

AHAB Meeting June 4th, 2019

Attendees (by phone): Darcy Dugan, Kayla Schommer and Molly McCammon (AOOS), Danielle Dickson (NPRB), Esther Kennedy, Kari Lanphier, Savannah Miller and Chris Whitehead (Sitka Tribe), Dominic Hondelero (NOAA Kasitsna Bay Lab), Sarah Schoen, John Pierce, Matt Smith and Caroline Van Hemert (USGS), Stephanie Mason (Kodiak Area Native Association), John Harley (Alaska Coastal Rainforest Center), Don Anderson (Woods Hole Oceanographic Institute), Cheryl Rosa (US Arctic Research Commission), Gay Sheffield (Alaska Sea Grant), Kim Stryker (Alaska Department of Environmental Conservation), Dean Stockwell (UAF), Naomi Barnum, Will Peterson, Kate Heltridge (ADHSS), Mike Brubaker (ANTHC), Theresa McKinney (ADEC Lab).

Updates by Region

Kachemak Bay

On behalf of Rosie Robinson and Syverine Bentz from the Kachemak Bay National Estuarine Research Reserve out of Homer, Kayla Schommer the AHAB Network Coordinator provided an update on HABs in the Kachemak Bay Area. KBNERR is busy with their phytoplankton-monitoring program. They have around 35 community monitors working with them this season from Lower Cook Inlet to the greater Resurrection Bay area. They would love to continue to receive samples from PWS but their last community monitor partner is too busy this summer. They are also sending in shellfish (primarily mussels and razor clams - but also hard-shell species) for toxin testing every other week. So far none of their samples have come back with concerning levels of toxins. They may have spotted *Alexandrium spp.* at three of our sites so far and are sending those samples off to Steve Kibler for QPCR. They are set up to provide boat support for USGS folks to come down and sample sea birds in response to a HAB event.

Additionally, they conducted their routine spring HAB Community Monitor Training with presentations by KBNERR, NOAA Kasitsna Bay Lab and ADEC. They outreached their HAB program with the Port Graham community and connected with community monitors through a lunch discussion session about environmental change and fisheries resilience. In July they will be adding Debbie Tobin, a UAA professor and Marine Mammal specialist, to our KBNERR staff. They are excited to connect about some potential new projects! They wish we were on the call but are busy with a visiting Reserve from Hawaii – where they were going to be discussing HAB concerns with them as well.

Aleutian and Pribilof Islands

Similarly on behalf of Bruce Wright from the Aleutian Pribilof Island Association, Kayla Schommer provided a brief summary of an update Bruce provided for her. The entire unabridged summary is included here.

“The Knik Tribe PSP project winter sampling has begun at some locations, and this expanded to additional communities in March 2019 prior to or as spring arrives and PSP blooms begin. The

communities now collecting weekly blue mussel samples are Chignik Lagoon, Chignik Bay, Juneau, Sand Point, King Cove, Seldovia, St. George and Akutan. The winter PSP levels in the Chigniks in butter clams is several times above the safe levels, and the PI advised caution by recommending no one consume the butter clams. Phytoplankton samples are being collected every two weeks in Seldovia, Tyonek, King Cove, Sand Point, Chignik Bay, Chignik Lagoon and St. George.

Outreach and site investigation has already taken place in St. George. I collected samples from St. George in April 2019; the mussels were 9.3, sea urchin eggs at 22.3, sea urchin guts at 66.5, drills 9.69, hair crab meat ND, hair crab guts 7.86 and limpets ND using HPLC. Next field trips are King Cove in late June, Sand Point and Nikolski in July, and making plans for trip to the Chigniks followed by Tyonek in September to participate in their culture camp and to collect samples.

The NOAA Beauford Lab staff thought the urchin data are really interesting and thought they are clearly eating something with saxitoxins. Maybe "there are Alexandrium cells stuck on all surfaces during blooms. We should think about testing surface sediment for toxins too." From last year's samples the Beauford Lab "found <10 ug/100g in all of the invertebrate samples that you provided Bruce (limpets, urchins, chitons), (were) basically below the quantitative limit for ELISA."

