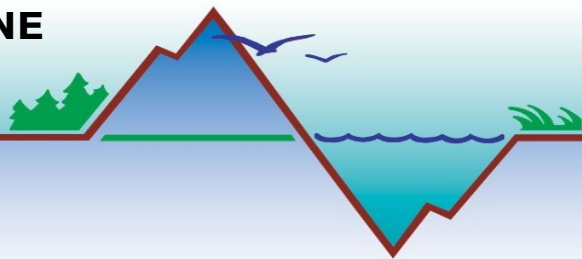


# KACHEMAK BAY NATIONAL ESTUARINE RESEARCH RESERVE



## Harmful Algal Bloom 2019 Progress Report

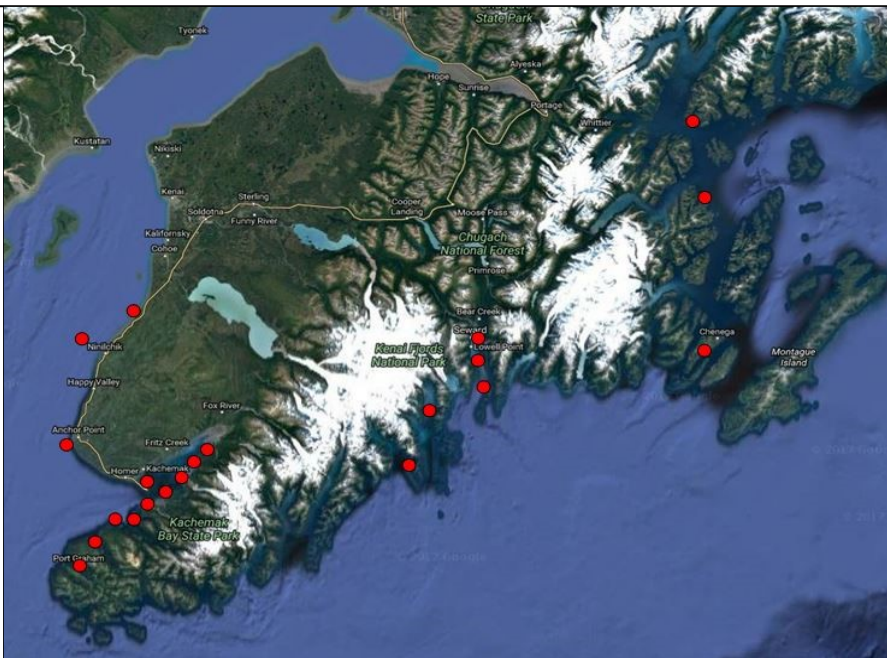
The main goal of the Harmful Algal Bloom (HAB) monitoring program is to look for groups of phytoplankton that are known to produce toxins that can result in shellfish poisoning.

**Thank you volunteers for dipping, peering, recording and communicating this season! Your work allowed us to track HABs in Kachemak Bay and provide essential updates to state managers!**

Map of KBNERR 2019 phytoplankton collection sites around the Kenai Peninsula and Prince William Sound.

This year we received samples from 21 locations.

Over 300 phytoplankton samples were collected by community monitors and KBNERR staff in 2019.



### Kachemak Bay Research Reserve Summary of the Harmful Algal Bloom 2019 season

- This season in Kachemak Bay species of concern were present in samples throughout the summer.
- However, NO wild shellfish KBNERR tested for saxitoxins were above the regulatory limit.
- Outer Kachemak Bay was dominated by diatoms from March to September, *Pseudo-nitzschia* dominated July to August reaching bloom levels in several sub-bays.
- No toxins were detected in association with prevalent *Pseudo-nitzschia* throughout Kachemak Bay in July & August.
- Kachemak Bay Research Reserve is not a regulatory agency. We provide our information to State of Alaska DEC and Epidemiology offices, which use their regulatory directives to post advisories.

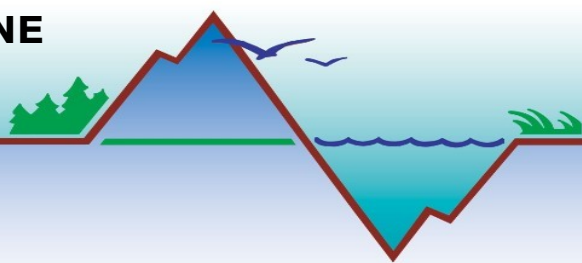
*If you dig wild shellfish yourself, you dig at your own risk.*



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The chart below shows which months of 2019 we observed *Dinophysis*, *Alexandrium*, or *Pseudo-nitzschia*, the three species in Kachemak Bay that can produce toxins.

