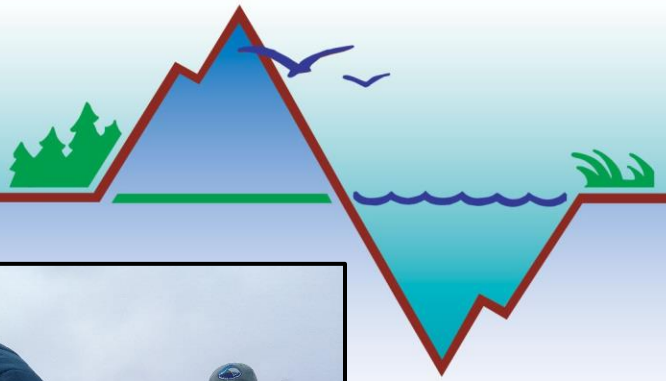


## Kachemak Bay Research Reserve Phytoplankton Update

April 1<sup>st</sup> – April 25<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmrobinson3@alaska.edu](mailto:rmrobinson3@alaska.edu)



Happy Spring Everyone!

We hope you all have had a great winter! We are excited that Spring is here, and field season is fast approaching. We have already received some samples from our amazing community monitors. Our updates will be coming out weekly starting now through the rest of the summer. We will also be sending in shellfish for toxin testing twice every month and will be sharing the results in these updates. A reminder to all that we are sending in **wild** shellfish for harmful algal bloom related toxin testing. Commercial shellfish is regulated through the Department of Environmental Conservation and is considered safe for consumption.

During the month of April, in Kachemak Bay, *Chaetoceros* and *Thalassiosira* have been the dominate species in our samples. The only two harmful algal bloom species that we've seen so far this season are *Pseudo-nitzschia* and *Dinophysis*. We saw *Chaetoceros* blooming first this year in Sadie Cove in the end of March – the spring bloom has happened!

We look forward to a great season; let us know if you have any questions!

Rosie Robinson, Grace Allan, & Jasmine Maurer



Kachemak Bay National Estuarine Research Reserve  
Alaska Center for Conservation Science  
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Kachemak Bay Research Reserve Phytoplankton Update  
Qualitative Analysis Phytoplankton Data

**INNER BAY**

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
4/9/2019	Homer Harbor	6.7	29.5	<i>Thalassiosira</i>	None	Present	None
4/15/2019	Bear Cove	7	33	Sparse sample	None	Present	None
4/16/2019	Homer Harbor	8.2	28.9	<i>Thalassiosira</i> <i>abundant</i>	None	Present	None

\*Samples received after last weekly update

**OUTER BAY**

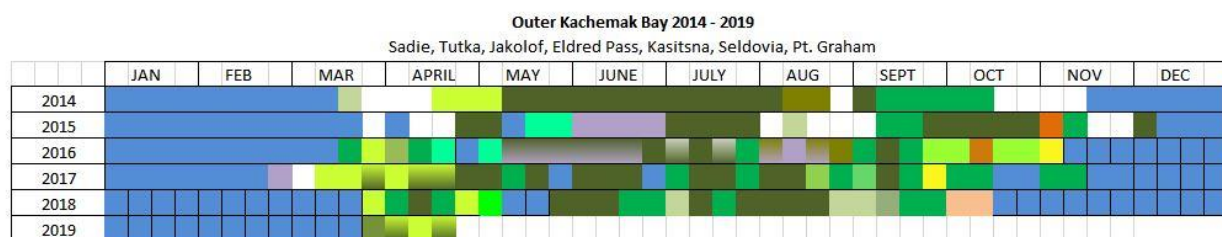
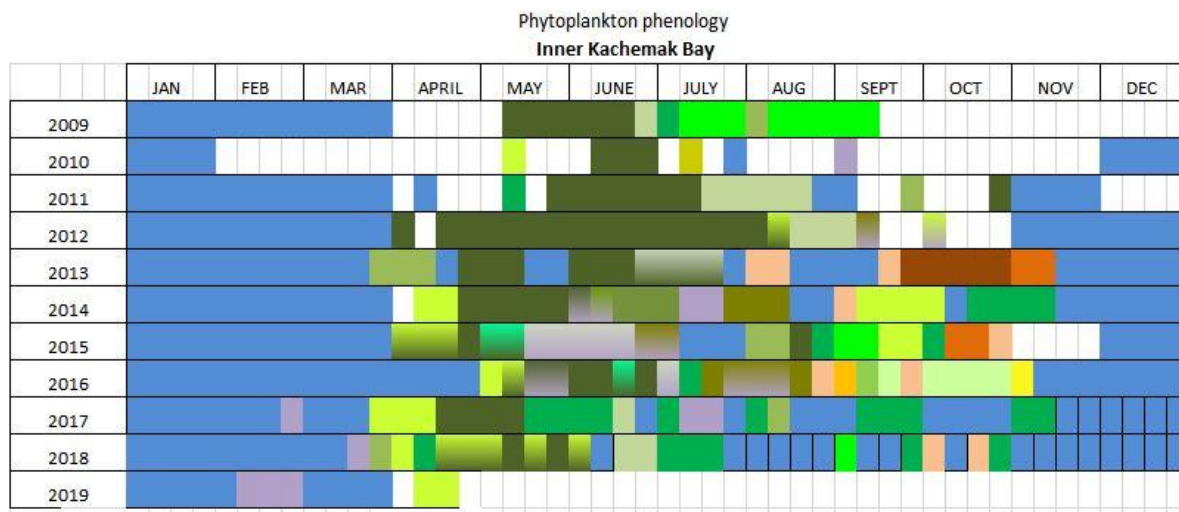
DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
4/3/2019	Kasistna Bay	6.0	30.5	Sparse sample	None	Present	None
4/3/2019	Tutka Bay	-	29	Sparse sample	None	Present	None
4/3/2019	Jakolof Bay	6.2	29.9	Sparse sample	None	Present	None
4/3/2019	Sadie Cove	6.2	30	<i>Chaetoceros</i> <i>bloom</i>	None	Present	None
4/3/2019	Jakolof Bay	-	-	<i>Thalassiosira</i> <i>abundant</i>	None	Present	None
4/4/2019	Seldovia Harbor	7.1	30	Sparse sample	None	Present	None
4/9/2018	Little Jakolof	6.5	34	<i>Thalassiosira</i> <i>abundant</i>	None	Present	None
4/20/2019	Bootleggers Cove	6.5	31	<i>Chaetoceros</i> <i>and</i> <i>Thalassiosira</i> <i>abundant</i>	None	Present	None
4/20/2019	Little Jakolof	6.5	31	<i>Thalassiosira</i> <i>bloom</i>	None	Present	None

4/23/2019	Jakolof Bay	5.3	-	<i>Chaetoceros</i> and <i>Thalassiosira</i>	Present	Present	None
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\*Samples received after last weekly update

## RESSURECTION BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
4/12/2019	SMIC Dock	5.8	27.8	<i>Thalassiosira</i>	None	None	None
4/19/2019	SMIC Dock	6.1	30.0	<i>Thalassiosira</i>	None	None	None



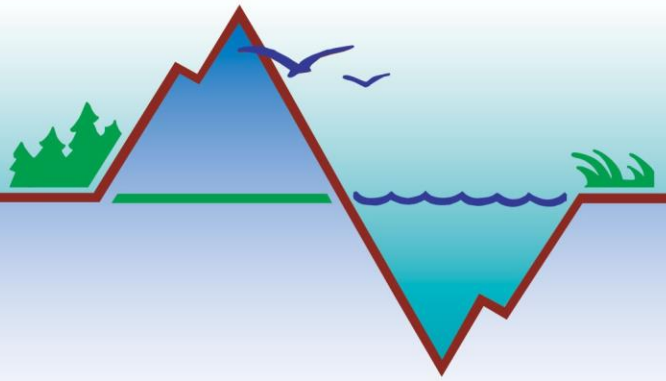
Dinoflagellates	Diatoms	
dinoflagellate mix	<i>Chaetoceros</i>	<i>Chaetoceros/Thalassiosira</i> equally dominant
<i>Ceratium furca</i>	<i>Cerataulina</i>	<i>Chaetoceros/Lauderia</i> equally dominant
<i>Karenia mikimotoi</i>	<i>Coscinodiscus</i>	<i>Chaetoceros/Leptocylindrus</i> equally dominant
<i>Alexandrium</i>	<i>Lauderia</i>	<i>Leptocylindrus/Pseudo-nitzschia/Rhizosolenia</i> equally dominant
<i>Ceratium longipes</i>	<i>Leptocylindrus</i>	<i>Chaetoceros/Pseudo-nitzschia</i> equally dominant
Diatom/Dinoflagellate Mix	<i>Pseudo-nitzschia</i>	<i>Rhizosolenia/Pseudo-nitzschia</i> equally dominant
low levels of phytoplankton	<i>Rhizosolenia</i>	<i>Cerataulina/Pseudo-nitzschia</i> equally dominant
no data	<i>Skeletonema</i>	<i>Thalassiosira/Pseudo-nitzschia</i> equally dominant
	<i>Stephanopyxis</i>	<i>Leptocylindrus/Pseudo-nitzschia</i> equally dominant
	<i>Thalassionema</i>	
	<i>Thalassiosira</i>	<i>Ditylum</i>
	Diverse diatoms	<i>Corethron</i>

## Kachemak Bay Research Reserve Phytoplankton Update

April 25<sup>th</sup> – May 2<sup>nd</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmrobinson3@alaska.edu](mailto:rmrobinson3@alaska.edu)



Hi all!

We are seeing phytoplankton blooming throughout Kachemak Bay! After seeing low abundances of phytoplankton in our samples last summer this is exciting news. *Thalassiosira spp.* is blooming in the inner bay and *Chaetoceros spp.* is blooming in the outer bay. We have yet to see any *Alexandrium spp.* in our samples, as far as harmful algal bloom species go. We are sending off shellfish for toxin testing and will hopefully have results to start sharing in the next update!

We look forward to a great season; let us know if you have any questions!

Rosie Robinson, Grace Allan, & Jasmine Maurer

## Kachemak Bay Research Reserve Phytoplankton Update

### Qualitative Analysis Phytoplankton Data

#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
4/23/2019	Peterson Bay	6	33	<i>Thalassiosira</i>	Present	None	None
4/26/2019	Homer Harbor	7.5	24.5	Sparse sample	None	None	None
5/1/2019	Halibut Cove	8	22	<i>Thalassiosira spp.</i>	None	None	None
5/2/2019	Peterson Bay	7.2	29.8	<i>Thalassiosira</i>	None	Present	None
5/2/2019	Halibut Cove	7.5	30.4	<i>Thalassiosira</i>	None	Present	None
5/2/2019	Bear Cove	7.9	29.3	<i>Chaetoceros &amp; Thalassiosira</i>	None	Present	None

\*Samples received after last weekly update

## **OUTER BAY**

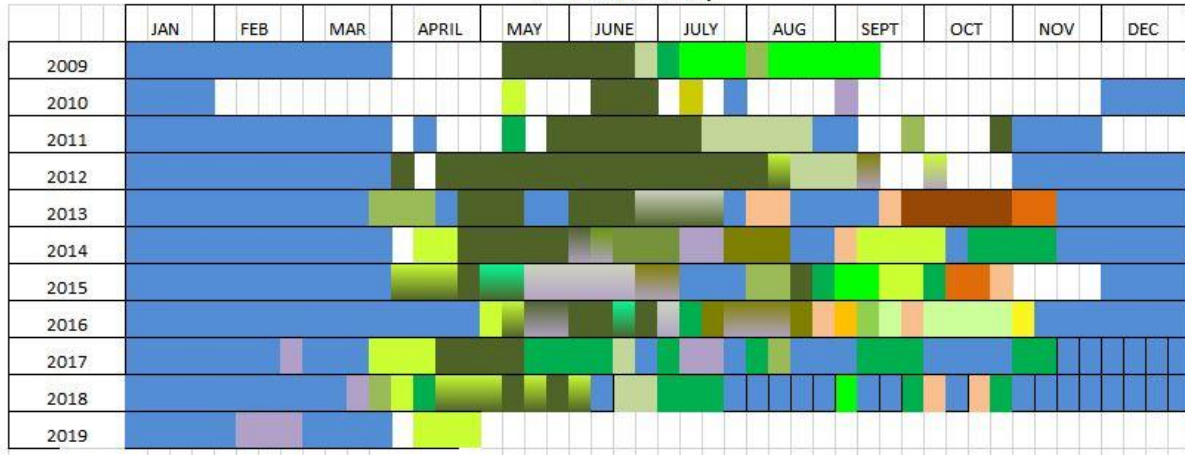
<b>DATE</b>	<b>Bay</b>	<b>Water Temp</b>	<b>Salinity</b>	<b>Dominant species</b>	<b>Dinophysis</b>	<b>Pseudo-nitzschia</b>	<b>Alexandrium</b>
4/29/2019	Bootleggers Cove	7	31	<i>Chaetoceros spp.</i>	None	Present	None
4/29/2019	Little Jakolof	7	31	<i>Chaetoceros spp.</i>	None	None	None
4/29/2019	Jakolof	6.5	31	<i>Chaetoceros and Thalassiosira</i>	Present	Present	None
5/2/2019	Jakolof	7.2	30.3	<i>Chaetoceros spp.</i>	None	Present	None
5/2/2019	Kasistna	7.4	29.7	<i>Chaetoceros spp.</i>	Present	Present	None

\*Samples received after last weekly update

## **RESSURECTION BAY**

<b>DATE</b>	<b>Bay</b>	<b>Water Temp</b>	<b>Salinity</b>	<b>Dominant species</b>	<b>Dinophysis</b>	<b>Pseudo-nitzschia</b>	<b>Alexandrium</b>
4/26/2019	SMIC Dock	5.9	30.2	Sparse sample	None	Present	None
4/27/2019	CIAA Net Pens	7.5	29	<i>Pseudo-nitzschia abundant</i>	None	Abundant	None

Phytoplankton phenology  
Inner Kachemak Bay



Outer Kachemak Bay 2014 - 2019

Sadie, Tutka, Jakolof, Eldred Pass, Kasitsna, Seldovia, Pt. Graham



Dinoflagellates

- dinoflagellate mix
- Ceratium furca*
- Karenia mikimotoi*
- Alexandrium*
- Ceratium longipes*
- Diatom/Dinoflagellate Mix
- low levels of phytoplankton
- no data

Diatoms

- Chaetoceros*
- Cerataulina*
- Coscinodiscus*
- 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
- Leptocylindrus/Pseudo-nitzschia* equally dominant
- Ditylum*
- Corethron*



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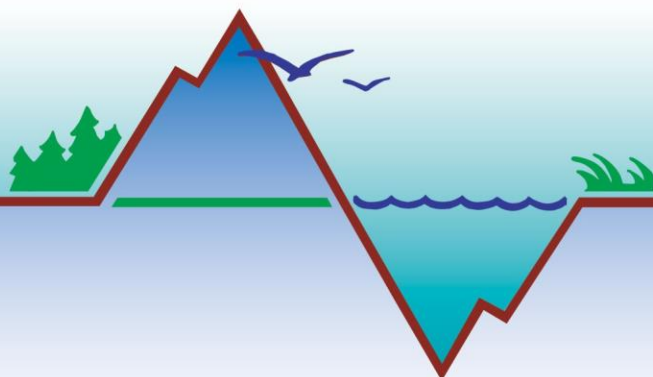


## Kachemak Bay Research Reserve Phytoplankton Update

May 3<sup>rd</sup> – May 9<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmrobinson3@alaska.edu](mailto:rmrobinson3@alaska.edu)



Hi all!

We are still seeing phytoplankton blooming in the Inner Bay this week with *Cerataulina* spp. dominating the samples. Our samples from the Outer Bay had lower abundances of phytoplankton. We have yet to see any *Alexandrium* spp. in any of our samples and have not seen the other two concerning species at high levels.

Thanks to all of our monitors for sending in samples and readings this week!

Rosie Robinson, Grace Allan, & Jasmine Maurer

### Kachemak Bay Research Reserve Phytoplankton Update

#### Qualitative Analysis Phytoplankton Data

#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
5/1/2019	Peterson Bay	7	33	<i>Thalassiosira</i> spp.	None	None	None
5/5/2019	Peterson Bay	7	31	<i>Cerataulina</i> spp. and <i>Thalassiosira</i> spp.	Present	None	None
5/6/2019	Homer Harbor	8	29.4	<i>Cerataulina</i> spp.	None	Present	None
5/8/2019	Halibut Cove	8	32	<i>Chaetoceros</i> spp.	Present	None	None

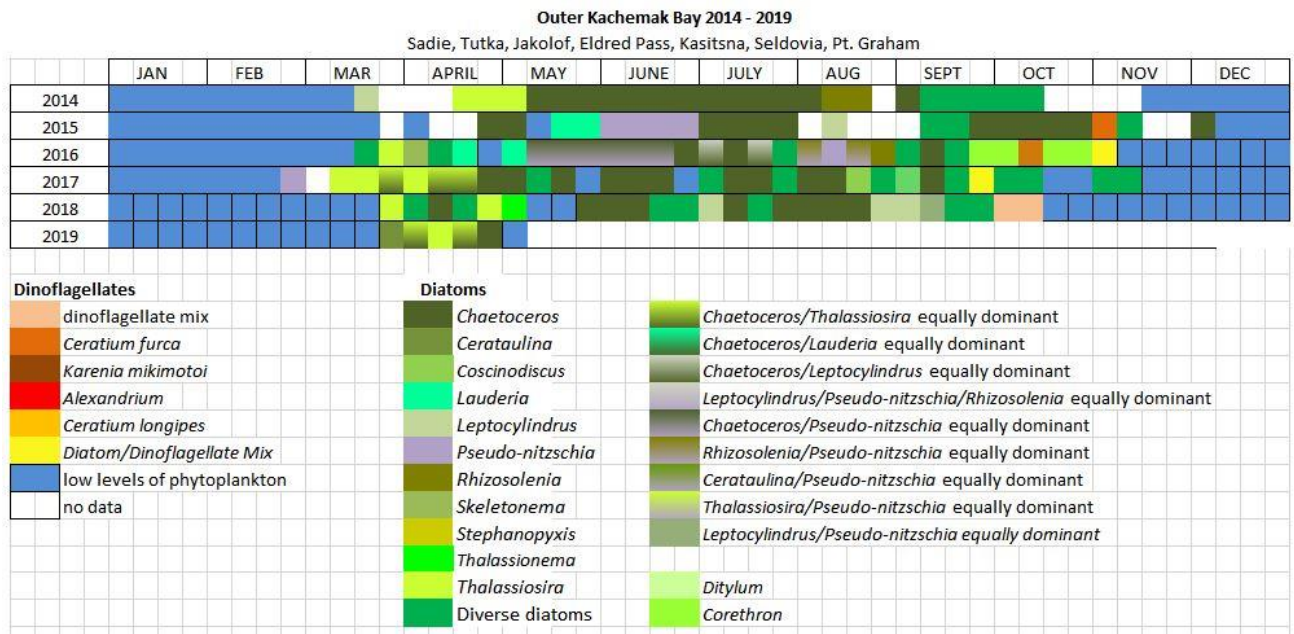
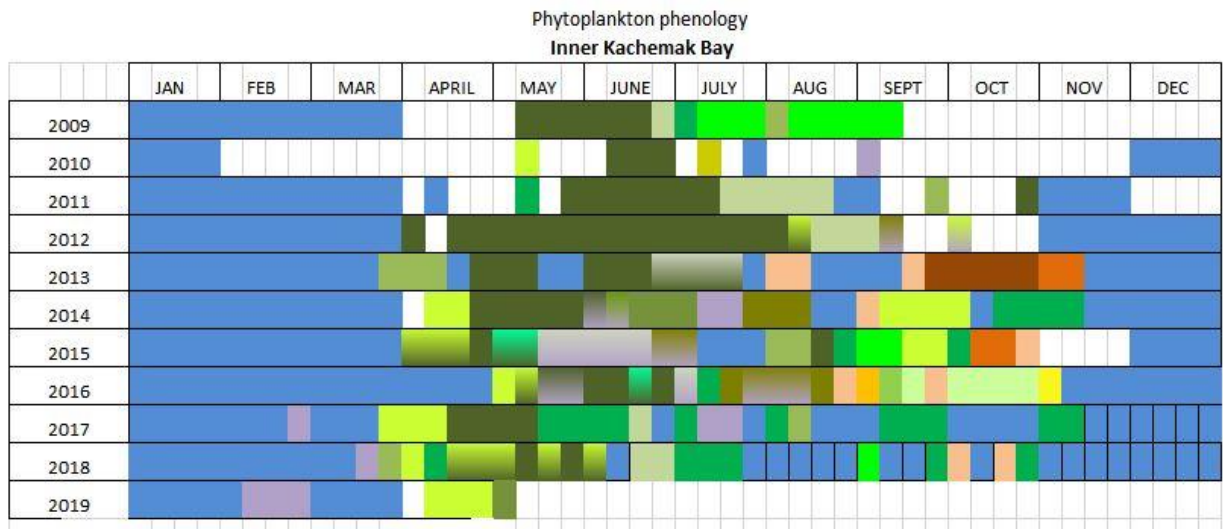
\*Samples received after last weekly update

#### OUTER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
4/18/2019*	Seldovia Harbor	6.8	-	<i>Thalassiosira</i> spp.	None	Present	None
4/25/2019*	Seldovia Harbor	7.3	30	Sparse sample	None	None	None

5/7/2019	Port Graham	7	-	Sparse sample	None	None	None
5/8/2019	Port Graham		33	<i>Chaetoceros</i> spp.	None	None	None

\*Samples received after last weekly update



Kachemak Bay National Estuarine Research Reserve  
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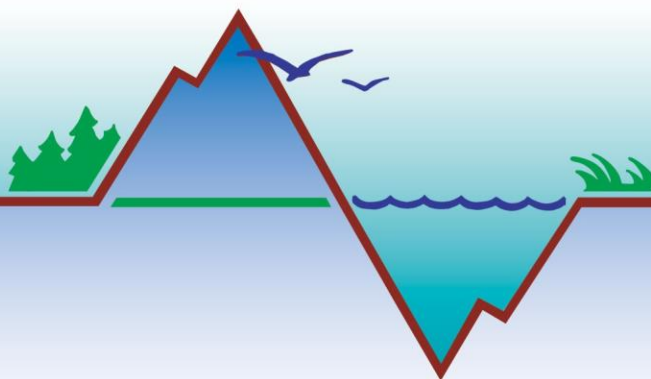


## Kachemak Bay Research Reserve Phytoplankton Update

May 10<sup>th</sup> – May 16<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmrobinson3@alaska.edu](mailto:rmrobinson3@alaska.edu)



Hi all!

