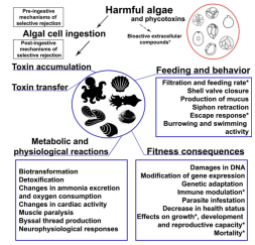
AHAB Monthly Call – September 9th, 2021

Participants: Thomas Farrugia (AOOS), Michelle Morris (ADFG), Chandra Poe (Qawalangin Tribe), Lily Olmo (KANA), Michael Opheim (Seldovia Village Tribe), Stephen Payton (Seldovia Village Tribe), Dom Holdero (NOAA Kasitsna Bay), Kris Holderied (NOAA Kasitsna Bay), Varis Ransi (NOAA), Maile Branson (APMI), Annette Jarosz (APMI), Jeff Hetrick (APMI), Patryce McKinney (DEC), Sarah Schoen (USGS), Caroline van Hemert (USGS), Naomi Bargmann (USGS), Dean Stockwell (UAF), Robb Kaler (USFWS), Muriel Dittrich (UAF), Susana Gonzalez (UAF), Anne Garland (ARIES), Alex Sabo (NOAA NCCOS), Steve Kibler (NOAA NCCOS), Rosie Masui (KBNERR), Danielle Gerik (USGS), Darcy Dugan (AOOS), Lori Verbrugge (CDC), Don Anderson (WHOI), Bridget Ferris (AFSC), Teri King (WA Sea Grant), Julie Matweyou (AK Sea Grant), Gwenn Hennon (UAF), Claudine Hauri (UAF IARC), John Harley (UAS), Rachel Lekanoff (APIA), Bill Carter (USFWS), Natalie Monacci (UAF), Carol Brady (DEC), Katie Gavenus (CACS), Amy Holman (NOAA)

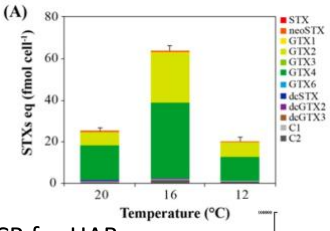
Thomas' updates (more details on AHAB website: https://aoos.org/alaska-hab-network/)

HAB Science

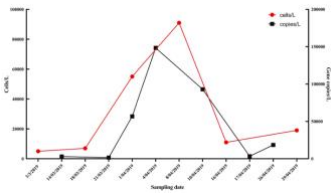
- Overview of HAB impacts on marine shellfish
  Neves et al. 2021



- Temp influence on STX biosynthesis in *A. pacificum*
  Wang et al. 2021



- Recent developments in qPCR for HABs
  Pearson et al. 2021
- Using qPCR to model P-N bloom
  Ajani et al. 2021



Patryce McKinney: In the Wang study, look at how small a the STX/nSTX are in relation to the total toxicity.
Steve Kibler: We found an interesting seasonal cycle among STX, neoSTX and the GTXs in Kodiak clams. So I'm not surprised. Seems to be related to season, the Alexandrium bloom itself, and the shellfish involved.
Patryce McKinney: It highlights some potential weakness in STX primary target testing kits that can underrepresent the toxicity, by location, species, or time....

AHAB work

- AFSC Ecosystem Status Report coming up – HAB section
- Update on seabird mortalities?
- NOAA OA/HAB funding opportunity
  - Letter of Intent: Oct 14, 2021; Full Proposal Jan 1, 2022
  - 3-5 projects funded at $300-500k/year for 1-3 years
  - This NOFO is an outflow from the Aug 2020 workshop on Defining a Research Agenda on OA and HABs
  - Aimed at better understanding the OA/HAB interaction and cascading impacts on ecosystems
  - Can be the multi-stressor of OA and HABs, or the impact of OA on HABs
  - Must include at least one of: analysis OA/HAB observational data; lab or field studies that target OA effects on HABs; OA and HAB interactions across different ecological levels.
  - No cost sharing or matching requirements

Patryce McKinney: EHL would be willing to do testing for PST if anyone is interested.
Katie Gavenus: I guess I should mention, if this group wants help with any youth education components for the NOAA HAB/OA proposal, Coastal Studies would be happy to help with writing that section and/or implementing if the proposal is funded. Things are slowing down a little after a very busy spring and summer for us, so I actually have a bit of time again! Feel free to get in touch if this is something anyone wants to talk more about.

