

# KACHEMAK BAY RESEARCH RESERVE

## Harmful Algal Bloom Monitoring

### 2015 Progress Report

The main goal of the Harmful Algal Bloom monitoring program is to look for groups of phytoplankton that are known to carry toxins that can result in shellfish poisoning. Over 200 phytoplankton samples were collected from 12 consistent sites by community monitors and KBRR staff this summer.

Kachemak Bay had a PSP toxic bloom this summer. Toxins caused by the dinoflagellate *Alexandrium* were found in mussels and oysters over the DEC limit for human safety.

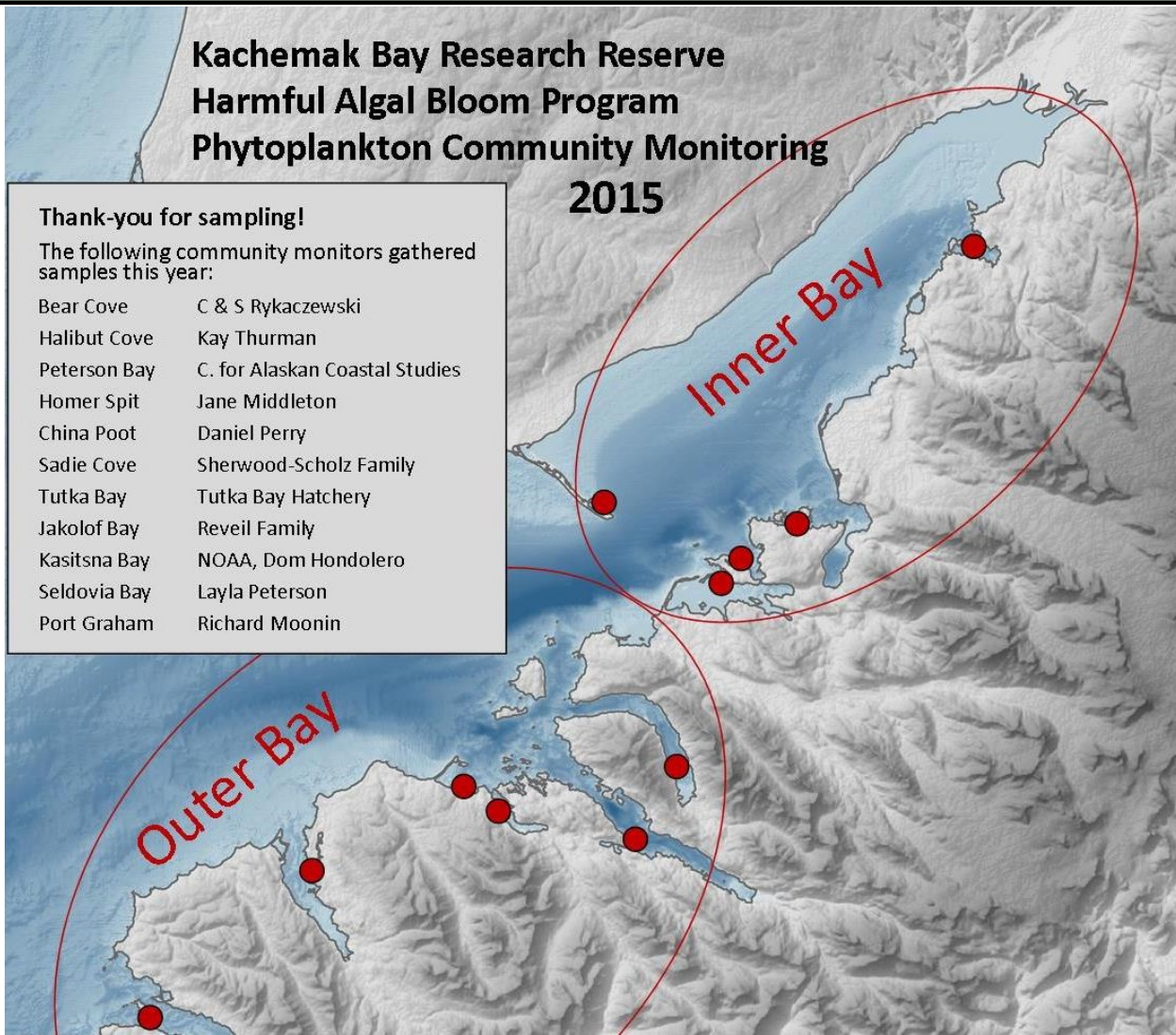
**Thank you volunteers for dipping, peering, recording and communicating this season!  
Your work was valuable in this year of potential and real toxic blooms.**