Our first wild shellfish toxin testing results of the summer are in! The shellfish that we send to DEC's Environmental Health Laboratory in Anchorage is wild and not from a commercial operation. Commercially harvested shellfish are regulated through DEC and are considered safe for consumption. The toxin test was done for saxitoxins which can are they type of toxin that can lead to paralytic shellfish poisoning. Anything below the regulatory limit of 80ug/100g is considered safe for human consumption. The blue mussels we tested came in well underneath the regulatory limit. KBNERR is not a regulatory agency and the harvest of wild shellfish is considered 'dig at your own risk' in the state of Alaska. Feel free to contact us with any questions!

<u>Date</u>	<u>Shellfish Type</u>	<u>Location</u>	<u>Toxin Tested For</u>	<u>Toxin Testing Result</u>
5/2/2019	Blue Mussels	Kasistna Bay	Saxitoxins – PSP	<10.1ug/100g
5/5/2019	Blue Mussels	Port Graham Harbor	Saxitoxins – PSP	<10.1ug/100g

Below is our phytoplankton update. We are still seeing large scale blooms of *Chaetoceros spp.* around Kachemak Bay!

Thanks to all of our monitors for sending in samples and readings this week!

Rosie Robinson, Grace Allan, & Jasmine Maurer

## Kachemak Bay Research Reserve Phytoplankton Update

### Qualitative Analysis Phytoplankton Data

#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
5/7/2019	Peterson Bay	8	31	<i>Chaetoceros spp.</i> and <i>Thalassiosira spp.</i>	None	Present	None
5/14/2019	Halibut Cove	8	32	<i>Chaetoceros spp. bloom</i>	None	None	None
5/14/2019	Homer Harbor	9.4	28.8	<i>Chaetoceros spp.</i>	None	Present	None

5/14/2019	Peterson Bay	8	30	<i>Chaetoceros spp.</i>	None	Present	None
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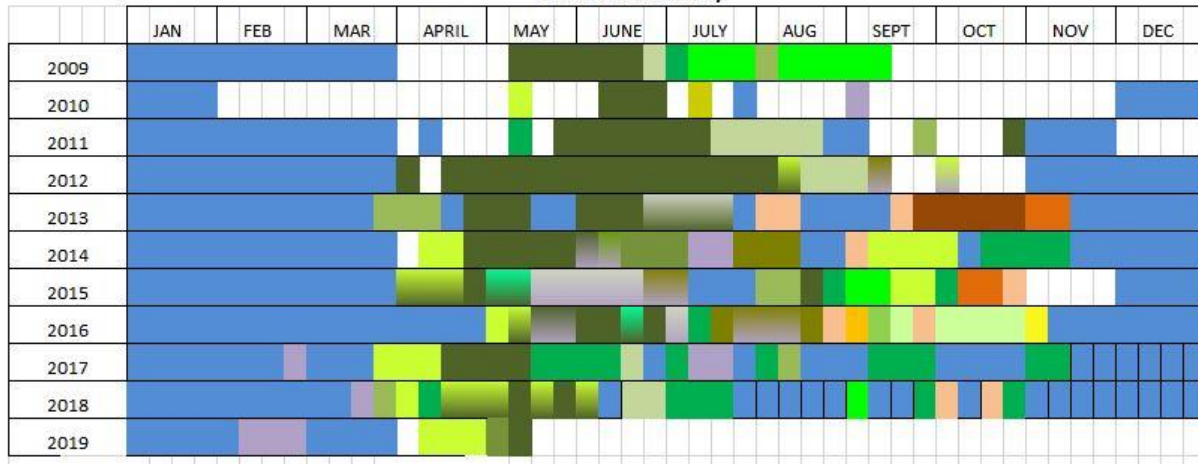
\*Samples received after last weekly update

## **OUTER BAY**

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
5/7/2019	Bootleggers Cove	7	30	<i>Chaetoceros spp. bloom</i>	None	Present	None
5/9/2019	Seldovia Harbor	8.4	29	<i>Licmophora spp.</i>	None	Present	None
5/13/2019	Port Graham Bay	6.6	31	Sparse sample	Present	Present	None
5/13/2019	Port Graham Bay Entrance	6.6	33	Sparse sample	None	Present	None
5/14/2019	Tutka Bay	7.6	28	<i>Chaetoceros spp. bloom</i>	None	Present	None
5/15/2019	Eldred Passage	7.9	30.3	<i>Chaetoceros spp. bloom</i>	None	Present	None
5/15/2019	Sadie Cove	8.8	21.4	<i>Chaetoceros spp.</i>	None	Present	None
5/15/2019	Kasistna Bay	7.3	31.2	<i>Chaetoceros spp. bloom</i>	None	Present	None
5/16/2019	Seldovia Harbor	8.1	33	Mixed Diatoms	None	Present	None
5/16/2019	Port Graham Bay Entrance	7.6	26	Mixed Diatoms	None	Present	None
5/16/2019	Port Graham Bay	7.6	30	Mixed Diatoms	Present	Present	None

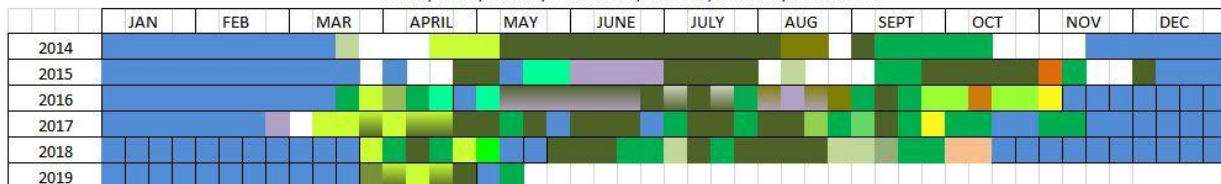
\*Samples received after last weekly update

Phytoplankton phenology  
Inner Kachemak Bay



Outer Kachemak Bay 2014 - 2019

Sadie, Tutka, Jakolof, Eldred Pass, Kasitsna, Seldovia, Pt. Graham



Dinoflagellates

- dinoflagellate mix
- Ceratium furca*
- Karenia mikimotoi*
- Alexandrium*
- Ceratium longipes*
- Diatom/Dinoflagellate Mix
- low levels of phytoplankton
- no data

Diatoms

- Chaetoceros*
- Cerataulina*
- Coscinodiscus*
- 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
- Leptocylindrus/Pseudo-nitzschia* equally dominant
- Ditylum*
- Corethron*



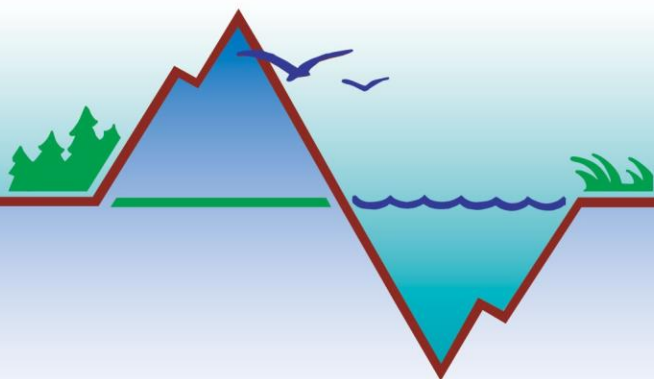
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## Kachemak Bay Research Reserve Phytoplankton Update

May 17<sup>th</sup> – 23<sup>rd</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmrobinson3@alaska.edu](mailto:rmrobinson3@alaska.edu)



Hi all,

We are still seeing *Chaetoceros* spp. dominate in our samples from the greater Kachemak Bay area. This species can lead to deaths of penned salmon since they are not able to swim away from the algal bloom. Currently a different species of phytoplankton is causing large scale die offs of penned salmon in Norway. Below is an article discussing the current impacts that algal bloom is having on their farmed salmon fishery.

<https://www.nytimes.com/2019/05/23/world/europe/salmon-norway-algae-bloom.html>

Thanks to all our monitors for sending in samples and readings this week!

Rosie Robinson, Grace Allan, & Jasmine Maurer

### Kachemak Bay Research Reserve Phytoplankton Update

#### Qualitative Analysis Phytoplankton Data

#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
5/20/2019	Homer Harbor	9	29	<i>Chaetoceros</i> spp. bloom	None	Present	None
5/20/2019	China Poot	-	-	<i>Chaetoceros</i> spp.	None	Present	None
5/20/2019	Peterson Bay	-	-	<i>Chaetoceros</i> spp. bloom	Present	Present	None
5/21/2019	Halibut Cove	8	31	<i>Chaetoceros</i> spp. bloom	None	Present	None
5/21/2019	Peterson Bay	9.5	34	<i>Chaetoceros</i> spp. bloom	None	Present	None

\*Samples received after last weekly update

#### OUTER BAY

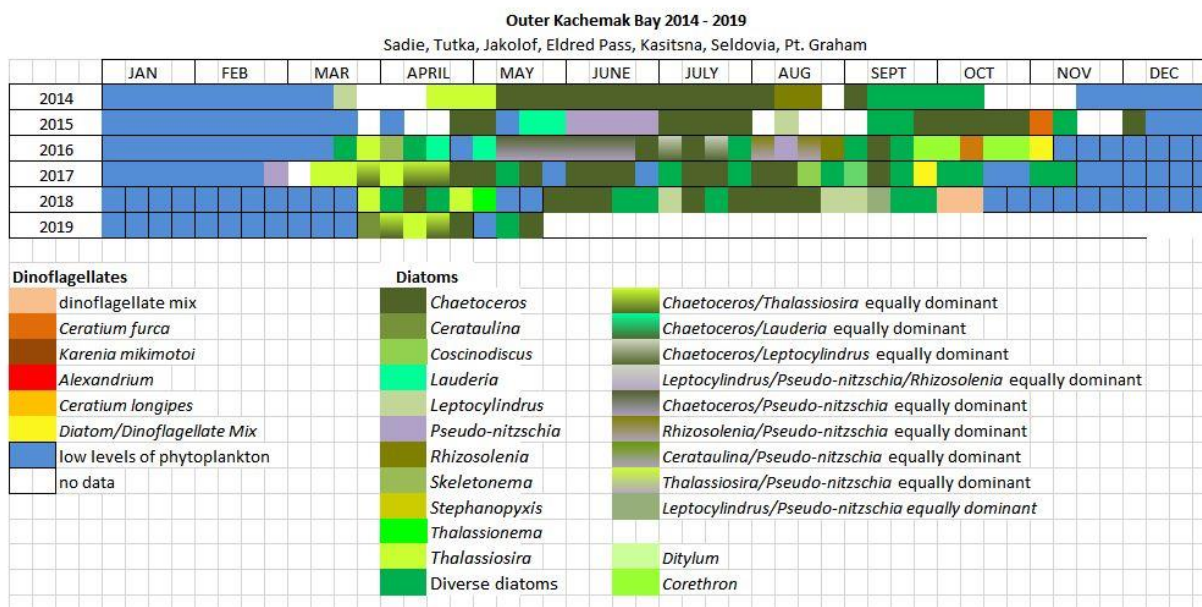
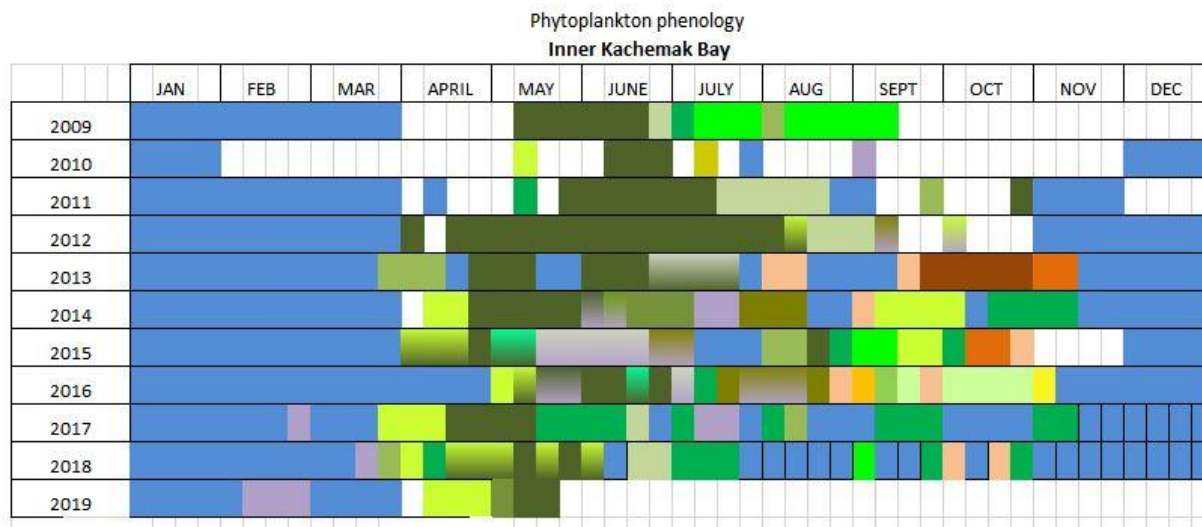
DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
5/19/2019	Bootleggers Cove	8	31	<i>Chaetoceros</i> spp.	None	Present	None
5/20/2019	Port Graham – Harbor	7.6	30	<i>Chaetoceros</i> spp.	None	Present	None

\*Samples received after last weekly update

## RESURRECTION BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
5/11/2019*	SMIC Dock	7.2	26.6	Sparse sample	None	None	None

\*Samples received after last weekly update



Kachemak Bay National Estuarine Research Reserve  
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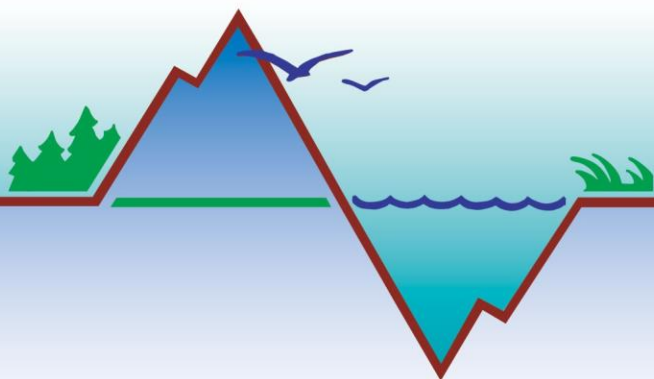


## Kachemak Bay Research Reserve Phytoplankton Update

May 24<sup>th</sup> – 30<sup>rd</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmrobinson3@alaska.edu](mailto:rmrobinson3@alaska.edu)



Hi all,

We saw low levels of phytoplankton in the inner bay this week. *Chaetoceros* spp. continues to be dominant in many areas of the outer bay with mixed diatoms dominating the Port Graham area samples. The ongoing *Chaetoceros* spp. bloom is dying down and we'll have to see what species comes in to dominate next. In past years we have seen it switch over to Mixed Diatoms for a while and last year we also saw a *Leptocylindrus* spp. bloom. We have not seen the other species of concern at high levels. As always – please reach out if you have any questions.

Thanks to all our monitors for sending in samples and readings this week!