Sarah Schoen: I can do a brief update on the Middleton Island die off. The National Wildlife Health Center tested for Botulism. They only were able to test two specimens. One had a positive detection for Botulism-C which isn't harmful to humans and the other one was barely detectable. So Botulism might be something we're looking into more. Then Naomi ran some more samples from muscles from Middleton and muscles from Port Edges over in Prince William Sound, where the tagged kittiwakes had been foraging right before the die off. And those all had below detection levels of saxitoxin, so it doesn't look like that was a big factor, but we'll still test some of the die-off tissues and some of the feces that were collected before the die off from breeding birds right at the colony (part of a biogeography study anyway), so we'll be testing the samples for saxitoxin and domoic acid a little bit later here, but it doesn't look like it's a smoking gun for saxitoxin.
Robb Kaler: More information about botulism and diseases in wildlife can be found here:
http://www.adfg.alaska.gov/index.cfm?adfg=hottopics.main
http://www.adfg.alaska.gov/index.cfm?adfg=disease.main
Caroline van Hemert: Middleton samples were also non-detects for DA.

Round Robin Updates (going by region of work)

SOUTHEAST
Muriel Dittrich
No major updates, but we still are sampling weekly and we're kind of going into analysis mode, so we actually sent off our OA samples to Natalie. So that's really exciting and we sent off some oyster samples to SEATOR after you guys recommendation on the domoic acid sampling. So

hopefully we'll get results for that soon, but kind of looking at nutrients and chlorophyll and processing all the samples we took this summer.

John Harley
Hey everyone, I apologize I haven't been on meetings recently. I was just doing a postdoc with the Forest Service up here in Juneau, but actually just got my appointment as a research faculty at UAS here in Juneau and I'm going to be working on some HAB modeling and specifically looking at incorporating some local traditional ecological knowledge to kind of expand our data set for HABs in southeast Alaska. I'm really interested in the NOAA call for the OA and HAB synergy and interested to see how this group goes forward with that.

Michelle Morris
Not a whole lot has changed over here. Just a few people still doing their routine sampling with shellfish that they keeping in cages or monitoring any sort of HAB events, but other than that, I think things are winding down on the year for me.

SOUTHCENTRAL
Dom Hondolero
We're not seeing a lot in our recent samples and seems like it's sort of the end of the summer bloom. Although we have in the past had some blooms happen late in September, so we're still keeping an eye on doing regular monitoring. We'll be going out next week to do our quarterly sampling, which is when we do the larger transects in lower Cook Inlet. So might have an update for you next time, but yeah, not much going on here as far as productivity.

Thomas: Did you ever get a chance to sample and Jakolof Bay after Michael Opheim had seen that algal bloom last month?
Dom: Yeah, I did go out there a couple days later and it seemed like the bloom was gone. I grabbed a sample and looked and we would didn't see anything out of the ordinary, so it might have moved somewhere else.

Varis Ransi
We are going to have this near real time satellite data up soon and we we're working with Axiom and they're going to help us serve the data. But at this point we're working on our end to kind of clean up our processing. We're going to serve the data on the cloud, and we're learning how the cloud works, and we're cleaning that up on our end before we approach Axiom.
Kris Holderied: This is the model on temperature conditions in relation to the range we expect for high Alexandrium growth. Other factors of course come into play, so it’s not about the probability of a bloom, it’s basically about growth conditions, so it's quantifying the temperatures relative to Alexandrian growth.

Michael Opheim
We did get the kittiwake sent off. We haven't heard anything back from Bruce yet, but he should have that now. Other than that, I think that's pretty much all we've got.

Rosie Masui
Nothing major to report from us, I just sent off those razor clams samples up to DEC, collected earlier this summer from across the inlet, which will be interesting to see what those look like. Like Dom, seems like things are trickling off. We had some concerns that I shared with folks last month about the potential for a Dinophysis bloom in the inner Bay, but that never built up to anything. So we were able to track that, but nothing led to concerning levels. Otherwise, we're still just kind of working through samples. We've get batches of samples from Prince William Sound at the end of the season, so we have a box of samples that I am going to go through and read and then share with folks at Alutiiq Pride.