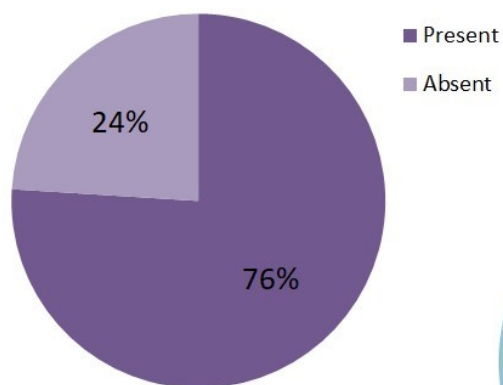
Green indicates months they were observed in a sample, grey represent no observations. Because the number of samples we receive varies from week to week this figure represents the minimum number of months these species were present in Kachemak Bay waters.

2019 Observations of Species of Concern in Kachemak Bay

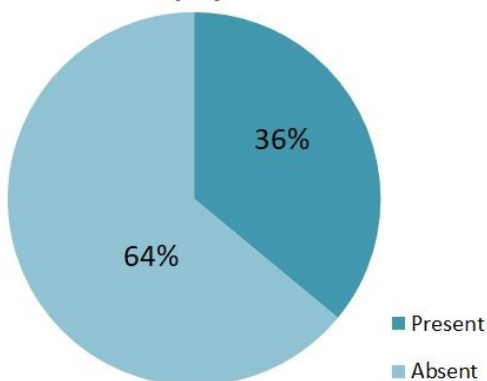
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.
<i>Dinophysis</i>	Grey	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
<i>Alexandrium</i>	Grey	Grey	Grey	Green	Green	Green	Green	Green	Green	Green	Grey
<i>Pseudo-nitzschia</i>	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Grey

From the chart above we can notice that species of concern are present throughout the year in Kachemak Bay. The pie charts below depict the percentage of samples species of concern were present in during 2019. *Pseudo-nitzschia* was present in the majority of the 2019 samples, and *Alexandrium* was present in a similar number of samples in 2016.

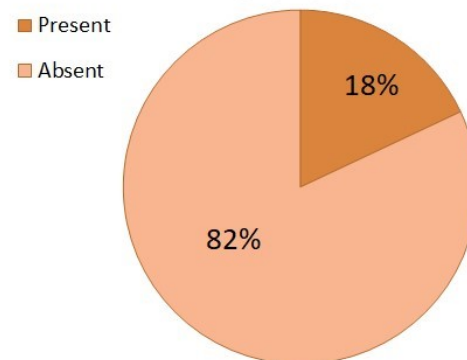
*Pseudo-nitzschia*



*Dinophysis*



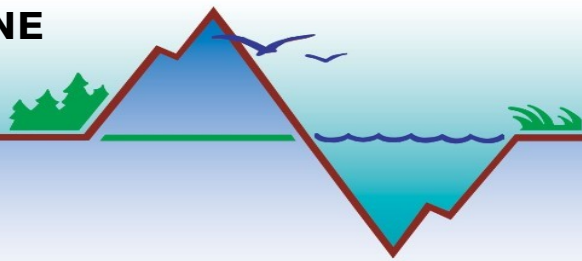
*Alexandrium*



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## Harmful Algal Bloom 2019 Progress Report

### HAB Research and Outreach

Throughout Alaska this summer Researchers collected samples to examine how toxins produced by harmful algal blooms travel through the marine food web. Researchers hope to be able to provide a better understanding of which other organisms accumulate toxins as a result of these efforts. Another research project is underway to map locations of cyst beds. Cysts are the dormant form phytoplankton take during winter months. Mapping cyst beds is an important piece needed to inform prediction models for harmful algal blooms.