Rosie Robinson, Grace Allan, & Jasmine Maurer

### Kachemak Bay Research Reserve Phytoplankton Update

#### Qualitative Analysis Phytoplankton Data

#### INNER BAY

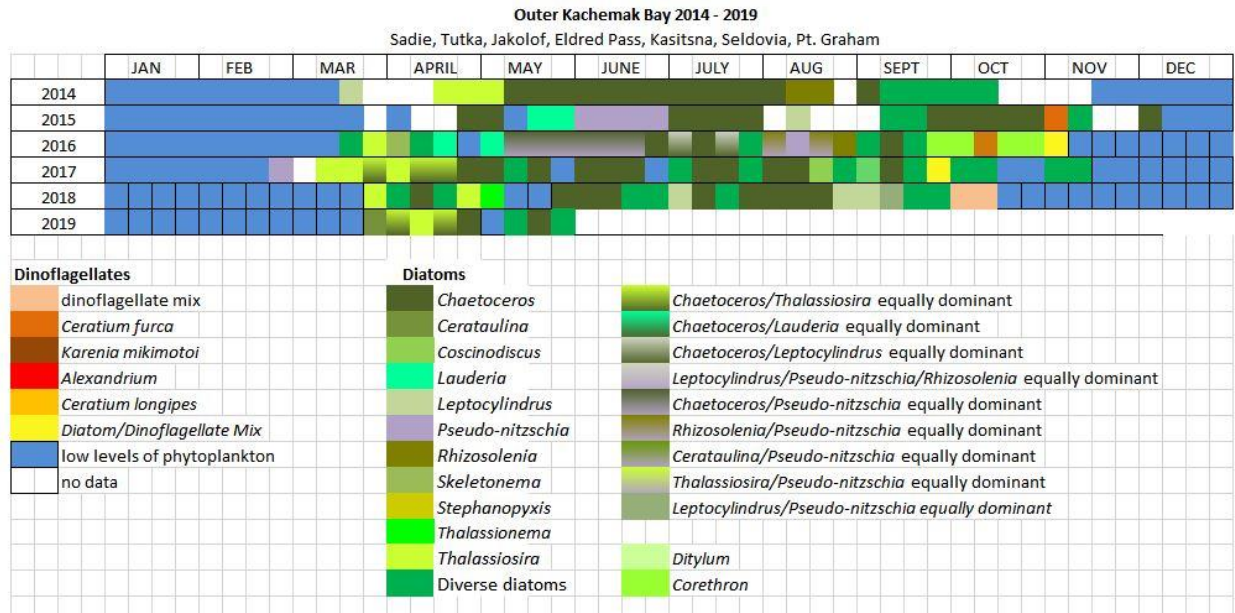
DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
5/27/2019	Peterson Bay	9.5	32	<i>Chaetoceros</i> spp.	None	Present	None
5/28/2019	Halibut Cove	8	31	Sparse sample	None	None	None

\*Samples received after last weekly update

#### OUTER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
5/20/2019	Tutka Bay	8.6	24	<i>Chaetoceros</i> spp.	None	Present	None
5/24/2019	Sadie Cove Entrance	8.4	30.4	<i>Chaetoceros</i> spp.	None	Present	None
5/23/2019	Seldovia Harbor	9.1	29	Sparse Sample	None	Present	None
5/24/2019	Tutka Bay Midbay	8.6	25	<i>Chaetoceros</i> spp.	None	Present	None
5/24/2019	Kasitsna Bay Lab	8.1	30.9	<i>Chaetoceros</i> spp.	None	Present	None
5/25/2019	Tutka Bay	9.0	18	<i>Chaetoceros</i> spp. bloom	None	Present	None





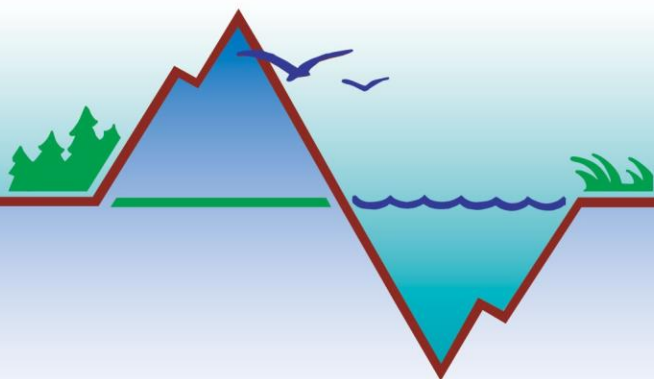
**Kachemak Bay National Estuarine Research Reserve**  
**Alaska Center for Conservation Science**  
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## Kachemak Bay Research Reserve Phytoplankton Update

May 31<sup>st</sup> – June 6<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmrobinson3@alaska.edu](mailto:rmrobinson3@alaska.edu)



Hi all,

Things are still pretty slow in the Inner Bay this week. Tintinnids were abundant in the sample from Halibut Cove. Tintinnids are microzooplankton that feed on phytoplankton and bacteria and are an important food source for copepods and larval fishes! The Outer Bay samples were dominated by mixed diatoms. We had our first sighting of *Alexandrium* sp. in the samples from Port Graham on May 31<sup>st</sup>. Seeing this species does not necessarily mean that shellfish are accumulating saxitoxins, which can lead to Paralytic Shellfish Poisoning, in their tissue. As always – please reach out if you have any questions.

Thanks to all our monitors for sending in samples and readings this week!

Rosie Robinson & Jasmine Maurer

## Kachemak Bay Research Reserve Phytoplankton Update

### Qualitative Analysis Phytoplankton Data

#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
5/24/2019*	China Poot	9	34	<i>Chaetoceros spp.</i>	None	None	None
5/29/2019*	China Poot	8.5	33	Mixed Diatoms	None	Present	None
6/2/2019	Halibut Cove	10.2	28.1	Sparse Sample	None	Present	None
6/2/2019	Homer Harbor	9.5	28	Sparse sample	None	Present	None
6/3/2019	Peterson Bay	10	32	Sparse Sample	None	None	None
6/5/2019	Halibut Cove	10	30	Sparse Sample	None	None	None
6/6/2019	China Poot	12	34	Mixed Diatoms	None	Present	None
6/6/2019	Homer Harbor	11.0	29.8	Sparse Sample	None	Present	None

\*Samples received after last weekly update

## OUTER BAY

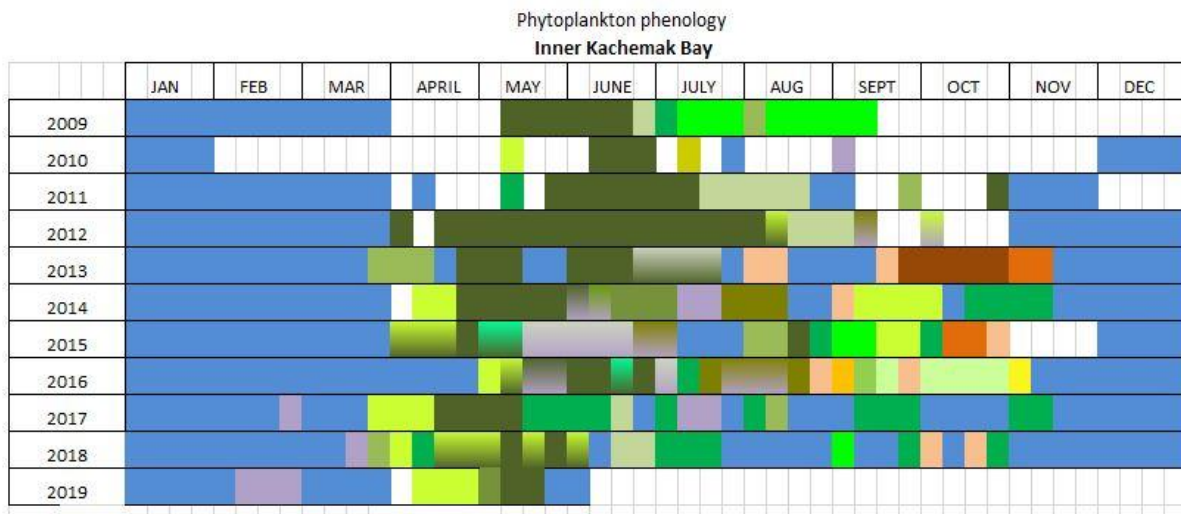
DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
5/30/2019*	Seldovia	9.0	30	Mixed Diatoms	None	Present	None
5/31/2019	Port Graham	7.8	30	Mixed Diatoms	None	Present	Present
5/31/2019	Port Graham	7.9		<i>Chaetoceros spp.</i>	Present	Present	Present
5/31/2019	Bootleggers	8.0	31	Mixed Diatoms	None	Present	None

\*Samples received after last weekly update

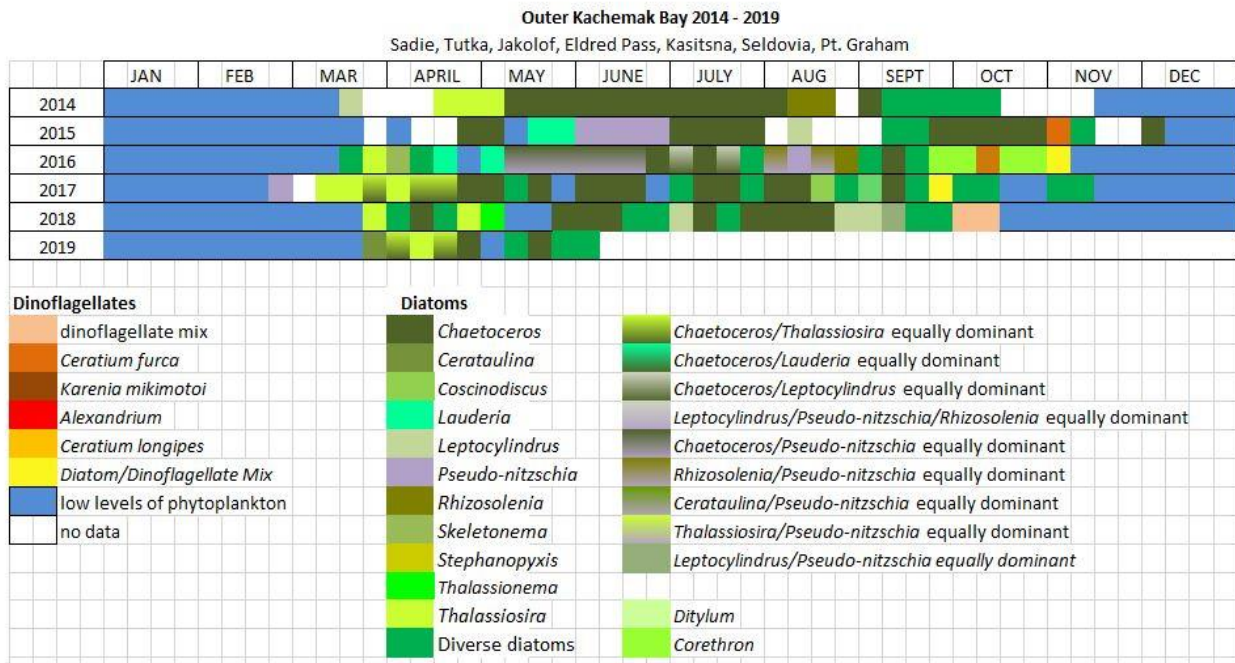
## RESURRECTION BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
5/31/2019	SMIC Dock	8.4	29.7	Sparse Sample	Present	Present	None

\*Samples received after last weekly update







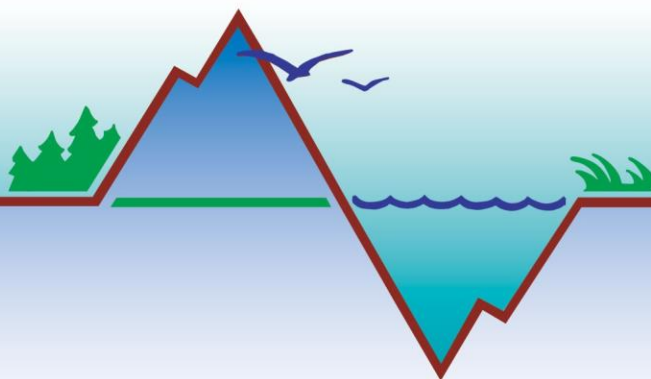
**Kachemak Bay National Estuarine Research Reserve**  
**Alaska Center for Conservation Science**  
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## Kachemak Bay Research Reserve Phytoplankton Update

June 7<sup>th</sup> – June 13<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmrobinson3@alaska.edu](mailto:rmrobinson3@alaska.edu)



Hi all,

<u>Date</u>	<u>Shellfish Type</u>	<u>Location</u>	<u>Toxin Tested For</u>	<u>Toxin Testing Result</u>
6/5/2019	Razor Clams	Ninilchick	Saxitoxins – PSP	Below regulatory limit
6/6/2019	Blue Mussels	Homer Harbor	Saxitoxins – PSP	Below regulatory limit

We have the results in from our wild shellfish toxin testing program! The razor clams and blue mussels both came in below the regulatory limit for saxitoxins which can lead to paralytic shellfish poisoning. We'll be doing our next round of sampling in two weeks. KBNERR is not a regulatory agency and the consumption of wild shellfish in Alaska is considered 'dig at your own risk'. Samples are analyzed for toxicity levels at DEC's Environmental Health Laboratory in Anchorage. Commercially harvested shellfish are regulated through the DEC and are considered safe for consumption.

Continue reading for our most recent phytoplankton analysis. Thanks to all of our monitors and partners for the phytoplankton and shellfish samples!

Rosie Masui & Jasmine Maurer

## Kachemak Bay Research Reserve Phytoplankton Update

### Qualitative Analysis Phytoplankton Data

#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
6/11/2019	Homer Harbor	11.6	29.7	Sparse sample	None	None	None
6/11/2019	Gull Island	11.9	28.3	<i>Skeletonema</i> sp.	None	None	None
6/11/2019	Halibut Cove	12	30	Sparse Sample	None	None	None
6/11/2019	Mud Bay	11.8	26.4	<i>Cerataulina</i> sp.	None	Present	None
6/12/2019	Mud Bay	11.7	28.8	Sparse Sample	None	Present	None

\*Samples received after last weekly update

## OUTER BAY

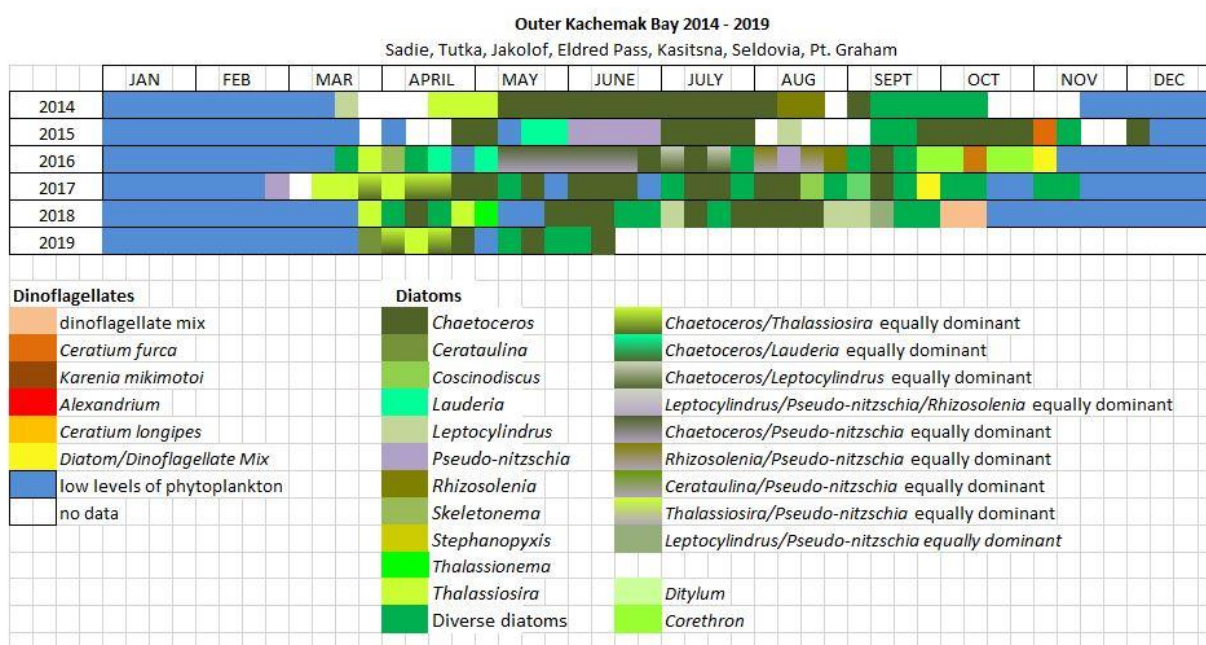
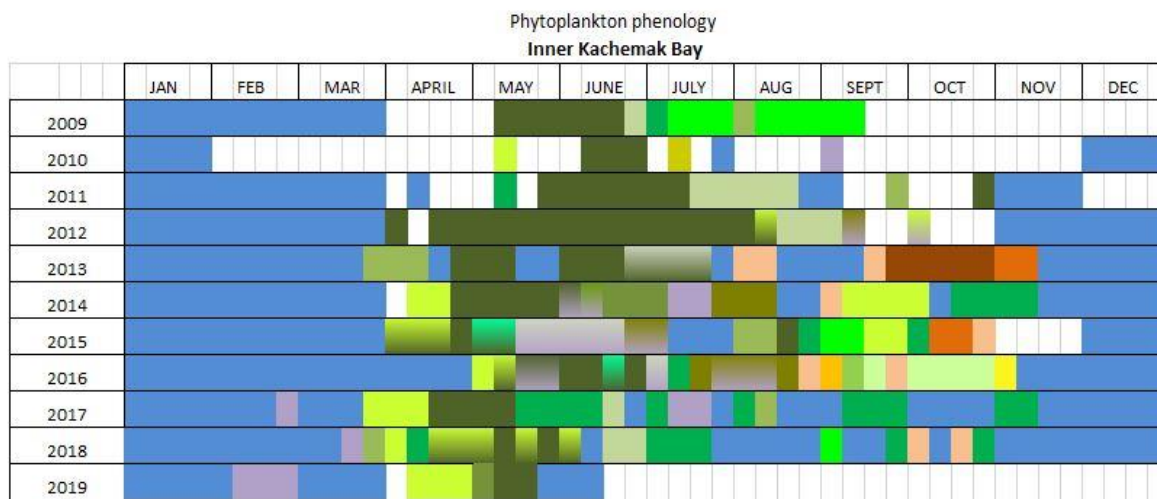
DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
5/19/2019*	Jakolof	7	32	<i>Chaetoceros</i> spp. bloom	Present	Present	Present
5/28/2019*	Jakolof	7.0	23	<i>Chaetoceros</i> spp. bloom	None	Present	None
6/3/2019	Port Graham	9.9	32	<i>Chaetoceros</i> spp. bloom	None	Present	Present
6/3/2019	Port Graham	9.9	25	<i>Chaetoceros</i> spp. bloom	None	Present	None
6/8/2019	Tutka Bay	5.5	15	<i>Chaetoceros</i> spp. bloom	Present	Present	None
6/10/2019	Tutka Bay	10.9	27	<i>Chaetoceros</i> spp. bloom	None	Present	None
6/11/2019	Tutka Bay	13.5	23.1	<i>Chaetoceros</i> spp.	None	Present	None
6/11/2019	Sadie Cove	13.2	19.5	<i>Chaetoceros</i> spp. & <i>Skeletonema</i> sp.	None	Present	None
6/11/2019	Eldred Passage	14.9	26.2	<i>Chaetoceros</i> bloom & <i>Leptocylindrus</i> bloom	None	Present	Present
6/11/2019	Kasitsna Bay	10.2	31	<i>Chaetoceros</i> & <i>Leptocylindrus</i>	None	Present	None
6/12/2019	Port Graham	11	30	<i>Chaetoceros</i> spp. bloom	None	Abundant	None

\*Samples received after last weekly update

## RESURRECTION BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
6/13/2019	SMIC Dock	10.2	26.2	<i>Pseudo-nitzschia</i>	Present	Present	None

\*Samples received after last weekly update



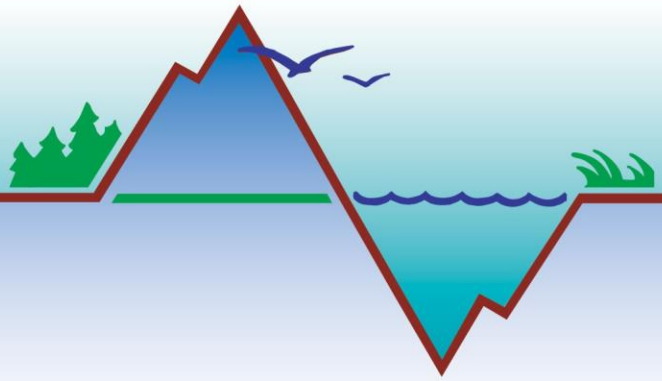
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## Kachemak Bay Research Reserve Phytoplankton Update

June 14<sup>th</sup> – June 20<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmrobinson3@alaska.edu](mailto:rmrobinson3@alaska.edu)



Hi all,

Although it was a slow week with the phytoplankton, things were busy with the shellfish! We joined local Fish and Game staff to collect razor clams for toxin analysis from both sides of Cook Inlet this week. Mussel samples from Homer Harbor and Kasistna Bay are also being collected to be sent off for analysis by DEC's Environmental Health Laboratory in Anchorage on Monday. We will be reporting on those results next week.