Maile Branson
We don't have much to add. We aren't seeing much. We are still collecting and we're going to collect through the end of the month, but I think we'll probably stop doing shellfish collections at the end of this month and then start working on processing samples. I do have a really interesting thing to share. We have we've been approached by Abraxas and they have created a rapid test that's usable in the field and they have approached us to work with them to beta test it. We're still in development, we haven't quite figured out exactly how it's going to go down, but it's a strip test and then it also comes with a reader and the reader is able to quantify it, but I think the reader is still in development. They only have it for saxitoxin right now, they are working on expanding it to other things. It sounds like the strip presents sort of a darkness that correlates with a range of values, but it's not super accurate and then they weren't very clear on how accurate the reader is with the strip, so I think they're still working on figuring some of those things out.

Thomas: does it quantify like total saxitoxin equivalents or a specific congener of saxitoxin?
Maile: My guess is that it would be sort of similar to the ELISA where it's saxitoxin and some of the other congeners, but not some of the other ones.
Naomi Bargmann: That is true. I looked it up to see if it did total toxicity, but it doesn't. It does 100% saxitoxin congener and the other one are really low percentages, like 10% or 19%.
Maile: I think if it if it works out, it could be a really cool initial test for shellfish farmers and field samples.
Thomas: Yeah, it’s definitely the kind of thing that we can send out to people. I can buy some kits and send them out to people and compare the field test versus what's being found with the mouse bioassay or whatever else, so that's great.
Dean Stockwell: Julie Matweyou in Kodiak has done a lot of work with different types of test kits and things, so you might reach out to her so she can give you some questions to ask.
Julie: Yes, happy to talk about my experiences

Caroline van Hemert
Nothing super new I don't think Matt's on, but getting the kittiwakes samples or the Middleton samples are done so nothing there in terms of HABs that we're aware of, and I think there's some additional samples from other die off events of the Nome area and northwestern Alaska that haven't come to us. They’re on their way and will be tested soon. Other than that, for our

captive study we now have at least 30 chicks at the Alaska Sea Life Center, so that's really great for the upcoming study so it looks like that's all moving forward.

Sarah Schoen
I've been missing the last couple meetings, so Naomi might have already talked about this, but we've got some Unalaska samples to test still, the samples we collected out in June. Naomi has been working those up now and we're still sort of tracking to see if there's any big bloom events, but I think we're mostly wrapped up for this field season. We've got a lot of work to do this winter testing out the samples we collected.

Robb Kaler
Bird wise we are continuing to get reports of carcasses at Norton Sound and Nome, so Gay Sheffield, Alaska Sea Grant has been emailing us reports and so it's mostly shearwaters but other species as well. We are working on a one-page fact sheet to share out. It's got the COASST map that uses data contributed by Kawerak and other partners. For the Botulism - that is the first report of avian mortality with botulism, so we're working with ADFG, and there will be a fact sheet released here in the next day or so (http://www.adfg.alaska.gov/static/species/disease/pdfs/avian_botulism_type_c_detection_statement_9_sept_21.pdf). And then we'll have a fact sheet just on the die off. But right now we just got reports back from the National Health Center and they have tested the 12 carcasses from the Bering Strait. They were all negative for avian influenza. Sarah also did collect or tissues that will go back to the USGS Alaska Science Center for harmful algal bloom testing.

Patryce McKinney
From our point, it's been pretty much business as usual, systems and things are operating well and I guess the only thing of interest was that the photographer who was following around the Scientific American reporter came through last week. They're looking to publish that sometime around December.

Carol Brady
I don't have any updates for commercial shellfish. We haven't had any results above the regulatory limit.

Darcy Dugan
I have two quick things that are relevant probably to the HABs community. One is the Alaska Ocean acidification network next week will be releasing a 6-part Carbon Policy Podcast series. It's called Our Future Ocean: What can carbon policy do for the ocean and our fisheries? And this idea came up through conversations with the fishing industry of how do we get coastal Alaskans, the fishing community and people in general to better understand what carbon policy is and how it can affect the oceans. So as we listen to national conversations we're more educated. The podcast is educational instead of persuasive in nature. So it goes over what is carbon pricing, or what different types of carbon policy, how it's relevant to the ocean and Alaska Ocean health, and then some of the different policy models that are being used other places and the lessons learned. It's got also resources for or links to where to find other

resources, so I just wanted to mention this as we'll be rolling this out. We would love all of your help and helping circulate it.
And the Global Ocean Acidification network is holding an ocean acidification week next week. There will be 50 sessions from all over the world. http://www.goa-on.org/webinars/OaWeek2021/webinar.php
It's free, you just need to register for a session and the North America hub one is on Monday so particularly for those who are thinking of maybe looking at that NOAA funding opportunity and are trying to get more ocean acidification info on a global scale for context, this could be an interesting thing to check out.