### Kachemak Bay Research Reserve Harmful Algal Bloom Program Phytoplankton Community Monitoring 2015

#### Thank-you for sampling!

The following community monitors gathered samples this year:

Bear Cove	C & S Rykaczewski
Halibut Cove	Kay Thurman
Peterson Bay	C. for Alaskan Coastal Studies
Homer Spit	Jane Middleton
China Poot	Daniel Perry
Sadie Cove	Sherwood-Scholz Family
Tutka Bay	Tutka Bay Hatchery
Jakolof Bay	Reveil Family
Kasitsna Bay	NOAA, Dom Hondolero
Seldovia Bay	Layla Peterson
Port Graham	Richard Moonin



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## Harmful Algal Bloom Monitoring in Kachemak Bay

2015

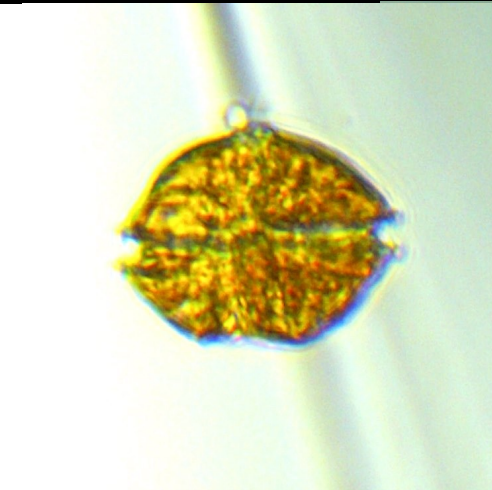
### What is a Bloom?

Phytoplankton blooms are a common phenomenon in the ocean. They are caused by many different kinds of microscopic plants that float in the upper, sunlit layers of water. When large numbers of colored phytoplankton are concentrated in one area, the color of the water may change. Other times a large bloom will not affect the color of the water at all. The dangerous cells in our area do not discolor the water. Large blooms are part of every summer in our thriving Kachemak Bay and fortunately are rarely toxic. This year we kept a close watch on two potential toxic phytoplankton cells. One created toxins but the other did not!



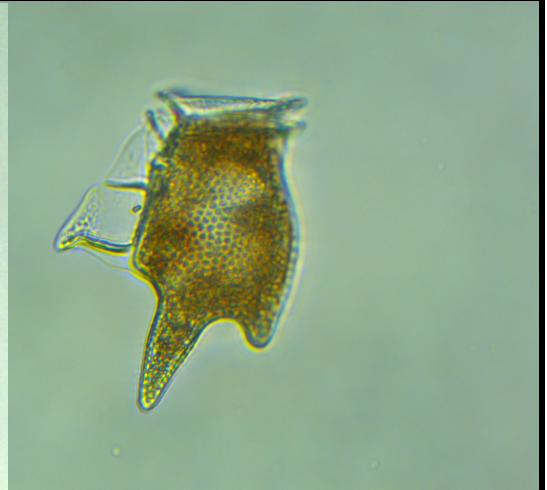
*Pseudo-nitzschia* sp., shaped like a kayak, connects with other cells in long lines.

These long cells were in bloom stage off and on all summer along the West Coast this summer. They also bloomed in our bay but were not producing toxins. KBRR used rapid analysis kits to test for Domoic Acid, (the toxin that affects humans). Our monitoring program also worked with NOAA Kasitsna Bay Lab and State of Alaska Dept. of Conservation (DEC) to keep checking for toxin levels which luckily never rose above trace amounts.



*Alexandrium* sp. from Homer harbor sample, September 10, 2015.

This cell produces saxitoxins that can accumulate in shellfish. On September 10th DEC detected saxitoxins in the regularly tested commercial y sold shellfish from Kachemak Bay for the first time since 2004. Saxitoxins are the cause of Paralytic Shellfish Poisoning. This event resulted in Halibut Cove and Peterson Bay closing for commercial harvest for part of September and October.



*Dinophysis tripos*

This cell was a new one to us but did not cause any trouble. We have seen other kinds of *Dinophysis* sp. over the years but this new shape caught our eye. The guide book says; "...rarely found in cold waters."

Our phytoplankton program works with the NOAA National Plankton Monitoring Network and we depend on training and expertise from both NOAA labs in Charleston and Beaufort.