Our program is a part of the larger Alaska Harmful Algal Bloom Network, which helps to connect the different monitoring, research, education, and response programs around the state. Through this Network we've been updated on the current situation in Southeast Alaska. High levels of toxins are being seen throughout Southeast Alaska – much higher than anything we have ever seen in our samples from South Central Alaska. Our partners at Southeast Alaska Tribal Ocean Research are leading the monitoring there. For more information check out their website: [www.seator.org](http://www.seator.org)

Continue reading for the weekly phytoplankton update and thanks to all of our monitors!

Rosie Masui & Jasmine Maurer

### Kachemak Bay Research Reserve Phytoplankton Update

#### Qualitative Analysis Phytoplankton Data

#### **INNER BAY**

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
6/1/2019*	Tutka Bay	9	30	<i>Chaetoceros</i> sp. bloom	Present	Present	None
6/3/2019*	Tutka Bay	9.5	25	<i>Chaetoceros</i> sp.	None	Present	None
6/18/2019	Halibut Cove	11	28	Sparse Sample	None	None	None
6/19/2019	Homer Harbor	12.7	29	<i>Melosira</i> sp. & <i>Cerataulina</i> sp.	None	Present	Present

\*Samples received after last weekly update

#### **OUTER BAY**

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
6/13/2019	Seldovia	10.8	32	Mixed Diatoms	None	Present	None

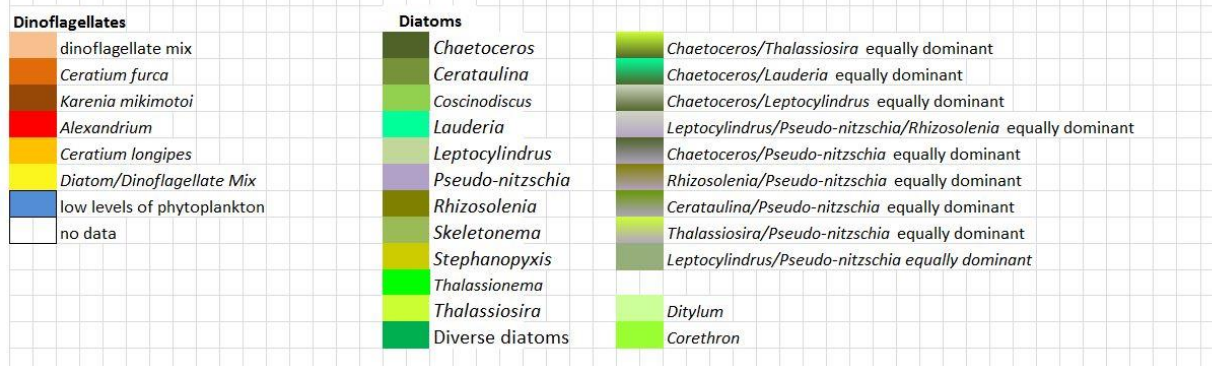
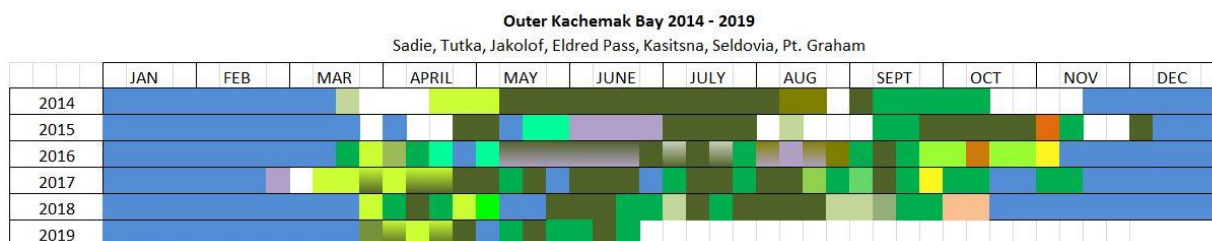
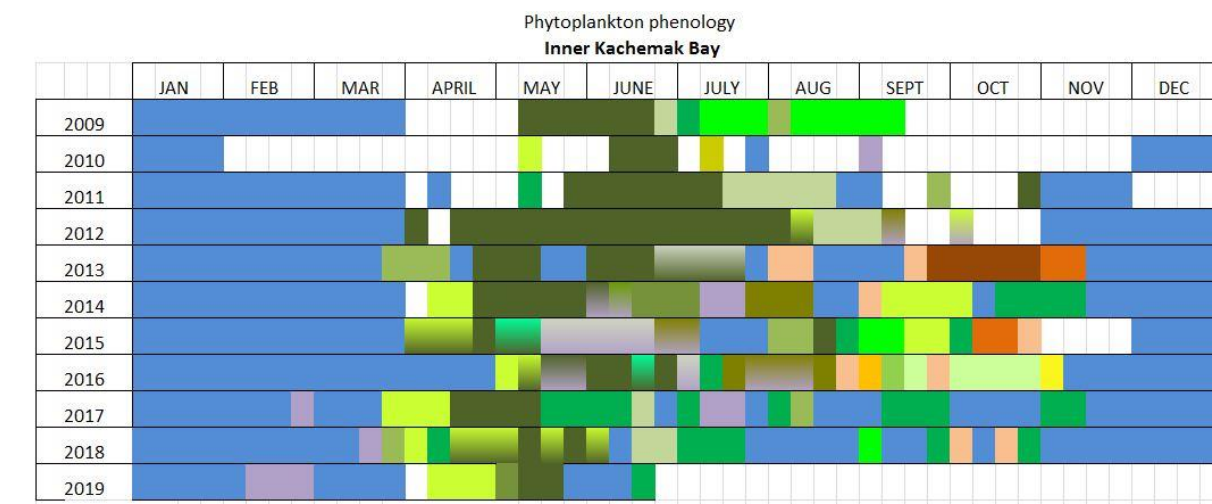


\*Samples received after last weekly update

## RESURRECTION BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
6/14/2019	SMIC Dock	8.4	29.7	Sparse sample	Present	None	None

\*Samples received after last weekly update



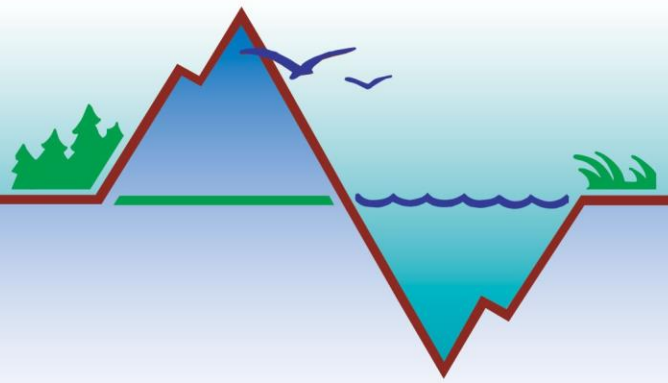
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## Kachemak Bay Research Reserve Phytoplankton Update

June 21<sup>ST</sup> – June 26<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmrobinson3@alaska.edu](mailto:rmrobinson3@alaska.edu)



Hello everyone,

<u>Date</u>	<u>Shellfish Type</u>	<u>Location</u>	<u>Toxin Tested For</u>	<u>Toxin Testing Result</u>
6/12/2019	Blue Mussels	Kasitsna Bay Laboratory	Saxitoxins-PSP	Below regulatory limit.
6/17/2019	Razor Clams	Clam Gulch	Saxitoxins-PSP	Below regulatory limit.
6/17/2019	Razor Clams	Polly Creek	Saxitoxins-PSP	Below regulatory limit.
6/18/2019	Razor Clams	Chinitna Bay	Saxitoxins-PSP	Below regulatory limit.
6/19/2019	Blue Mussels	Homer Harbor	Saxitoxins-PSP	Below regulatory limit.

Above are the results from our wild shellfish testing program. The blue mussels and razor clams sampled from locations in Lower Cook Inlet and Kachemak Bay were under the regulatory limit for saxitoxins. However, we want to notify you that wild shellfish tested from locations in Southeast Alaska, Kodiak and the Aleutians have had high levels of toxins, well above the limits considered safe for consumption. Please review the Press Release, also attached to the weekly email, from the Department of Health and Social Services that was developed in partnership with multiple organizations involved in the Alaska Harmful Algal Bloom Network and KBNERR.

KBNERR is not a regulatory agency and harvesting wild shellfish in Alaska is considered 'dig at your own risk'. All commercially harvested shellfish are regulated by DEC and considered safe for consumption.

It was another quiet week for phytoplankton in Kachemak Bay and it will be interesting to see what comes up next as July begins. Keep reading for detailed analysis of this week's samples. Phytoplankton samples from Prince William Sound, representing April to June 10<sup>th</sup>, were received and analyzed this week. For the detailed analysis on these spring samples please contact us.

Thanks to all of our monitors for the phytoplankton samples!  
Rosie Masui & Jasmine Maurer

Kachemak Bay Research Reserve Phytoplankton Update  
Qualitative Analysis Phytoplankton Data

**INNER BAY**

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
6/21/2019	Bear Cove	13	25	Sparse Sample	None	Present	None
6/23/2019	Halibut Cove	11	30	Sparse Sample	None	None	None
6/24/2019	Homer Harbor	14.2	27.8	Sparse Sample	None	None	None
6/26/2019	Halibut Cove	15	27	Sparse Sample	None	None	None

\*Samples received after last weekly update

**OUTER BAY**

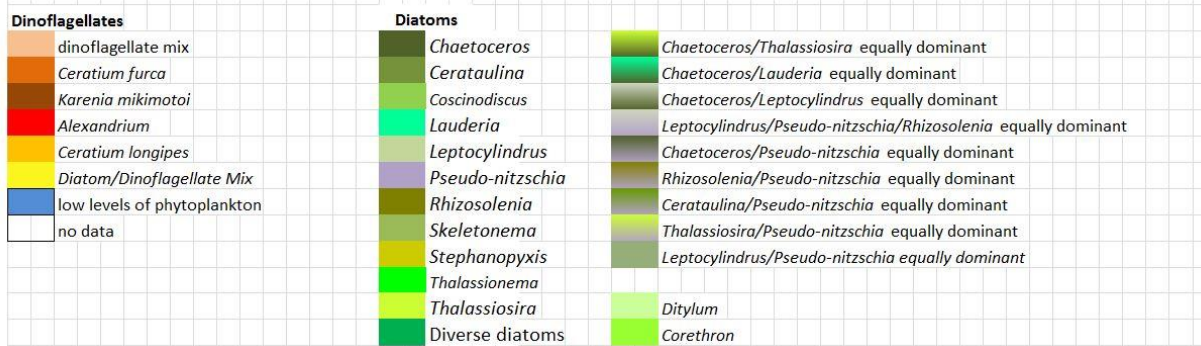
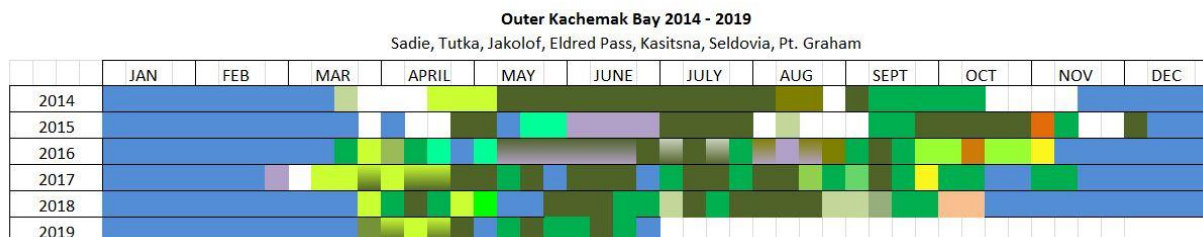
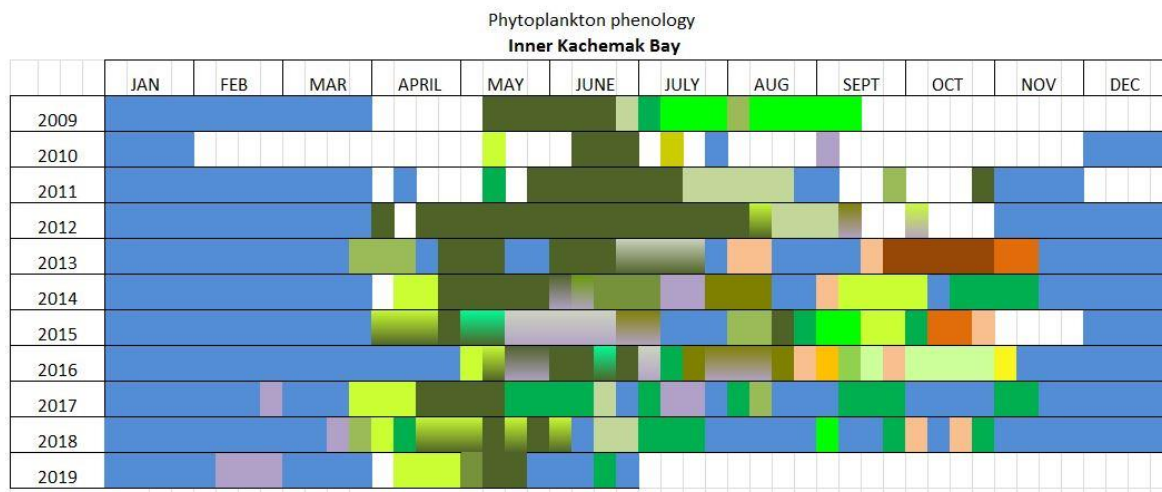
DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
6/19/2019*	Jakolof	9.3	31	<i>Chaetoceros</i> sp.	Present	Present	None
6/20/2019	Seldovia Harbor	11.9	30	Sparse Sample	None	Present	None
6/25/2019	Port Graham		30	Sparse Sample	Present	Present	None

\*Samples received after last weekly update

**RESURRECTION BAY & Prince William Sound**

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
6/10/2019*	Prince William	12	14	<i>Leptocylindrus</i>	None	Present	None
6/22/2019	SMIC Dock	8.9	30.8	<i>Chaetoceros</i> sp.	Present	Present	None

\*Samples received after last weekly update



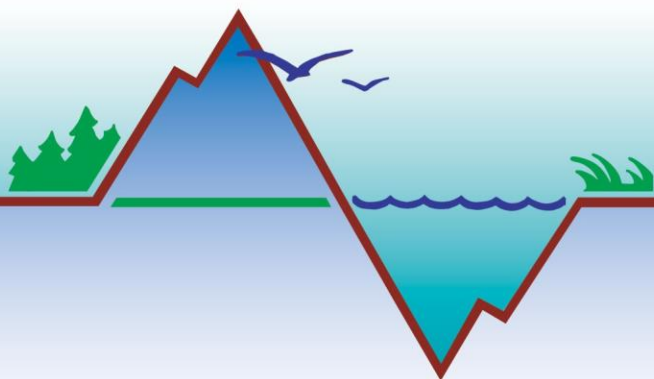
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## Kachemak Bay Research Reserve Phytoplankton Update

June 27<sup>th</sup> – July 3<sup>rd</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmrobinson3@alaska.edu](mailto:rmrobinson3@alaska.edu)



Happy 4<sup>th</sup> of July!

This week we joined our Fish and Game partners for their clam surveys in Kachemak Bay, allowing us to collect samples for our wild shellfish toxin testing program. We expect to have those results to share with you all in next week's weekly update.

The phytoplankton samples from the Inner Bay continue to be sparse. This is in contrast to what we observed in the Outer Bay samples with *Chaetoceros* sp. dominating and even reaching bloom levels at Kastisna Bay. This week we also observed *Dinophysis* sp. at low levels at several locations. *Dinophysis* spp. are another harmful algal bloom species of concern in Kachemak Bay. This dinoflagellate can produce okadaic acid which can lead to diarrhetic shellfish poisoning when it accumulates in shellfish and is consumed. All commercially harvested shellfish are regulated by DEC and are considered safe for consumption.

Thanks to all of our monitors and partners for the phytoplankton and shellfish samples!

Rosie Masui & Jasmine Maurer

### Kachemak Bay Research Reserve Phytoplankton Update

#### Qualitative Analysis Phytoplankton Data

#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
6/18/2019*	Peterson Bay	7	30	Sparse Sample	None	None	None
6/18/2019*	China Poot	9.5	32	Sparse Sample	None	None	None
6/24/2019*	China Poot	12.5	30	Sparse Sample	Present	None	None
6/25/2019*	Peterson Bay	16	27	Sparse Sample	None	None	None
6/28/2019	Peterson Bay	13	31	Sparse Sample	None	None	None
7/2/2019	Homer Harbor	15.5	24.5	Mixed Diatoms	Present	Present	None
7/2/2019	Halibut Cove	16	25	Sparse Sample	None	None	None

\*Samples received after last weekly update



## OUTER BAY

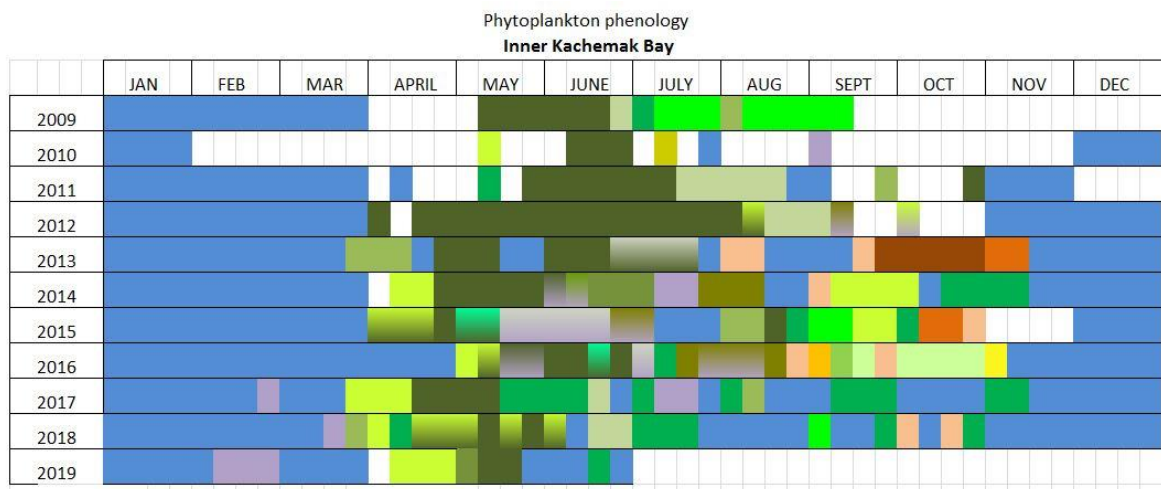
DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
6/26/2019*	Seldovia Harbor	13.6	29.9	<i>Chaetoceros</i> sp.	None	Present	None
7/01/2019	Kasitsna Bay	15.8	29.6	<i>Chaetoceros</i> sp. Bloom	Present	Present	None
7/02/2019	Jakolof	13.7	29.3	<i>Chaetoceros</i> sp.	Present	Present	Present
7/2/2019	Port Graham	14.9	30	<i>Chaetoceros</i> sp.	None	Present	None
7/2/2019	Sadie Cove	16.1	25.5	<i>Chaetoceros</i> sp.	Present	Present	None