When asked why the Beauford Lab's didn't use HPLC, Wayne Litaker the gave a scientifically interesting (and educational I thought) explanation that I thought would be of interest to this group. *HPLC really gives out below 10 - 30 ug/100 g depending on the congeners present. Reason is that HPLC is not super sensitive and also fails to detect certain congeners as well as others, hence becomes less accurate in the low toxicity ranges the higher the proportion of poorly detected congeners present in the sample.*

The ELISA can "quantify" to about 2-3 ug/100 g, again this has to be taken a qualitative measure because the antibody used will not detect certain congeners. So the amount reported could easily be an underestimate of the actual amount present depending on the congener suite present in the sample - i.e. it often represents a conservative estimate of the amount of actual toxin present. If the ELISA results come up as 10 or higher, we go ahead and try the HPLC on the off chance that we can get a decent quantification. Below 10 on the ELISA we do not bother running the HPLC because concentrations are simply too low to detect and not worth the labor and reagents.

To improve the ELISA accuracy, we are currently vetting a sample digest method that uses L-lysine to convert many of the congeners not detected by the ELISA antibody to forms that are detectable. Initial results look promising as the ELISA results are matching better with the HPLC results. Rance was scheduled to go down to UNCW this week to use their Mass Spec setup to actually quantify how efficient the L-lysine conversion from non-detectable to detectable forms actually is. Unfortunately, their liquid nitrogen generator failed and will be a couple of weeks before fully repaired. Can't run the MS without the liquid N. Hopefully their machine will be

back on line and we can get actual quantification regarding the conversion process. I thought that explains lots, and verifies to me the sea urchin eggs at 22.3 and urchin guts at 66.5 using HPLC are meaningful.”

Southeast

Kari Lanphier (Sitka Tribe of Alaska/ Southeast Alaska Tribal Ocean Research) provided an update on the Southeast region.

Northern Southeast: It has pretty quiet so far in 2019. Kake had a huge bloom that started in the fall of 2018, into October and November. So far blue mussels are low but butter clams are retaining in 2019. There was a spike in Skagway samples in May, with samples measuring at over 800 ug/100g. SEATOR is continuing to monitor this site.

Southern Southeast: Everything here is quiet except Ketchikan. In the last 3 years, Ketchikan has been the one to look out for, often being well above the regulatory limit. As of April, it hovered well above limit, with samples as high as 1,000 ug/100g. Monitoring is continuing in Ketchikan with the addition of extra phytoplankton samples.

POW: Overall 2019 has been pretty quiet in POW. Saw the late fall bloom (blue mussels above the limit in Klawock in October and November). Mussels are remaining quite low in 2019, but butter clams in Kasaan are still quite high in 500s ug/100g.

In 2018 SEATOR ran a project to test domoic acid on water samples. They tested 20 samples, 10 had detectable limits but the limits were low. SEATOR hopes to continue this project this summer and to add tissue samples if they're seeing large blooms of pseudo-nitzschia.

Kodiak

Stephanie Mason (KANA) provided an update on the Kodiak region. Kana is continuing to monitor 3 locations with support for 1 more. The data from these sights is public through SEATOR for butter clams and blue mussels. They made their first community advisory in collaboration with KANA and advised no summer harvesting because of the elevated levels they're seeing. They expect them to continue to rise. Saw Alexandria and pseudo-nitzschia in bloom for the first time in Kodiak. They are currently in the planning phase of year 2 of this project: hoping to expand to new locations. Kana is also talking with Julie Matweyou at Alaska Sea Grant and Steve Kibler at NOAA to continue their NPRB sites. With the hopes of possibly transitioning those sites into the SEATOR model.

Arctic

Gay Sheffield (Alaska Sea Grant) provided an update on the Arctic region. Gay expressed that they don't have routine HAB monitoring in the Arctic. Bottom trawl survey from Unalaska to Diomedes will begin in August, collecting bivalve and snail samples in the northern Bering Sea / Bering Strait.