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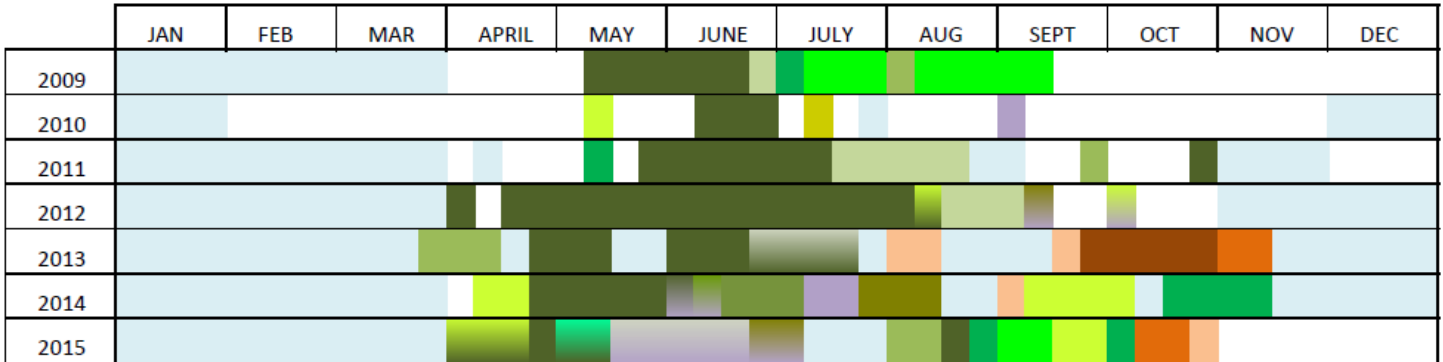
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# KACHEMAK BAY RESEARCH RESERVE

## Harmful Algal Bloom Monitoring in Kachemak Bay

Phytoplankton phenology  
Inner Kachemak Bay 2015



Alexandrium toxic bloom during this time.  
(was never dominant so doesn't show up in chart)

### Dinoflagellates

- dinoflagellate mix
- Ceratium furca*
- Karenia mikimotoi*
- Alexandrium*

- low levels of phytoplankton
- no data

### Diatoms

- Chaetoceros*
- Cerataulina*
- Lauderia*
- Leptocylindrus*
- Pseudo-nitzschia*
- Rhizosolenia*
- Skeletonema*
- Stephanopyxis*
- Thalassionema*
- Thalassiosira*
- Diverse diatoms

- Chaetoceros/Thalassiosira* equally dominant
- Chaetoceros/Lauderia* equally dominant
- Chaetoceros/Leptocylindrus* equally dominant
- Leptocylindrus/Pseudo-nitzschia/Rhizosolenia* equally dominant
- Chaetoceros/Pseudo-nitzschia* equally dominant
- Rhizosolenia/Pseudo-nitzschia* equally dominant
- Cerataulina/Pseudo-nitzschia* equally dominant
- Thalassiosira/Pseudo-nitzschia* equally dominant

Kachemak Bay Research Reserve-2015 C.Bursch

### Phytoplankton Phenology

This is what our phytoplankton timing looks like over the course of a year. This 'phenology' chart doesn't say anything about how **much** plankton there was, but it tells us which group dominated inner Kachemak Bay waters and when. Look how *Chaetoceros* dominates for a shorter period of time now compared to 2012. Some other bodies of water have a consistent switch to dinoflagellates in the fall. (dinos are colored in oranges and reds on the chart) They definitely come into their own in the later part of our summer, but it is not very consistent. Kudos to our wonderful volunteers who are responsible for no data gaps this year!!!



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# KACHEMAK BAY RESEARCH RESERVE

## Harmful Algal Bloom Monitoring in Kachemak Bay

### Kachemak Bay National Estuarine Research Reserve Harmful Algal Bloom 2016 Response Workgroup

#### Overview

Within Kachemak Bay there are numerous groups studying phytoplankton and monitoring for potential harmful algal blooms (HAB). The Kachemak Bay Research Reserve is planning a workgroup to bring together agencies and the local community to address HAB response and opportunities for increased coordination. Key agency members will be brought in to help illuminate HAB response processes and timelines.

#### Objectives

The objectives of this response workgroup are to address the following recommendations from the 2014 HAB Workshop Goals:

- Update flow chart showing a cascade of actions and contacts in the event of a toxic bloom
- Create an outreach plan for toxic events
- Work on getting quicker, easier tests for toxic shellfish into the hands of user groups

#### Workshop structure

Participants are invited from research institutions, regulatory agencies, and the shellfish industry. They will give and receive presentations defining their role related to HAB response. Round table discussions will follow on creating a coordinated network for response and a public outreach plan.

#### Date and Location: TBD

February 17-19.... Or.... February 24-26 to be determined...  
At the Alaska Islands and Ocean Visitor Center, Homer, Alaska.

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