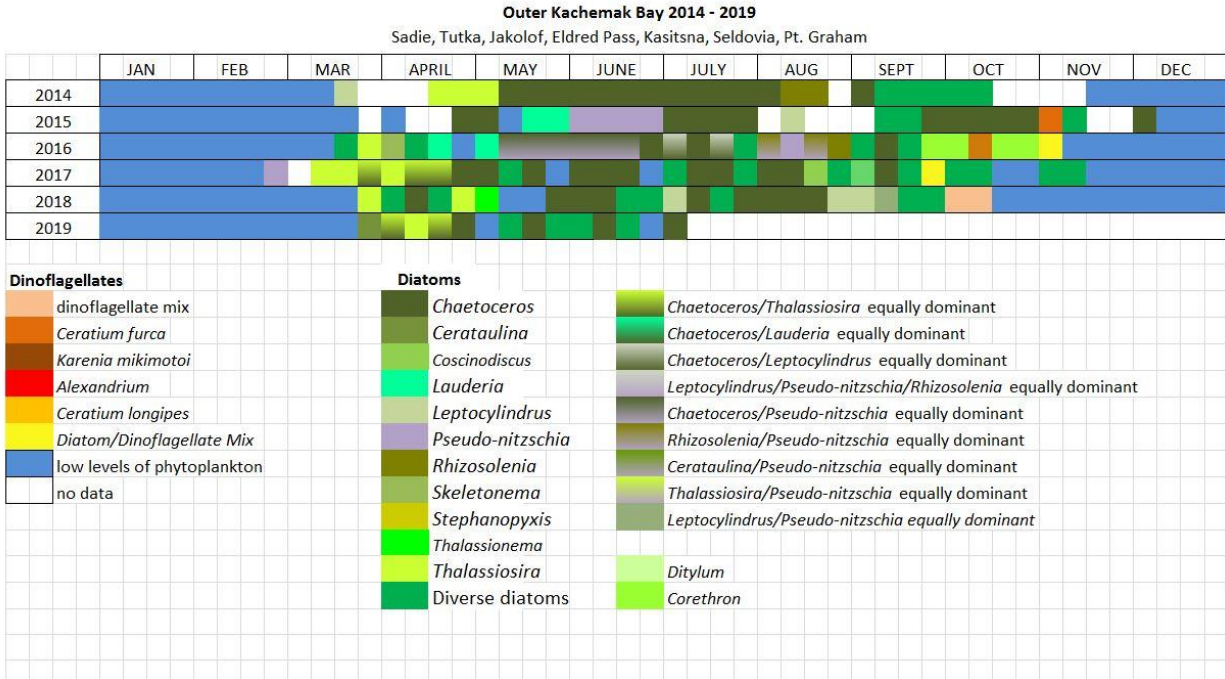
\*Samples received after last weekly update

## RESURRECTION BAY & Prince William Sound

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
6/29/2019	SMIC Dock	8.5	27.3	Sparse Sample	Present	None	None

\*Samples received after last weekly update





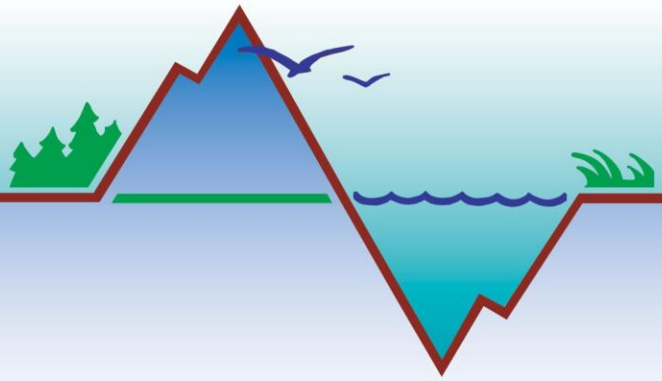
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## Kachemak Bay Research Reserve Phytoplankton Update

July 4<sup>th</sup> – July 11<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmrobinson3@alaska.edu](mailto:rmrobinson3@alaska.edu)



Hi all,

This week we saw elevated numbers of *Pseudo-nitzschia* in Kachemak Bay, with it reaching bloom levels in Halibut Cove and Peterson Bay. *Pseudo-nitzschia* can produce domoic acid which can lead to amnesic shellfish poisoning when toxic shellfish are consumed. Domoic acid also impacts seabirds, fishes and marine mammals, causing lethargy, disorientation, seizures and even death. Please let us know if you observe animals in unusual places or exhibiting unusual behavior. As always we recommend leaving these animals alone. Stranded marine mammals can be reported to the Marine Mammal stranding network by calling 1-888-774-7325.

To date Kachemak Bay has not experienced a toxic *Pseudo-nitzschia* bloom, however the species present in Kachemak Bay are capable of producing the toxin. We will be following this bloom and plan on testing for domoic acid next week. All commercially harvested shellfish are regulated by the DEC and considered safe for consumption.

Preliminary shellfish toxin testing results from last week have returned showing no concerning levels of saxitoxins (type of toxin that can lead to paralytic shellfish poisoning). The first sample we sent in was of butter clams from Jakolof Bay harvested on 7/3, a reminder that butter clams can hold toxins for up to two years but these were not toxic. The second sample was of blue mussels from 7/8 from the Homer Harbor, also not toxic. Please reach out if you have any questions.

Thanks to all of our monitors and partners for the phytoplankton samples!

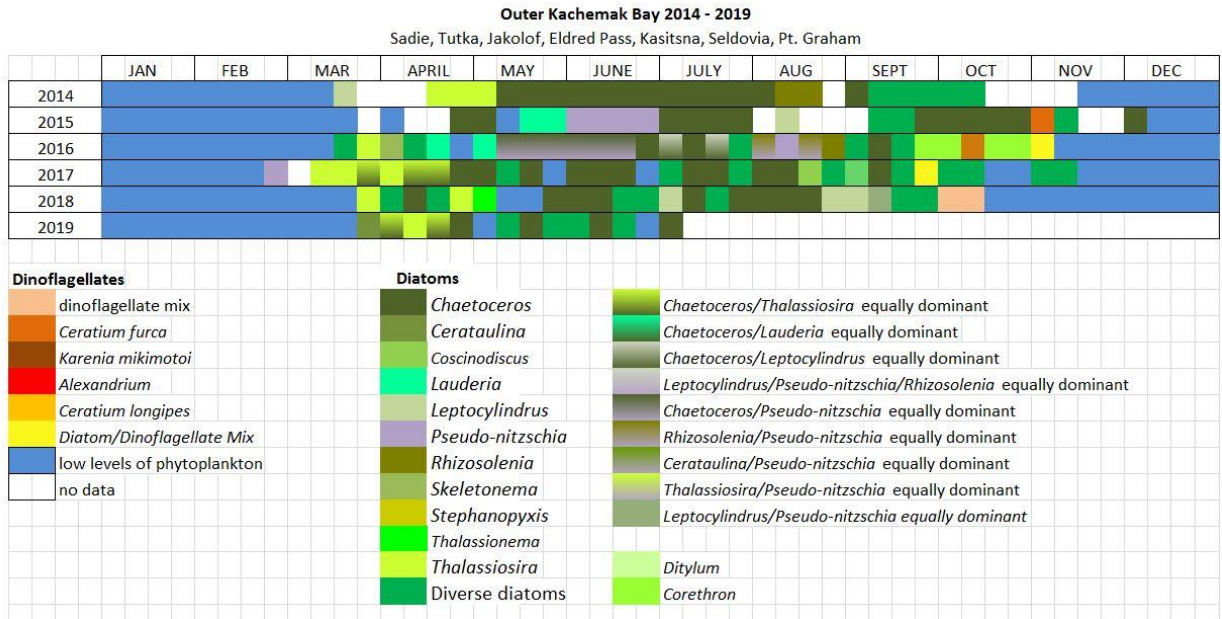
Rosie Masui & Jasmine Maurer

### Kachemak Bay Research Reserve Phytoplankton Update Qualitative Analysis Phytoplankton Data

#### **INNER BAY**

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
6/30/2019*	China Poot	15.5	25	<i>Fragilariopsis</i>	None	Present	None
7/2/2019*	Peterson Bay	17	28	Sparse Sample	None	None	None
7/6/2019	Peterson Bay	16	29	Sparse Sample	Present	Present	None
7/6/2019	Bear Cove	15	22	Sparse Sample	Present	Present	None
7/8/2019	Homer Harbor	14.7	27.6	<i>Chaetoceros</i> spp.	Present	None	None





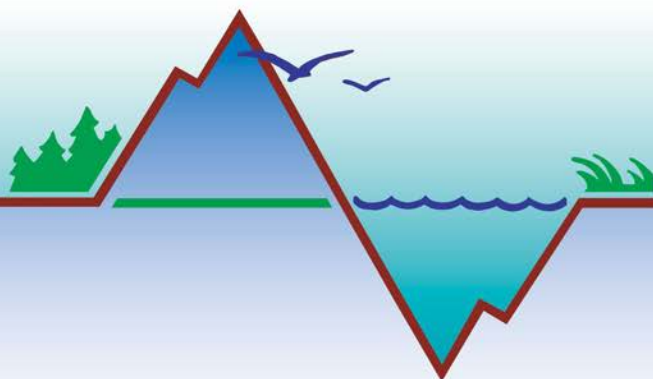
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## Kachemak Bay Research Reserve Phytoplankton Update

July 12<sup>th</sup> – July 18<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmrobinson3@alaska.edu](mailto:rmrobinson3@alaska.edu)



Hello Everyone,

This week *Pseudo-nitzschia* continues to dominate samples throughout Kachemak Bay. *Pseudo-nitzschia* is at bloom levels in Halibut Cove, Peterson Bay, and Jakolof Bay. Similarly *Pseudo-nitzschia* dominated samples during July in 2014 & 2017. As a reminder *Pseudo-nitzschia* can produce domoic acid which can lead to amnesic shellfish poisoning when toxic shellfish are consumed. Domoic acid also impacts seabirds, fishes and marine mammals, causing lethargy, disorientation, seizures and even death. Please let us know if you observe animals in unusual places or exhibiting unusual behavior. As always we recommend leaving these animals alone. Stranded marine mammals can be reported to the Marine Mammal stranding network by calling 1-888-774-7325.

All commercially harvested shellfish are regulated by the DEC and considered safe for consumption.

Thanks to all of our monitors and partners for the phytoplankton samples!

Rosie Masui & Jasmine Maurer

### Kachemak Bay Research Reserve Phytoplankton Update Qualitative Analysis Phytoplankton Data

#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
7/12/2019	Peterson Bay	16		<i>Pseudo-nitzschia</i>	None	Bloom	None
7/12/2019	Halibut Cove	15		<i>Pseudo-nitzschia</i>	None	Bloom	None
7/12/2019	Gull Island	14		<i>Pseudo-nitzschia</i>	None	Bloom	None
7/13/2019	Peterson Bay		28	Sparse Sample	Present	Present	None
7/14/2019	Halibut Cove	12	27	Sparse Sample	None	Present	None
7/16/2019	Halibut Cove	14	26	<i>Pseudo-nitzschia</i>	None	Bloom	None
7/16/2019	Homer Harbor	14.9	17.7	<i>Skeletonema</i>	Present	Present	None
7/17/2019	Bear Cove	12	15	<i>Skeletonema</i>	Present	Present	Present

\*Samples received after last weekly update



## OUTER BAY

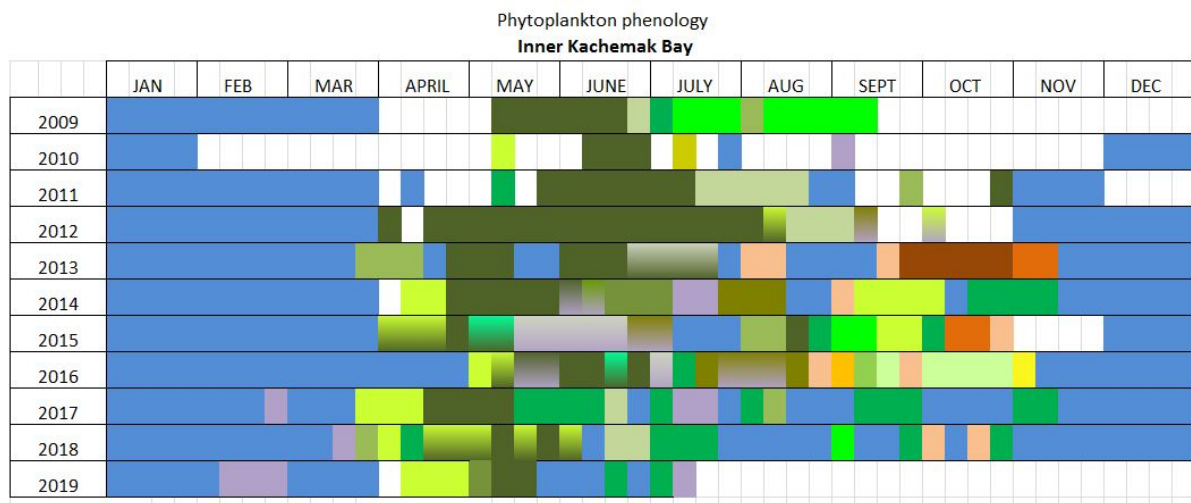
DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
7/11/2019*	Seldovia Harbor	14	30	Sparse Sample	Present	Present	None
7/15/2019	Jakolof Bay	12	28	<i>Pseudo-nitzschia</i> & <i>Chaetoceros</i> bloom	Present	Bloom	Present
7/15/2019	Tutka Bay	13.4	21	<i>Chaetoceros</i> sp.	Present	Present	Present
7/16/2019	Port Graham	10.7	30	<i>Pseudo-nitzschia</i>	None	Present	None
7/16/2019	Port Graham	11	30	<i>Mixed Diatoms</i>	Present	Present	None

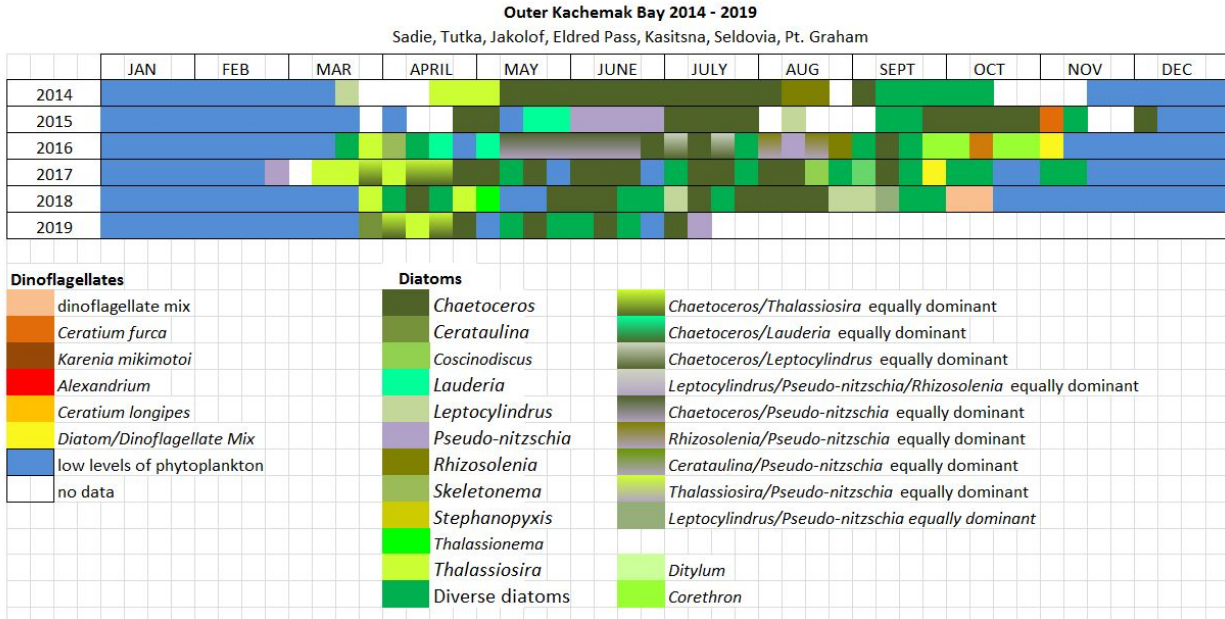
\*Samples received after last weekly update

## RESURRECTION BAY & PRINCE WILLIAM SOUND

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
7/13/2019	SMIC Dock	10.7	30.8	Sparse Sample	None	None	None

\*Samples received after last weekly update





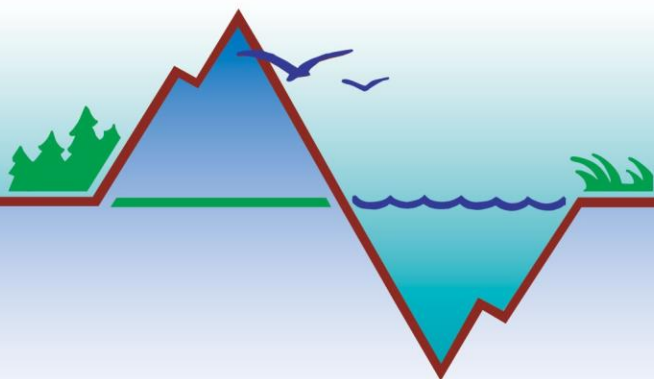
**Kachemak Bay National Estuarine Research Reserve**  
**Alaska Center for Conservation Science**  
 UNIVERSITY of ALASKA ANCHORAGE

## Kachemak Bay Research Reserve Phytoplankton Update

July 19<sup>th</sup> – July 25<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmrobinson3@alaska.edu](mailto:rmrobinson3@alaska.edu)



Hello Everyone,

Phytoplankton samples this week are dominated by *Pseudo-nitzschia* and *Chaetoceros* sp. in both the Inner and Outer bay. *Pseudo-nitzschia* is at bloom levels in the samples from Sadie Cove and Peterson Bay. We have started to see larger amounts of *Alexandrium* in our samples and are awaiting shellfish toxin testing results. We should have these results by tomorrow and will send out an extra update this week if any of them come back above the regulatory limit.

Thanks to all of our monitors and partners for the phytoplankton samples!