In October KBNERR hosted a workshop with community partners to address the need for coordinated response to communicate risk and reduce vulnerability of coastal subsistence harvesters to algal toxins. In a changing climate, the threat of marine toxins as a result of harmful algal blooms is increasing in Alaskan coastal communities

### What is a Bloom?

Phytoplankton blooms are a common phenomenon in temperate and polar seas. They are caused by many different kinds of microscopic plants that float in the upper, sunlit layers of water. When large numbers of phytoplankton are concentrated in one area they contribute to lower visibility in the water. **Large blooms are part of every summer in our thriving Kachemak Bay, supporting zooplankton, forage fish, salmon, birds and marine mammals. The dangerous blooms in our area have not discolored the water.**

Compare the images below: The image on the left is from temperate Jakolof Bay, and on the right is tropical Red Sea. Notice the low level of visibility in Jakolof versus the 50+ feet of visibility in the Red Sea. Tropical seas are likened to deserts, they have very little phytoplankton and therefore greater visibility than the phytoplankton rich waters laden with billions of microscopic primary producers and consumers.



Image by Sarah Traiger



Image by Georgette Douwma, getty images

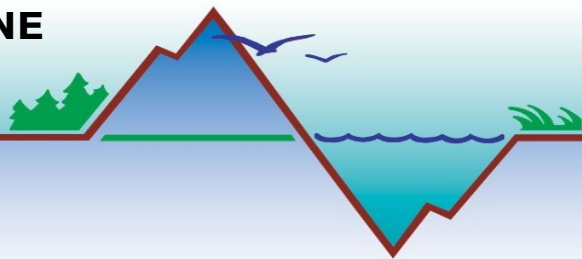


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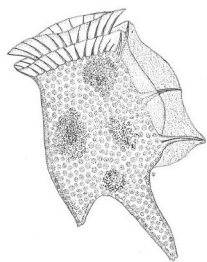


# KACHEMAK BAY NATIONAL ESTUARINE RESEARCH RESERVE

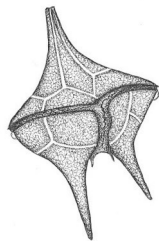


## Harmful Algal Bloom 2019 Progress Report

### We are updating our Phytoplankton Guide!



*Dinophysis tripos*  
illustration by  
Conrad Field



*Protoperidinium* sp.  
illustration by Conrad  
Field

Over the last 10 years KBNERR staff and partners have been working hard to get to know our local species of phytoplankton and develop useful guides for monitors and outreach.

This fall Conrad Field worked with us to create scientific illustrations of many of the phytoplankton species we see in Kachemak Bay. We will be using these illustrations to produce an updated Phytoplankton Guide to Kachemak Bay this spring.

If you wish to receive a digital copy reach out to Jasmine at  
[jrmaurer@alaska.edu](mailto:jrmaurer@alaska.edu)

### KBNERR **WILD** Shellfish Toxin Testing Program

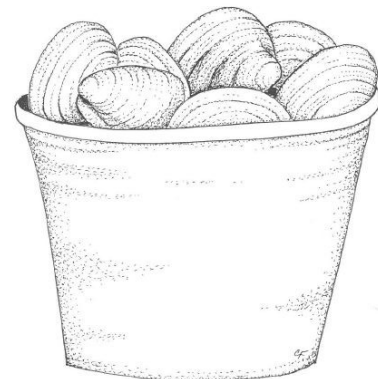
At KBNERR discrete funds are designated to test wild shellfish collected by staff and our partners. Our wild shellfish testing occurs on a bi-weekly basis during the summer months. Once collected, shellfish are shucked and the meat is frozen. There must be at least 130 grams of shellfish meat to run a toxin test. The frozen sample is mailed out on a Monday to DEC in Anchorage. By mailing the sample on a Monday we assure that someone will be there to receive the sample and that we will most likely receive preliminary results in time to include them in our weekly updates.

**\*\*Commercial product is tested before going to market by Alaska DEC. \*\***

#### Key Terms

**Elevated:** this term is used to track the trend when toxins are present and increasing from one sample to the next but still within the range considered safe for consumption

**Toxic or Above Regulatory Limits:** toxin levels have accumulated to a level the DEC has determined to be above the threshold considered safe for human consumption.



By Conrad Field

For more information visit Alaska Department of Epidemiology webpage at:

<http://dhss.alaska.gov/dph/Epi/id/Pages/dod/psp/default.aspx>



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