KODIAK
Lily Olmo
Hi I wanted to introduce myself. I am taking over for Hallie Brown as the VistaCorps volunteer. So I'm going to be doing education and outreach as well as helping with monitoring, so I've kind of been learning protocols this week and got to do my first phytoplankton tow and shellfish dig so super excited to be here and to learn from you all. But as far as updates, we also don't really have any updates to share and everybody else is out of town.

ALEUTIAN AND PRIBILOF ISLANDS
Chandra Poe
We don't hardly have updates. We were able to collect a couple of shearwaters, they're still sitting in the freezer. We've actually been running into some pretty significant obstacles lately with COVID situations and staff situations and so not a lot of new information. We do have some stuff in the freezer, so whenever we can get it out we will. I don't think I have anything very exciting to share, but it's super fun to hear everyone's information.

Rachel Lekanoff
Hi everyone, I am new at APIA, just started last week. I'm sitting in for Karen Plotnikoff today. I see a few familiar faces, so it's nice to meet you all and hopefully I'll get to keep sitting in and working with you all.

NORTHERN BERING SEA
Emma Pate
We had a power outage, but I'm back on power. What I'm doing here is collecting water samples once a week from one site at a lagoon 20 miles outside of Nome. We're using the microscopy process to analyze those samples. And then I coordinated with the harbormaster with the city of Nome to bring one of our staff offshore within a 2 mile radius to collect samples at least once a month. We base that around the weather, when we have these South winds they create some high waves so it makes it difficult. And we've had a lot of rain and wind this summer. But the lagoon site is easily accessible, at least until it starts freezing. And then our plan is when the ice forms we will coordinate with subsistence crabbers to help us collect some samples offshore.

ARCTIC

Don Anderson
Hi everyone, two things to mention to the group. The first is I haven't heard any discussion yet about the DBO cruise operating right now. I just wanted to point out we have a HAB person on there to be taking samples throughout that cruise. The unfortunate news is that the ship is having issues - they have to use birthing vans on the deck and band vans for the labs and so forth. And some of them are having troubles with electrical service to the birthing vans. So actually there are ongoing discussions about whether our HAB person is going to get off when that gets to Dutch Harbor and maybe try some repairs. Apparently a few other people may be getting off, whether they're replaced or not, we don't know. In terms of HAB data that was our chance to try to get somewhat late season Alexandrium or Pseudo-nitzschia samples and some more sediment samples and but it's not totally clear what will happen because of the situation with the vessel.
The other thing is just a heads up for everybody in the network to be aware. I've mentioned before that we have collected data over the last few years about Alexandrium cysts themselves and in more recent times we've done a reasonable amount of analysis to try to look at bottom water temperatures and even done some modeling and calculations of what we think the environment is for germination of the large number of cysts we've observed and mapped out in the Chukchi sea and even up by point Barrow, and this is now in a manuscript that has been accepted in the Proceedings of National Academy of Science (PNAS), and it's one of these high impact journals, and I say this because typically, when something is published in a journal like that, it often generates a fairly strong media attention, and this one already is doing that.
The journal itself has flagged this as one of the stories they want to highlight in this particular issue. They would like to help with media outreach so there's a major coordination effort going on, led by Woods Hole to try to get a correct and appropriate message out. And that's why I'm telling this group. In this case, we want to tell a very clear and strong science story. This is what we know. This is what we think about and what it's saying is not just that we've seen these cysts, or seeing these blooms, but there's really a strong potential for recurrent annual self-seeding - we would say the blooms would originate within the Chukchi Sea blooms, in addition to the ones that have been documented in the past that move up from southern waters through Bering Strait and are transported into the region. Right now the bottom water temperatures are 8 degrees up there that's warmer than we see in the Gulf of Maine where these blooms happen every year. So we are walking this fine line where we want to tell a science story, say that there's a potential for significant and recurrent blooms, but at the same time trying to be very much aware that it's just potential. No one has gotten sick yet. It may be that the main outcome of all this is that there's more of a risk to food security than actual public health given the diets of people and the way these toxins might move through the food web. But as you all know, there's a number of studies funded, Kathi Lefebvre is leading one with me on food web transfer, and eventually we'll have more information, but now all we have is this early information about the blooms themselves. So if you start hearing media talk about this, let's all be responsible and try to make sure that there isn't any sensationalism. This isn't the end of the world. We aren't telling people that they can't eat all the resources up there. We're just saying there's a risk. Be careful we're working on it. These are the people you can talk to to get more information. Whether it's about the temperature effects or the cysts or the food web, or the benthic ecology with Jackie Greg Meyer, she's also a Co author, so.