Rosie Masui & Jasmine Maurer

### Kachemak Bay Research Reserve Phytoplankton Update

#### Qualitative Analysis Phytoplankton Data

#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
7/17/2019*	Peterson Bay	14	28	<i>Skeletonema</i> sp.	Present	Present	None
7/19/2019	Gull Island	14.9	22.4	<i>Chaetoceros</i> sp.	Present	Present	Present
7/19/2019	Peterson Bay	13.5	26.1	<i>Pseudo-nitzschia</i>	Present	Bloom	Present
7/22/2019	Homer Harbor	14.7	24	Sparse Sample	Present	Present	None
7/23/2019	Halibut Cove	15	24	Sparse Sample	None	Present	None
7/23/2019	Peterson Bay	14	24	<i>Pseudo-nitzschia</i>	None	Bloom	Present

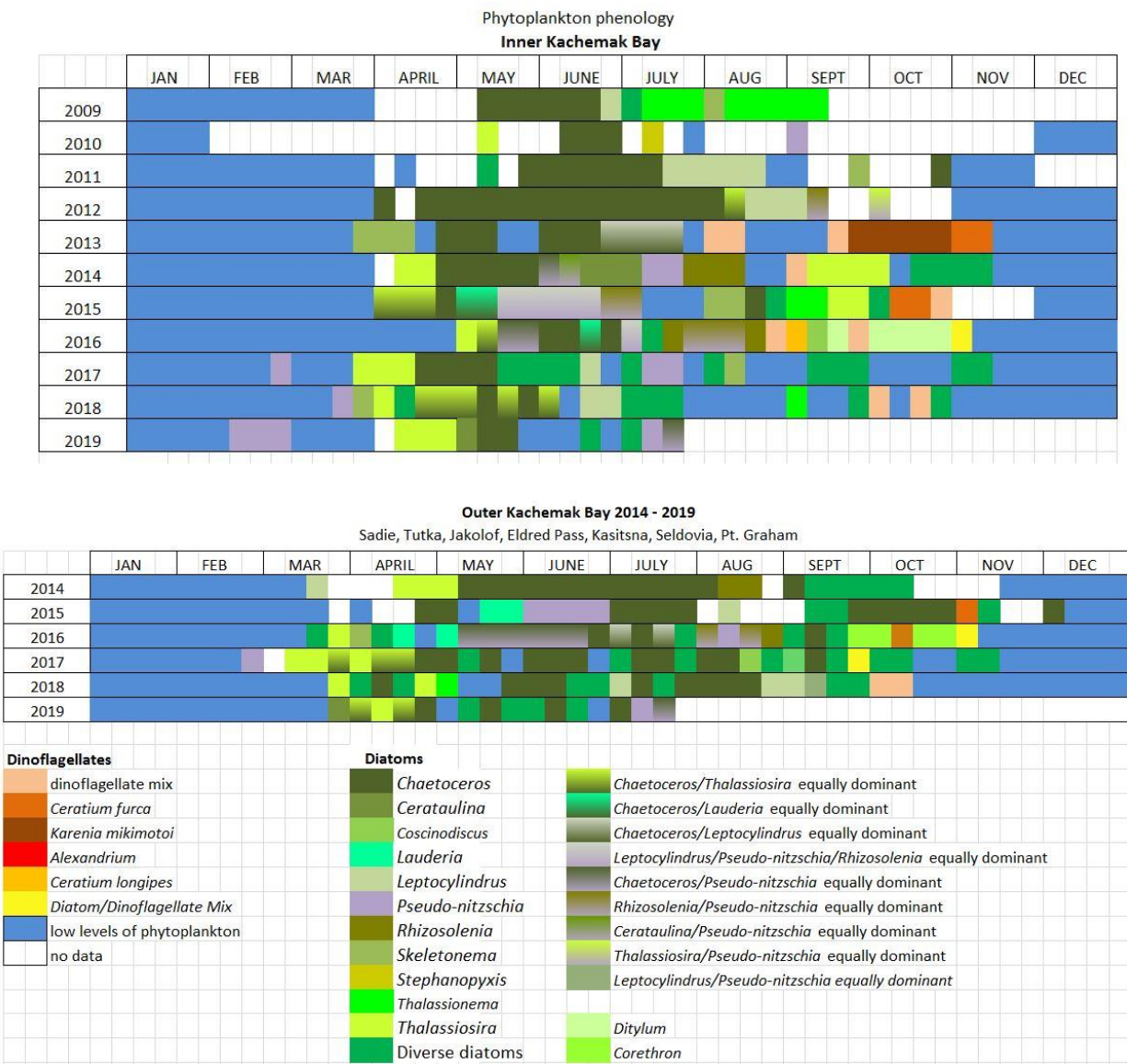
\*Samples received after last weekly update

#### OUTER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
7/19/2019	Eldred Passage	12	29.2	<i>Chaetoceros</i> sp.	Present	Present	Present
7/19/2019	Sadie Cove	14.6	28.1	<i>Pseudo-nitzschia</i>	Present	Bloom	Present

7/22/2019	Jakolof	12	30	<i>Chaetoceros</i> sp. & <i>Pseudo-nitzschia</i>	Present	Present	None
7/23/2019	Port Graham	13.6	29	<i>Cerataulina</i> sp.	Present	Present	None

\*Samples received after last weekly update



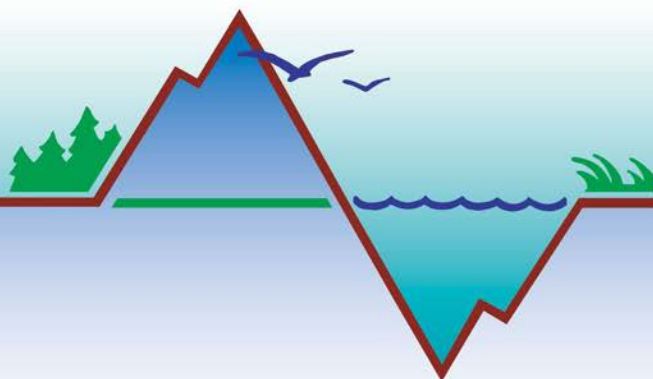
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Alaska Center for Conservation Science  
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## Kachemak Bay Research Reserve Phytoplankton Update

August 2<sup>nd</sup> – August 8<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmmasui@alaska.edu](mailto:rmmasui@alaska.edu)



Hello Everyone,

It is a relatively quiet week for phytoplankton in Kachemak Bay; we are seeing sparse levels of phytoplankton from most of the sites in the Inner Bay. However, *Pseudo-nitzschia* is blooming in Homer Harbor. In the Outer Bay at Kasitsna Bay and Port Graham the phytoplankton is abundant with *Pseudo-nitzschia*, and *Lauderia* competing at bloom levels.

We will be testing wild shellfish next week and hope to have preliminary results to report out to you all in next week's Weekly Update.

Please reach out if you have any questions.

Thanks to all of our monitors and partners for the phytoplankton samples!

Rosie Masui & Jasmine Maurer

## Kachemak Bay Research Reserve Phytoplankton Update

### Qualitative Analysis Phytoplankton Data

#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
7/31/2019*	China Poot	12	30	Sparse Sample	Present	Present	None
8/7/2019	Homer Harbor	13	30	<i>Pseudo-nitzschia</i>	Present	Bloom	None
8/6/2019	Halibut Cove	14	26	Sparse Sample	None	Present	None

\*Samples received after last weekly update

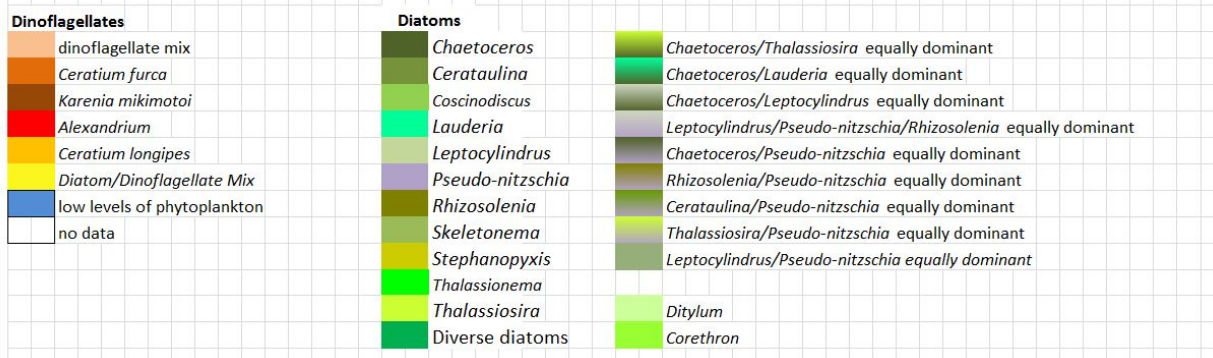
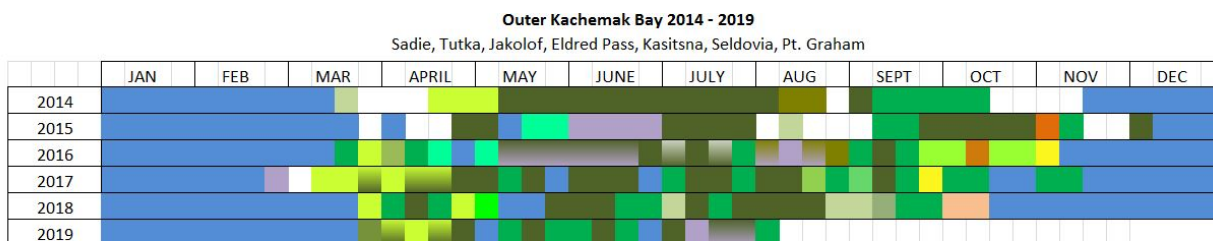
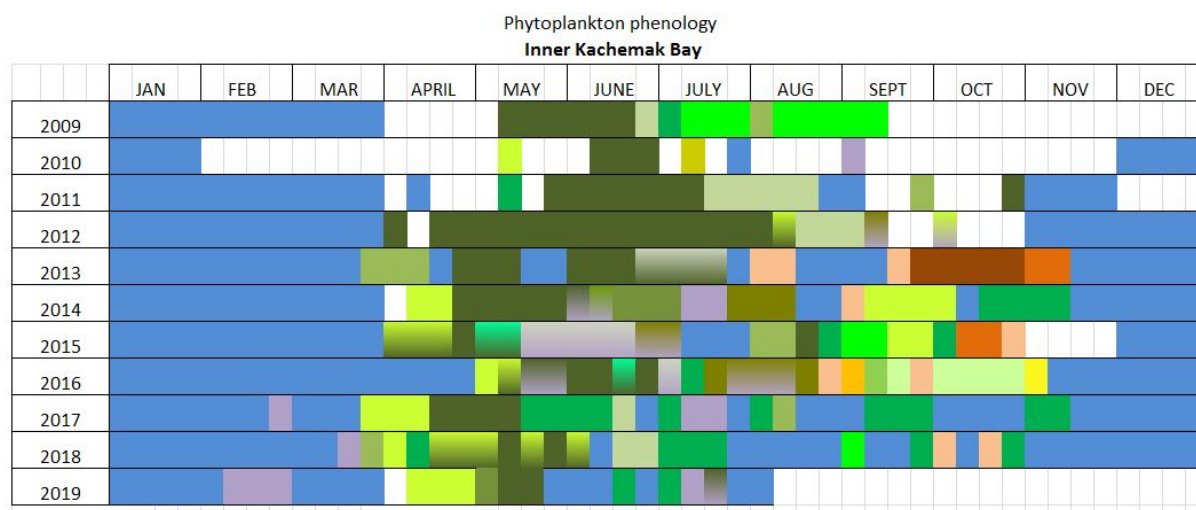
#### OUTER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
7/30/2019*	Tutka Bay	14	25	<i>Chaetoceros</i> sp.	Present	None	None
7/31/2019*	Little Jakolof	14	24	Sparse Sample	Present	Present	None
8/1/2019	Seldovia Harbor	12.8	32	Sparse Sample	None	Present	None



8/2/2019	Kasitsna Bay	12.6	32	Mixed Diatoms	None	Bloom	None
8/3/2019	Tutka Bay	13.6	27.3	<i>Scrippsiella</i>	Present	Present	None
8/7/2019	Port Graham	12.9	30	Mixed Diatoms	None	Bloom	Present

\*Samples received after last weekly update



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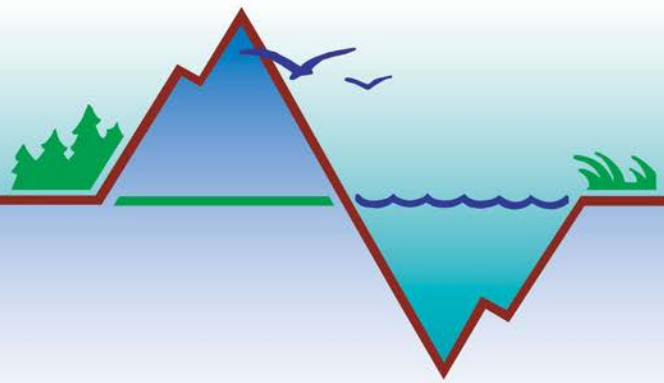


## Kachemak Bay Research Reserve Phytoplankton Update

August 9<sup>th</sup> – August 15<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmmasui@alaska.edu](mailto:rmmasui@alaska.edu)



Hello Everyone,

We have the results in from our wild shellfish toxin testing program! The blue mussels collected from Homer Harbor on 8/9/2019 came in below the regulatory limit for saxitoxins. KBNERR is not a regulatory agency and harvesting wild shellfish in Alaska is considered 'dig at your own risk'. All commercially harvested shellfish are regulated by the DEC and considered safe for consumption.

Several Inner Bay sites continue to have sparse phytoplankton in contrast to abundant phytoplankton at Outer Bay sites, including a *Pseudo-nitzschia* bloom in Jakolof Bay. *Pseudo-nitzschia* has been abundant in Outer Bay samples since mid-July; see the phenology graphs at the end of this update. There are three species we highlight in the Weekly Updates that are the species of concern in Kachemak Bay, *Dinophysis*, *Pseudo-nitzschia*, and *Alexandrium*. When we see any of these three in abundance we work through our follow-up procedures. If something is of concern we will share those findings with you and our partners throughout Kachemak Bay communities.

Please reach out if you have any questions.

Thanks to all of our monitors and partners for the phytoplankton samples!

Rosie Masui & Jasmine Maurer

### Kachemak Bay Research Reserve Phytoplankton Update Qualitative Analysis Phytoplankton Data

#### **INNER BAY**

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
8/11/2019	Bear Cove	15	21	Sparse Sample	Present	Present	None
8/13/2019	Halibut Cove	14	25	Sparse Sample	None	Present	None
8/14/2019	Homer Harbor	13.6	26.6	<i>Thalassionema</i>	Present	Present	Present

\*Samples received after last weekly update

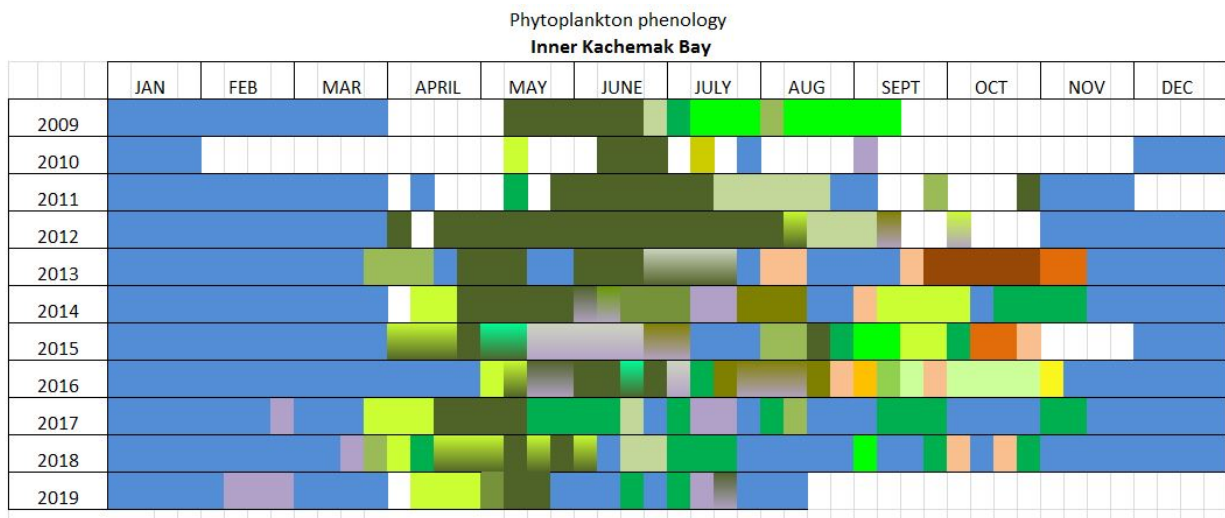
## OUTER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
8/8/2019	Seldovia Harbor	14.9	30	<i>Pseudo-nitzschia</i>	Present	Present	None
8/12/2019	Jakolof Bay	13	30	<i>Pseudo-nitzschia</i>	Present	Bloom	Present
8/14/2019	Port Graham	12.9	32	Mixed Diatoms	None	Present	None

\*Samples received after last weekly update

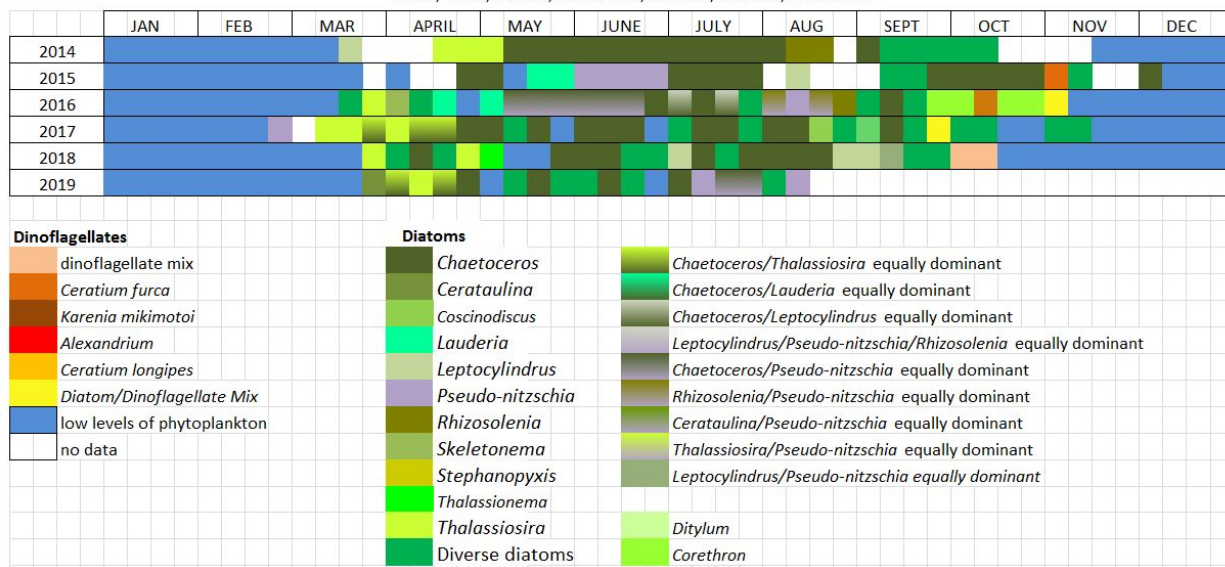
## RESURRECTION BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
8/12/2019	Resurrection Bay	15.2	25.5	Sparse Sample	None	None	None



# Outer Kachemak Bay 2014 - 2019

Sadie, Tutka, Jakolof, Eldred Pass, Kasitsna, Seldovia, Pt. Graham



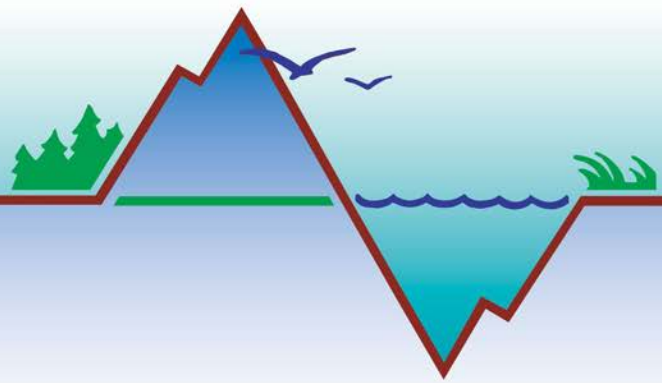
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 Alaska Center for Conservation Science  
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## Kachemak Bay Research Reserve Phytoplankton Update

August 16<sup>th</sup> – August 22<sup>nd</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmmasui@alaska.edu](mailto:rmmasui@alaska.edu)



Hello Everyone,

This week we did another round of toxin testing of wild blue mussels. Blue Mussels from Homer Harbor and Kasitsna Bay are both below the regulatory limit for saxitoxins. However, the Kasitsna Bay blue mussel saxitoxin level has come up from previous values this summer. This is a cautionary note as we could see toxin levels continue to rise in the coming weeks, or it may drop back down. We will be tracking this and send out updates as we have more information. KBNERR is not a regulatory agency and harvesting wild shellfish in Alaska is considered 'dig at your own risk'. All commercially harvested shellfish are regulated by the DEC and considered safe for consumption.

This week in the Inner Bay phytoplankton is sparse, although interestingly Homer Harbor is the exception with an abundance of phytoplankton there. The Inner Bay had a similar sparsity of phytoplankton during the same weeks in 2018. In the Outer Bay we are seeing a *Pseudo-nitzschia* bloom in Port Graham and *Thalassionema*, a diatom, blooming in Tutka Bay

Please reach out if you have any questions.

Thanks to all of our monitors and partners for the phytoplankton samples!

