kachemak Bay Research Reserve tested positive for paralytic shellfish poisoning by Southeast Alaska Tribal Ocean Research.
Harmful species: Dinoflagellates & Diatoms

**Paralytic Shellfish Poisoning (PSP)**  
*Alexandrium fundyense*  
Saxitoxins (>20 forms)

**Amnesic Shellfish Poisoning (ASP)**  
*Pseudo-nitzschia* spp.  
Domoic Acid

**Effects**  
Human illness  
Shellfishing closures  
Marine Mammals  
Seabirds
Historical Saxitoxin Levels in AK Shellfish

Close harvesting at 80 μg STX equivalents per 100 g shellfish

Potentially lethal > 500 μg STX equivalents per 100 g shellfish

Combined data from State of Alaska, Federal reports, and academic publications collected by Vera Trainer and Ray Ralonde; samples analyzed over the past 30+ years.
Unusual mortality events

Marine mammals & Seabirds

Warming? Food web? HABs?
Alaska HAB monitoring locations

- SEATT sampling
- NOAA-NCCOS routine sampling
- Alaska Sea Grant sampling
- Gulf Watch Alaska opportunistic sampling
- APIAI and ADEC opportunistic sampling
Environmental factors and climate change

Temperature – cell growth, warm events & cyst beds
Snowpack/glacier melt – freshwater input, water column stability

Kachemak Bay
Seldovia temperature anomaly

Seldovia SWMP (~8 m) Monthly Water Temperature Anomaly
(against 2004-2015 monthly means)

Fig. 4.
Seldovia SWMP (~8 m) Monthly Salinity Anomaly Anomaly
(against 2004-2015 means for each month)

Salinity anomaly

Fresher
Toxic phytoplankton cell concentrations

Monthly sampling in mid-Kachemak Bay

2012-2016 Pacific warming
Kachemak Bay HAB monitoring

NOAA Kasitsna Bay Laboratory
Kachemak Bay Research Reserve
Volunteer community monitors
Kachemak Bay Research Reserve Phytoplankton Update: Nov 4-9, 2016

Harmful Algal Bloom Program
Catie Bursch, cmbursch@uaa.alaska.edu; Rosie Robinson, rmrobinson3@uaa.alaska.edu
Kachemak Bay HAB Information System

Harmful Algal Bloom Information System for Kachemak Bay, Alaska

Current Water Temperature (°F) at Seldovia Harbor, Kachemak Bay

Kachemak Bay National Estuarine Research Reserve water quality station (SEQA2)

LATEST CONDITION
47.79 (°F)
Lower growth
11/10/2010 02:45

Growth potential for harmful algal blooms (HAB)
- Lower growth
- Moderate growth
- Maximum growth

Web and Windows
SEATT
South East Alaska Tribal Toxins Partnership

Chris Whitehead, Environmental Program Manager
Sitka Tribe of Alaska, Resource Protection Department
chris.whitehead@sitkatribe-nsn.gov
Coastal Alaskan Native populations are 12 times more likely to be affected by PSP than the Caucasian community because of the greater use of subsistence foods (Gessner and Schloss, 1996).

EPA IGAP funds for baseline phytoplankton monitoring to create an early warning system.

Toxin analysis laboratory supporting SEATT and other AK partners.
AK PSP testing partnership - APIA

<table>
<thead>
<tr>
<th>Activity</th>
<th>Count</th>
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<tr>
<td>Community-based sampling</td>
<td>1084</td>
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<tr>
<td>Analysis at ADEC Environmental Health Lab</td>
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Bruce Wright, Senior Scientist
Aleutian Pribilof Islands Association
brucew@apiai.org
WANTED: DEAD

Sand Lance AKA Needle Fish AKA Sand Eels
Sand lance can become contaminated with paralytic shellfish poisoning (PSP) and become sick or die. Sea lions, seals, sea otters, marine birds and salmon that eat these toxic sand lance can die too.

If you find dead or dying sand lance: collect 5, put in a Ziplock, label with your name, location collected and date, freeze and contact: Bruce Wright at 907-222-4260 or brucew@apiai.org for shipping instructions.
Thanks! Questions?

Kris.Holderied@noaa.gov
NOAA Kasitsna Bay Lab

- SEATTT sampling
- NOAA-NCCOS routine sampling
- Alaska Sea Grant sampling
- Gulf Watch Alaska opportunistic sampling
- APIAI and ADEC opportunistic sampling
Water column patterns

Temperature - 12Aug2015 Tutka Bay

Salinity - 12Aug2015 Tutka Bay

Tutka Bay
12 Aug 2015