I know that there's been efforts to have workshops on communication of HABs, HAB toxicity, and HAB data. This is a real world example of how careful one has to be with this, and we're trying to be ahead of the whole game. So just be aware that it's coming probably within the next month. I've got the page proofs just arrived today, have to deal with those and within one to three weeks it will be published and it will be embargoed for a certain period of time.
In other words, journalists will learn about it a week ahead of time and will actually then get all contact information. But whatever they learn from us and whatever they read can't be distributed until the day this is published, but it's imminent and in a good way, this could really help put HABs in Alaska and the Arctic even more on the map than they currently are.
I should add one more thing, I forgot to say is that we've been working with Gay Sheffield and others, but Gay has highlighted a number of communities and organizations that we really need to get the word to. Ideally, we would get it to them before this is published, but that's proving very difficult to do. Gay wanted me to give a Strait talk, but the next date is too close to the time this might be published, so it may still be embargoed at that time. But we are soliciting the names of communities and whatever outlets and others that it should be at least informed as this press release and other things go out. So if there are suggestions and just send me a message, we'll try to to loop them in as well.

Bill Carter
We actually had a couple of blooms in the last month in the lagoon and out in Kotzebue Sound. I'm not the one who IDs them, Alex Whiting is doing that work and we had a chance to run through our new sondes, and do the sampling with that. And then our collaborator Ajit from Columbia University is coming out, the week after next and they're going to test out a buoy that they're putting out in Hoffman Inlet, so he'll be here for a week working on that and sussing out all the sonde issues that we are having at the moment with getting the data off them and things. So that's kind of what's going on here until next year.
Dean: if you can grab some water I can take a quick look at it for you, if you're interested, just put it in a plastic bottle and send it down to me.
Bill: Yeah, Alex is doing those so we're covered.

STATEWIDE
Dean Stockwell
No new updates for me, but I do want to applaud Don Anderson's group for the work they're doing and trying to reach out to the communities. I think by working with Gay closely like that they'll take away the scare tactics and get something more productive.

Gwenn Hennon
No updates on science but there's a couple of proposals, including that NOAA OA/HABs proposal that I've been thinking about with Claudine Hauri and I sort of wanted to second John Harley's interest in that. So contact me if you're interested in chatting about it. And then I wanted to give a heads up to everyone who might not know about this new EPSCoR pre-proposal that's coming out. That's due, I believe it's October 1st. It's a Glaciers-to-Gulf idea and it's open to people in the University of Alaska and then also community partners. So if you're interested in sort of a HABs or phytoplankton ecology angle for Glaciers-to-Gulf, get in touch

with me. I'm thinking about trying to tie it in with some of the northern Gulf of Alaska. Long Term Ecological Research cruises.

Caroline Cummings
I'm mostly here to just kind of check in on news, but I guess I will say we did just do a cruise out to the Aleutians for some sea otter surveys and benthic habitat assessment and we did collect some invertebrate species that we're collaborating with some NOAA folks to screen for PSP toxins. Results will be a little while out, but just want to let you guys know we did get some sampling.

Bridget Ferris
Thanks again for mentioning we do have this annual Ecosystem Status Report that summarizes the conditions of the marine environment in the Gulf of Alaska, Aleutian Islands, and Bering Sea. And last year was our first time collaborating with the AHAB network through Darcy and now this year through Thomas to bring in a HAB summary. So really successful and went over really well last year. We present this to the North Pacific Fisheries Management Council and we really are grateful for all the efforts you put in all year round to collect these data and hopefully we can help communicate it to a broader audience as well. I'm happy to talk with each of you individually or through Thomas to pull this together again this year and I can answer any questions also.

NEXT AHAB MONTHLY CALL WILL BE: THURSDAY October 14TH, 2021 AT 9:30AM AK