Rosie Masui & Jasmine Maurer

## Kachemak Bay Research Reserve Phytoplankton Update

### Qualitative Analysis Phytoplankton Data

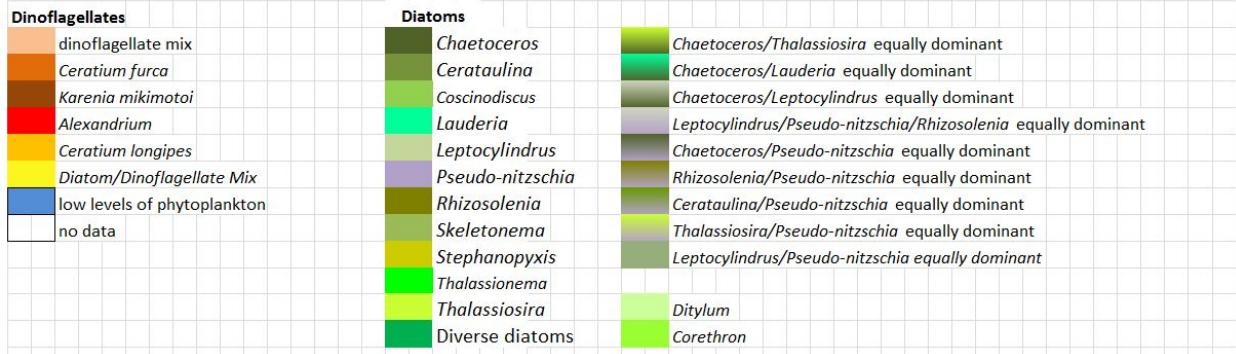
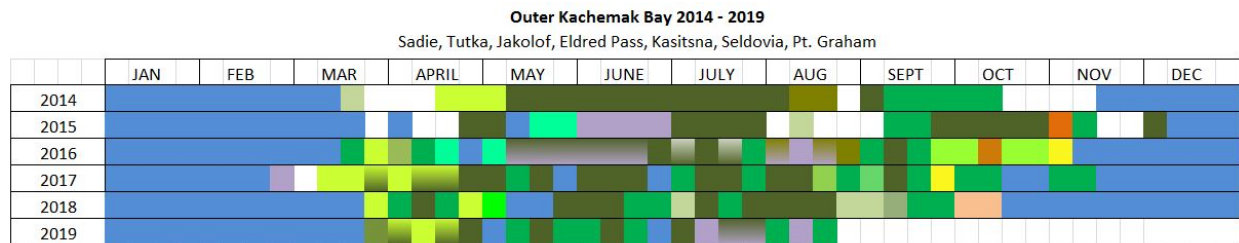
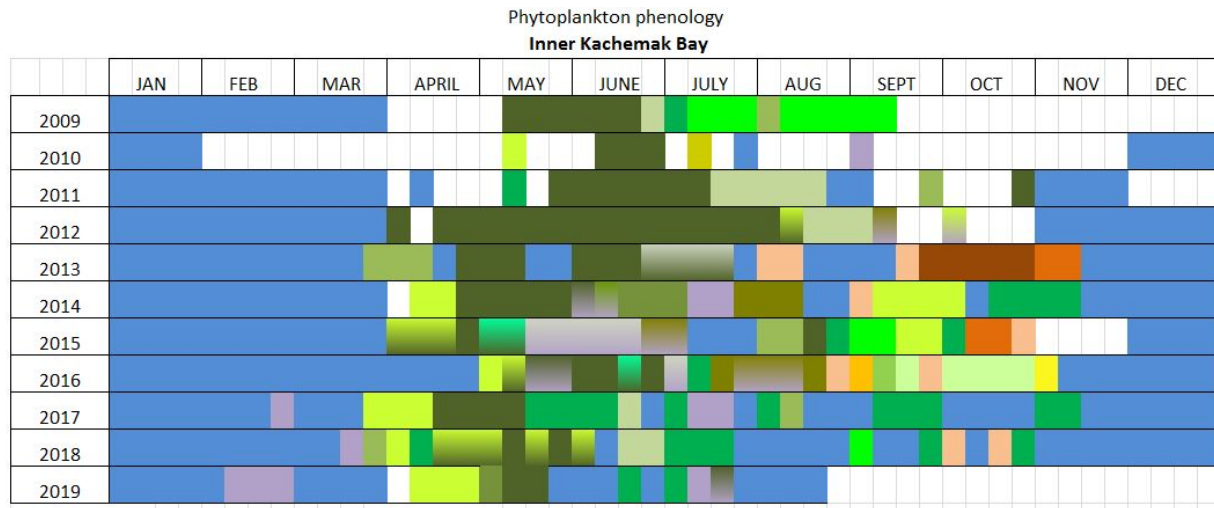
#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
8/11/2019*	Peterson Bay	17	28	Sparse Sample	Present	Present	None
8/16/2019	China Poot	14	28	Sparse Sample	Present	Present	Present
8/20/2019	Halibut Cove	12	28	Sparse Sample	None	Present	None
8/22/2019	Homer Harbor	11.8	27.3	Mixed Diatoms	Present	Present	Present

\*Samples received after last weekly update

## OUTER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
8/16/2019	Tutka Bay	17	24.9	<i>Thalassionema</i> Bloom	Present	Present	Present
8/20/2019	Port Graham	10.6	28	<i>Pseudo-nitzschia</i>	Present	Bloom	Present

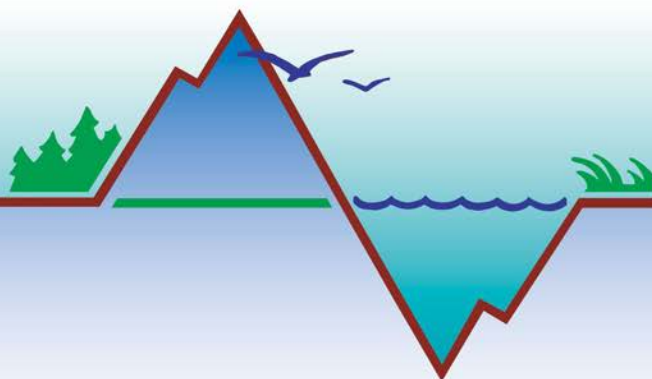


## Kachemak Bay Research Reserve Phytoplankton Update

September 6<sup>th</sup> – September 12<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmmasui@alaska.edu](mailto:rmmasui@alaska.edu)



Hello Everyone,

This week we are seeing phytoplankton at lower levels as fall settles in on Kachemak Bay. For the first time since June phytoplankton is sparse at Outer Bay sites. We will continue weekly phytoplankton sampling and analysis through October with bi-weekly email updates. However, the shellfish toxin testing program is wrapping up for the season.

As always reach out with any questions

Thanks to all of our monitors and partners for the phytoplankton samples!

Rosie Masui & Jasmine Maurer

## Kachemak Bay Research Reserve Phytoplankton Update

### Qualitative Analysis Phytoplankton Data

#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
9/9/2019	Bear Cove	11.5	26	Sparse Sample	None	Present	None
9/12/2019	Homer Harbor	12.4	25.3	Sparse Sample	Present	Present	None

\*Samples received after last weekly update

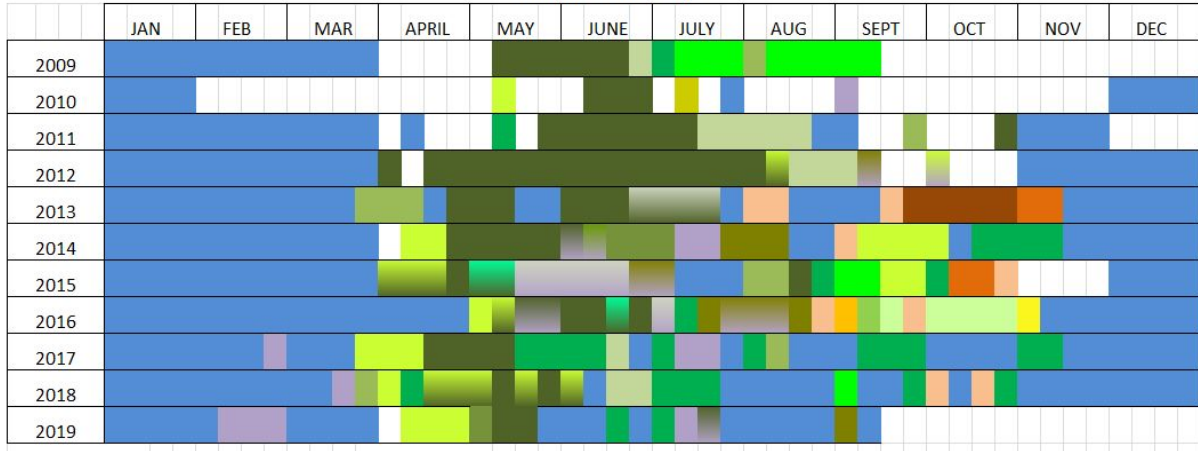
#### OUTER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
9/12/2019	Seldovia Harbor	12.8	30	Sparse Sample	Present	Present	Present

\*Samples received after last weekly update

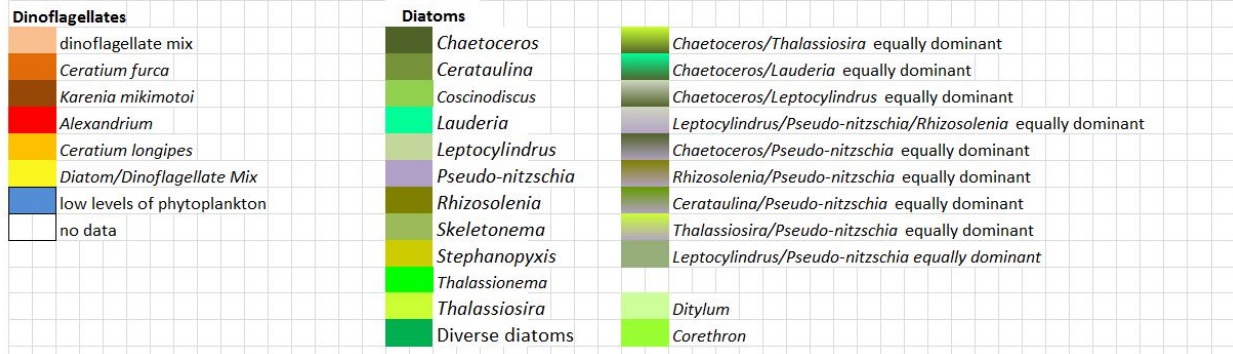
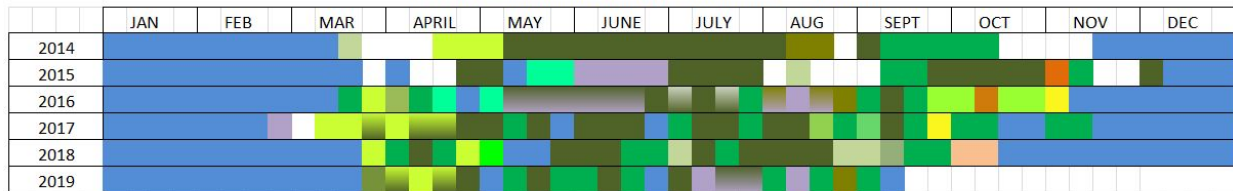


Phytoplankton phenology  
Inner Kachemak Bay



Outer Kachemak Bay 2014 - 2019

Sadie, Tutka, Jakolof, Eldred Pass, Kasitsna, Seldovia, Pt. Graham



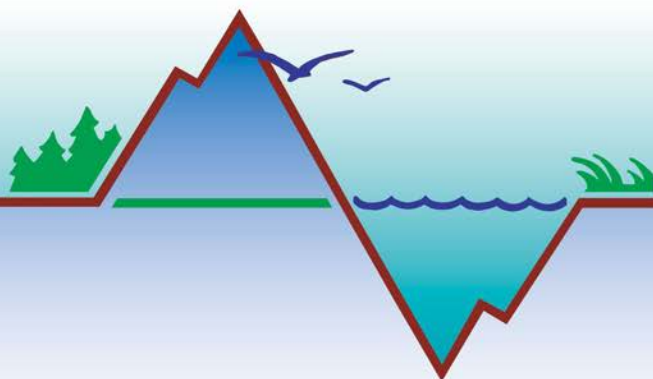
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## Kachemak Bay Research Reserve Phytoplankton Update

September 19<sup>th</sup> – September 26<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Robinson 907-235-1598 [rmmasui@alaska.edu](mailto:rmmasui@alaska.edu)



Hello Everyone,

This week phytoplankton is sparse in the Inner and Outer Bay. The low levels of phytoplankton in the Outer Bay differs from previous years when we have seen Mixed Diatoms at more abundant levels during this time period. We will continue to monitor phytoplankton and send out bi-weekly updates through the fall.

As always reach out with any questions

Thanks to all of our monitors and partners for the phytoplankton samples!

Rosie Masui & Jasmine Maurer

### Kachemak Bay Research Reserve Phytoplankton Update

#### Qualitative Analysis Phytoplankton Data

#### **INNER BAY**

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
9/17/2019	Bear Cove	11	25	Sparse Sample	None	None	None
9/19/2019	Homer Harbor	11.1	26.3	Sparse Sample	Present	None	Present
9/26/2019	Homer Harbor	10.5	28.5	Sparse Sample	Present	Present	Present

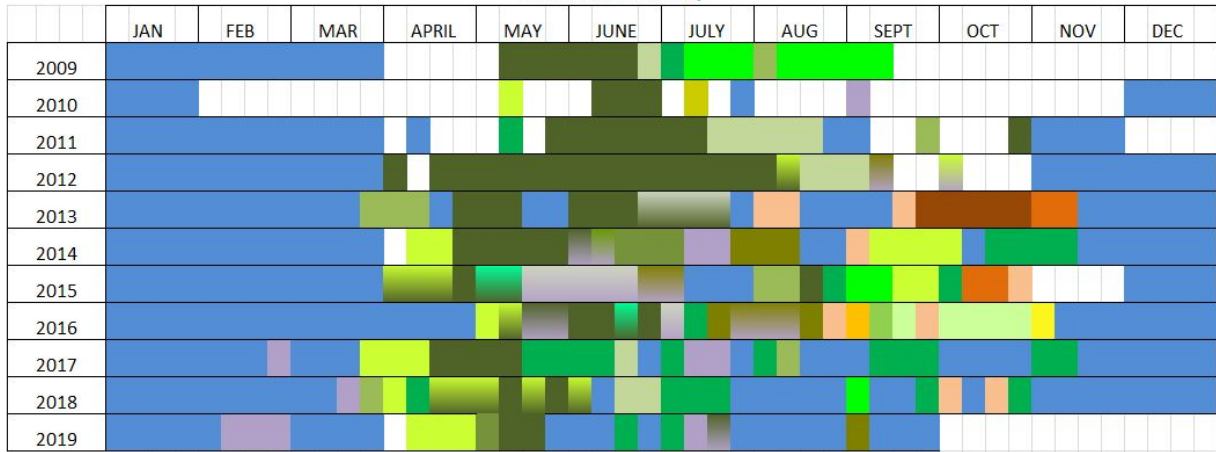
\*Samples received after last weekly update

#### **OUTER BAY**

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
9/19/2019	Eldridge Passage	11.7	29.6	Sparse Sample	Present	None	Present
9/19/2019	Seldovia Harbor	12.2	29	Sparse Sample	None	None	None
9/19/2019	Sadie Cove Entrance	11.6	28.3	Prorocentrum	Present	Present	Present
9/19/2019	Kasitsna Bay	11.6	30.0	Sparse Sample	Present	Present	Present

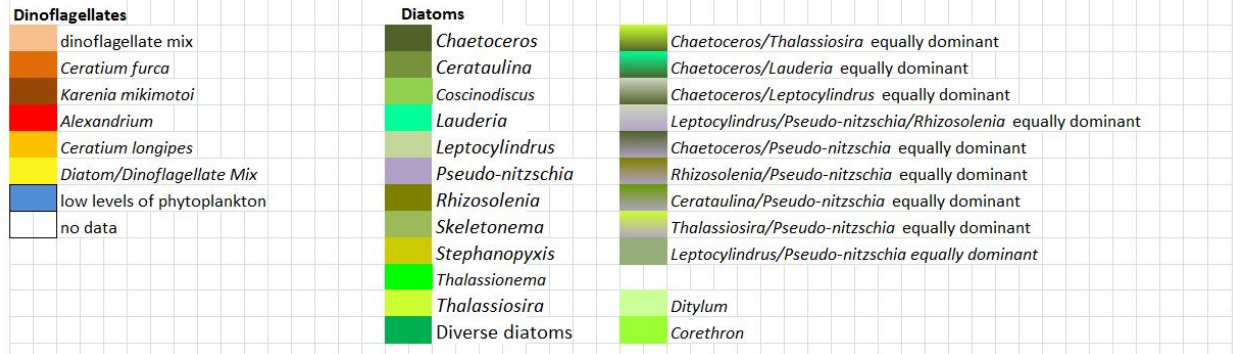
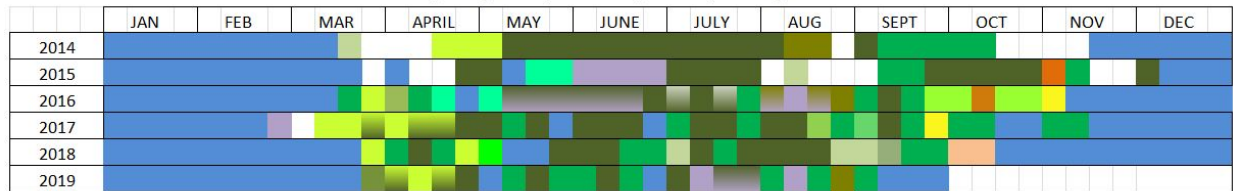
\*Samples received after last weekly update

Phytoplankton phenology  
Inner Kachemak Bay



Outer Kachemak Bay 2014 - 2019

Sadie, Tutka, Jakolof, Eldred Pass, Kasitsna, Seldovia, Pt. Graham



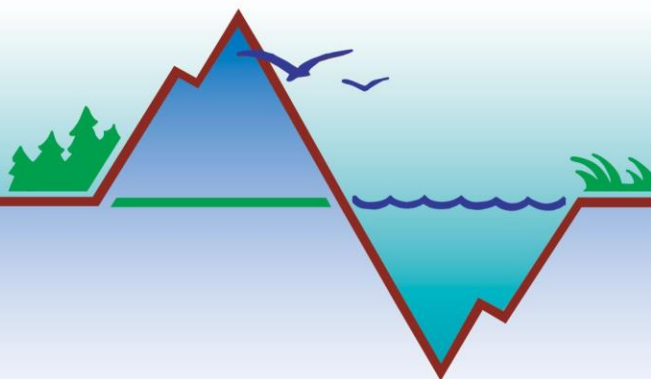
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## Kachemak Bay Research Reserve Phytoplankton Update

September 26<sup>th</sup> – October 10 2019

Harmful Algal Bloom Program

Rosie Masui 907-235-1598 [rmmasui@alaska.edu](mailto:rmmasui@alaska.edu)



Hello Everyone,

We are still seeing some phytoplankton in our samples. None of our samples had any species with elevated numbers but we are still seeing a variety. We will be continuing to sample the Homer Harbor weekly throughout the winter but otherwise will only be taking phytoplankton samples opportunistically. We invite everyone to join us for a lunch lecture tomorrow at the Kachemak Bay Campus in Homer for a presentation on Harmful Algal Blooms in Kachemak Bay and South-Central Alaska.

We have received phytoplankton samples from our partners at Prince William Sound Aquaculture. If anyone is curious about the results from those samples, please reach out. We are happy to share.

Thanks to all our monitors and partners for the phytoplankton samples!

Rosie Masui & Jasmine Maurer

### Kachemak Bay Research Reserve Phytoplankton Update

#### Qualitative Analysis Phytoplankton Data

#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
10/2/2019	Homer Harbor	10.5	28.7	<i>Cerataulina</i>	Present	Present	None
10/2/019	Bear Cove	8.8	28.8	<i>Chaetoceros</i>	Present	Present	None
10/8/2019	Peterson Bay	9.4	30.3	<i>Thalassionema</i>	Present	Present	None
10/8/2019	Halibut Cove	9.6	30.0	Mixed Diatoms	None	Present	None

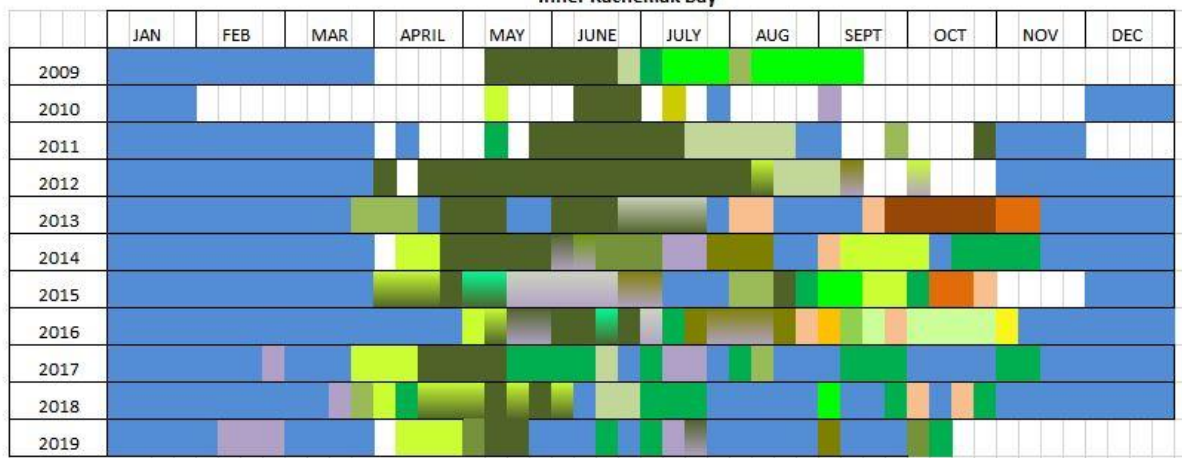
\*Samples received after last weekly update

#### OUTER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
10/8/2019	Jakolof Bay	9.1	30.7	Mixed Diatoms	None	None	Present
10/8/2019	Kasistna Bay	9.0	30.5	Mixed Diatoms	Present	Present	Present

\*Samples received after last weekly update

Phytoplankton phenology  
Inner Kachemak Bay



Outer Kachemak Bay 2014 - 2019

Sadie, Tutka, Jakolof, Eldred Pass, Kasitsna, Seldovia, Pt. Graham



Dinoflagellates

- dinoflagellate mix
- *Ceratium furca*
- *Karenia mikimotoi*
- *Alexandrium*
- *Ceratium longipes*
- Diatom/Dinoflagellate Mix
- low levels of phytoplankton
- no data

Diatoms

- *Chaetoceros*
- *Cerataulina*
- *Coscinodiscus*
- *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
- *Leptocylindrus/Pseudo-nitzschia* equally dominant
- *Ditylum*
- *Corethron*



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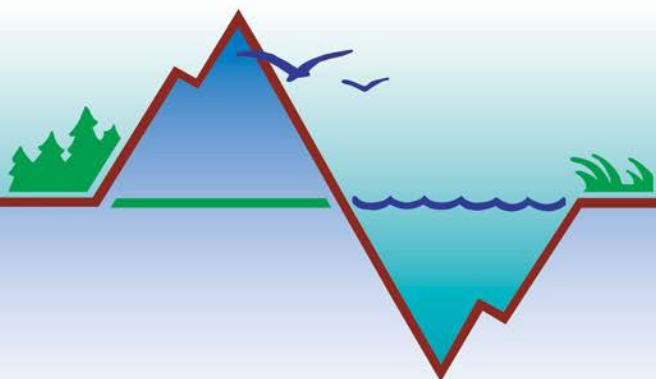


## Kachemak Bay Research Reserve Phytoplankton Update

October 11<sup>th</sup> – October 24<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Masui 907-235-1598 [rmmasui@alaska.edu](mailto:rmmasui@alaska.edu)



Hello Everyone,

A variety of phytoplankton species are present in our samples this week at low levels. Homer Harbor will be sampled weekly throughout the winter and we will continue opportunistically taking phytoplankton samples at other locations.

Last week the KBNERR hosted a workshop with local partners to discuss human health factors around harmful algal blooms. We look forward to incorporating ideas from that workshop into our HAB program as well as continuing to work with local partners and health care professionals to provide products Kachemak Bay communities can use to minimize health risks from HABs.

Thank you to all the participants who attended the workshop.

Thanks to all our monitors and partners for the phytoplankton samples!

Rosie Masui & Jasmine Maurer

### Kachemak Bay Research Reserve Phytoplankton Update

#### Qualitative Analysis Phytoplankton Data

#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
10/18/2019	Homer Harbor	8	28	Sparse Sample	Present	Present	Present
10/24/2019	Homer Harbor	8.2	28.2	Sparse Sample	Present	Present	None

\*Samples received after last weekly update

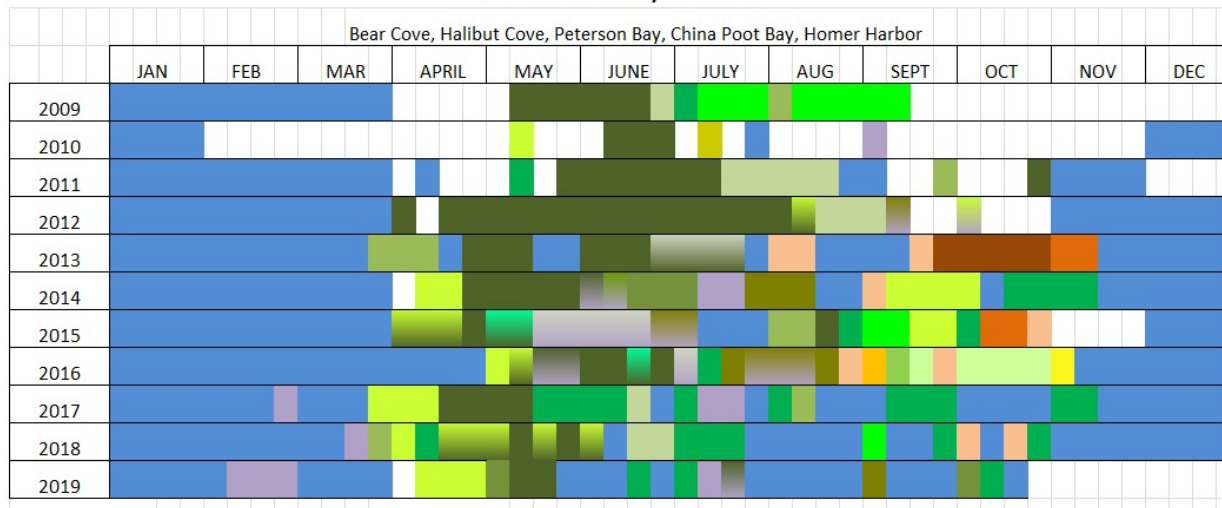
#### OUTER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
10/12/2019	Tutka Bay	8.7	28.4	<i>Chaetoceros</i> spp.	Present	Present	None
10/17/2019	Seldovia Harbor	7.9	30	Mixed Diatoms	None	None	Present
10/21/2019	Seldovia Ferry Dock	8.0	28.4	Sparse Sample	None	Present	None

\*Samples received after last weekly update

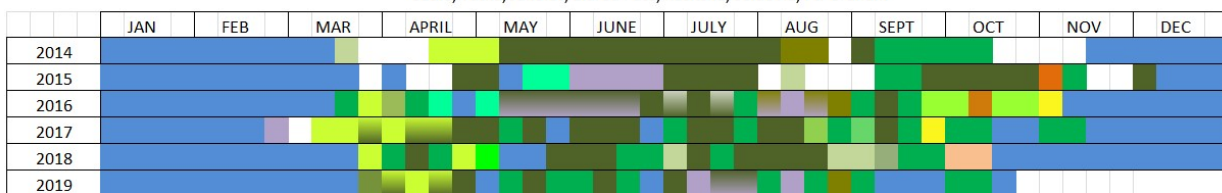


Phytoplankton phenology  
Inner Kachemak Bay 2009 - 2019



Outer Kachemak Bay 2014 - 2019

Sadie, Tutka, Jakolof, Eldred Pass, Kasitsna, Seldovia, Pt. Graham



Dinoflagellates

- dinoflagellate mix
- Ceratium furca*
- Karenia mikimotoi*
- Alexandrium*
- Ceratium longipes*
- Diatom/Dinoflagellate Mix
- low levels of phytoplankton
- no data

Diatoms

- Chaetoceros*
- Cerataulina*
- Coscinodiscus*
- 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
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- Thalassiosira/Pseudo-nitzschia* equally dominant
- Leptocylindrus/Pseudo-nitzschia* equally dominant
- Ditylum*
- Corethron*



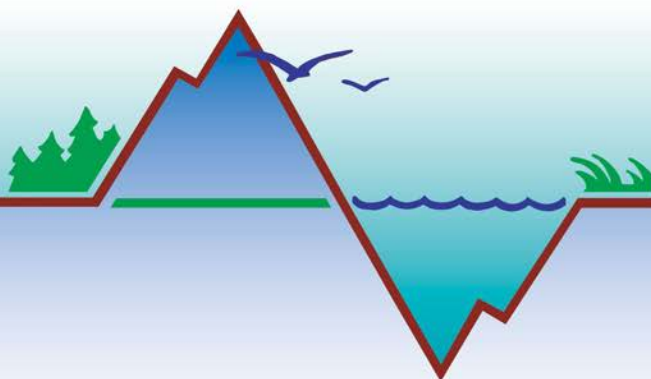
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## Kachemak Bay Research Reserve Phytoplankton Update

October 25<sup>th</sup> – November 7<sup>th</sup> 2019

Harmful Algal Bloom Program

Rosie Masui 907-235-1598 [rmmasui@alaska.edu](mailto:rmmasui@alaska.edu)



Hello Everyone,

Last week we saw the phytoplankton in Homer Harbor increase in diversity and abundance, especially the dinoflagellates. Dinoflagellates are a diverse group of single celled organisms that include *Alexandrium* and *Dinophysis*. The Greek root dinos, “whirling”, describes their distinctive swimming pattern when observed live under the microscope.

Although we see dinoflagellates throughout the year in our phytoplankton samples, they do not frequently dominate a sample. You may notice in the phenology charts, at the end of this update, that the orange and red colors, used to indicate a dinoflagellate was dominant, are not common.



Photo by KBNERR

*Ceratium furca*, shown above, was the dominant dinoflagellate in last week’s Homer Harbor sample.

The next update, and the last for 2019, will be on November 21<sup>st</sup>. We will begin our email updates again in April of 2020. Please reach out with any questions at any time.

Thanks to all our monitors and partners for the phytoplankton samples!

Rosie Masui & Jasmine Maurer

### Kachemak Bay Research Reserve Phytoplankton Update

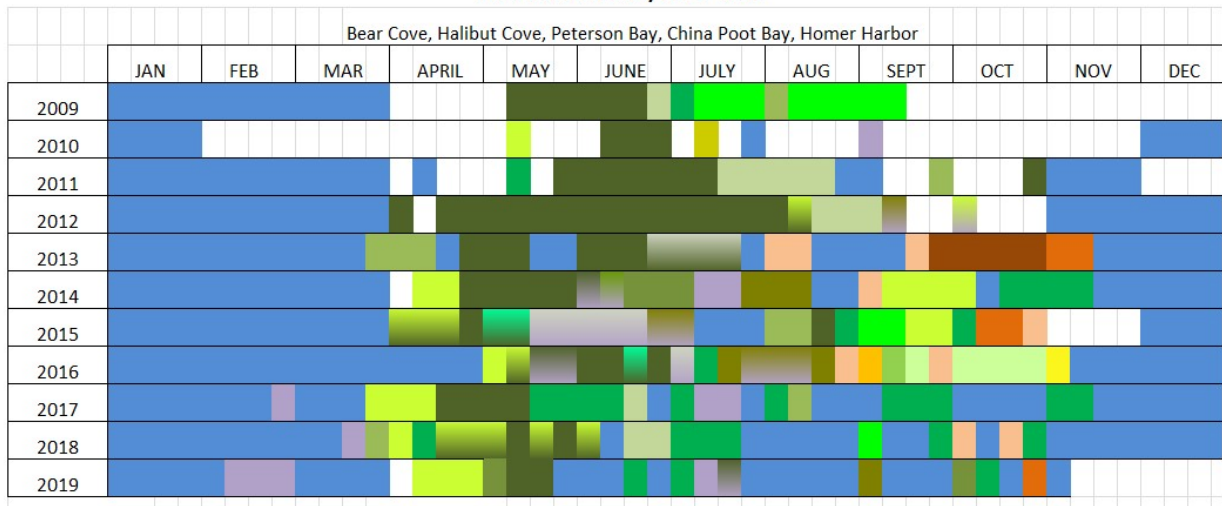
#### Qualitative Analysis Phytoplankton Data

#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
10/31/2019	Homer Harbor	9	28	<i>Ceratium furca</i>	Present	None	Present
11/06/2019	Homer Harbor	7.8	26.2	Sparse Sample	None	Present	None

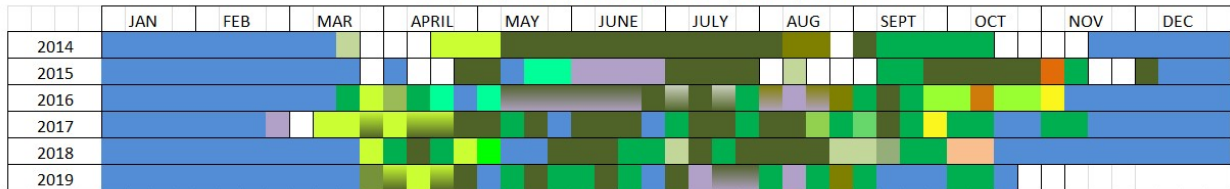
\*Samples received after last weekly update

Phytoplankton phenology  
Inner Kachemak Bay 2009 - 2019



Outer Kachemak Bay 2014 - 2019

Sadie, Tutka, Jakolof, Eldred Pass, Kasitsna, Seldovia, Pt. Graham



Dinoflagellates

- dinoflagellate mix
- Ceratium furca*
- Karenia mikimotoi*
- Alexandrium*
- Ceratium longipes*
- Diatom/Dinoflagellate Mix
- low levels of phytoplankton
- no data

Diatoms

- Chaetoceros*
- Cerataulina*
- Coscinodiscus*
- Lauderia*
- Leptocylindrus*
- Pseudo-nitzschia*
- Rhizosolenia*
- Skeletonema*
- Stephanopyxis*
- Thalassionema*
- Thalassiosira*
- Diverse diatoms
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- Chaetoceros/Lauderia* equally dominant
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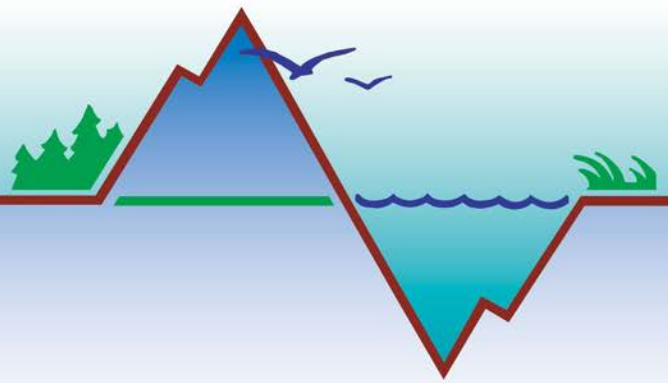
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## Kachemak Bay Research Reserve Phytoplankton Update

November 8<sup>th</sup> – November 21<sup>st</sup> 2019

Harmful Algal Bloom Program

Rosie Masui 907-235-1598 [rmmasui@alaska.edu](mailto:rmmasui@alaska.edu)



Happy Thanksgiving Everyone,

Our samples from the Homer Harbor were sparse over the last two weeks. Most of the species observed are represented by a single individual on the slide. Sparse samples during this period of the year are common; see the phenology charts below, the blue represent weeks of sparse phytoplankton.

This is the last Phytoplankton Update of 2019. Weekly samples of the Homer Harbor will continue through the winter and we will report out on any relevant observations when our email updates begin again in April of 2020.

Please reach out at any time with questions.

We are grateful to all our monitors and partners for all your contributions this year! Your work allowed us to track HABs in Kachemak Bay and beyond.

Rosie Masui & Jasmine Maurer

### Kachemak Bay Research Reserve Phytoplankton Update

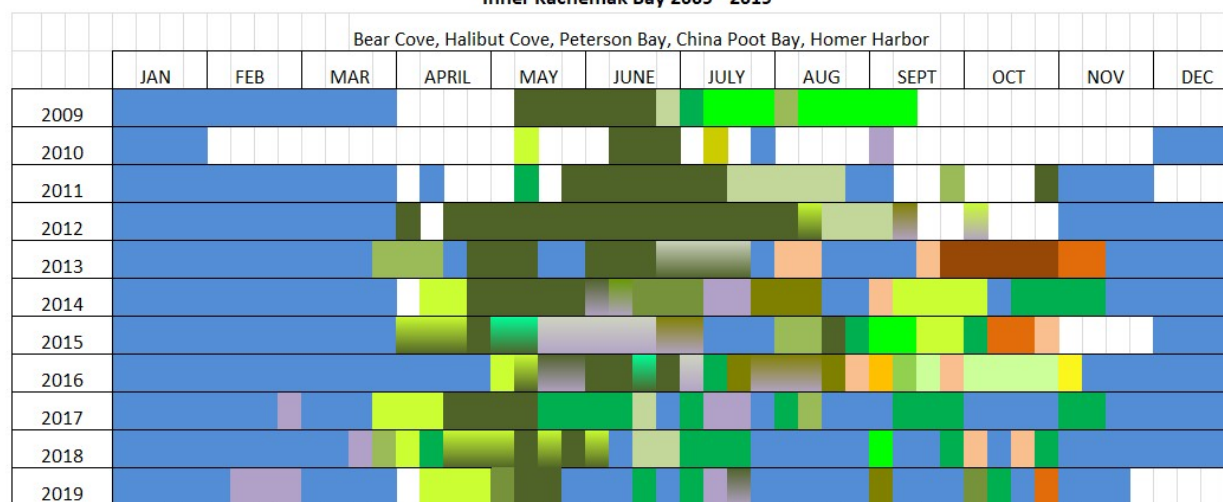
#### Qualitative Analysis Phytoplankton Data

#### INNER BAY

DATE	Bay	Water Temp	Salinity	Dominant species	Dinophysis	Pseudo-nitzschia	Alexandrium
11/14/2019	Homer Harbor	7	27	Sparse Sample	Present	None	None
11/21/2019	Homer Harbor	7.2	27.7	Sparse Sample	Present	None	None

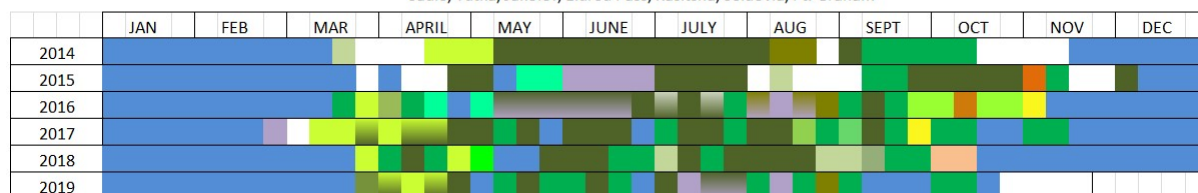
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Phytoplankton phenology  
Inner Kachemak Bay 2009 - 2019



Outer Kachemak Bay 2014 - 2019

Sadie, Tutka, Jakolof, Eldred Pass, Kasitsna, Seldovia, Pt. Graham



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