UAF-ACCAP thought last year was unprecedented with loss of sea ice however, this year is even more so. The Northern Bering Sea was devoid of ice in late February. NOAA doesn't anticipate a thermal barrier between northern and southern Bering to last this summer. With the lack of sea ice, it is anticipated that there will be less sea ice algae production.

St. Lawrence Island may have the beginnings of a seabird die off. No bodies have been sent in but there are reports of 50 dead murre and 8 Sandhill cranes. Witnesses have said the murre's head droops and then they topple over dead.

Gay also announced the dates for an Arctic AHAB workshop next month in Nome, July 16-17. This workshop will include one day for the public and local communities and one day for the regional health providers.

Don Anderson (Woods Hole Oceanographic Institute) provided an update on his research in the Arctic. He joined two of the NOAA DBO surveys in 2018, one in August and one in Oct/Nov. As a result of both of those, they now have nice map of abundance of cysts of Alexandrium stretching from Nome to Bering to Beaufort. There are almost no cysts in Bering Strait region, but at Ledyard Bay he documented some of the largest concentration of cysts in world. It then tapers off as you head east. There are still some in the Beaufort Sea but are at a low abundance.

During the cruises, they also looked at bottom temperatures. Recently the Arctic has been having conditions that would lead to bloom development. It is a possibility that blooms are carried up into the Bering Strait from the south, but there is a good likelihood of in-situ bloom development as well. During the August cruise, they also documented cells in the water confirming what he just said – very large planktonic bloom of Alexandrium that covered much of the same area – south of Ledyard Bay. There were more than enough to cause dangerous levels of toxicity in shellfish and fish. There was a special request by Don to get in touch with him if you have the ability to get samples in the Arctic.

Kate Hubbard is looking at domoic acid and pseudo-nitzschia on the cruises. ELISA can give a relative abundance of different species. That data set on the same transect (Nome to beginning of Beaufort) shows there are 15-20 diff pseudo-nitzschia species off to the east. We found Relatively high abundance of pseudo-nitzschia australi which they know to be dangerously toxic (this was the species responsible for big west coast bloom around the blob) Upcoming this year, they will be going out in August on a NOAA cruise to get similar types of data. Little by little they are getting a better feel of distribution and abundance.

Updates from other Network members

ECO HAB Proposal

Don Anderson shared some good news about the ECO HAB proposal submitted by Kathy Lefebvre that many AHAB network members were a part of. This 5-year proposal focuses on

food-web transfer of HAB toxins using data collected from multiple cruises throughout Alaska. While the proposal was not funded this round it was highly ranked and was “**recommended for reconsideration in 2020**”. There should be funding for that project to begin early next year.

Targeted MERHAB Proposal

Steve Kibler provided an update after the call via email on a targeted MERHAB proposal that was funded for method development. A 3-year project with the University of Washington Tacoma (Cheryl Greengrove) and UAF (Julie Matweyou) was funded by NOAA to develop molecular techniques for quantifying Alexandrium resting cysts in sediment samples. The project includes Courtney Hart and Ginny Eckert (UAF), Don Anderson and Mindy Richlen (WHOI), Kris and Dominic from the Kasitsna Bay Lab, Jerry Borchert from the Washington Dept. Health, and a variety of other regional partners. The objective is to reduce the time and cost required for cyst counting, to speed up delivery of data for NOAA's HAB Operational Forecast system. The immediate users of the data are in the Gulf of Maine and Puget Sound regions, but with help from Julie, Courtney, Kris and Don, we hope to move further along the path to PSP forecasting for Alaska.

USGS

Sarah Schoen (USGS) provided an update on USGS HABs work. They just received one year of USGS funding to do a food-web study looking at Biotoxin accumulation and transfer throughout South-central but can also travel elsewhere if there's an active bloom. They will be tracking samples during an active bloom, as well as when a non-active bloom is present. They'd appreciate any early warning signs of hot levels and USGS will deploy a team to collect samples.

DEC

Kim Stryker (DEC) provided an update for the State of Alaska. So far, they have had one commercial farm with a couple closures this year due to getting results over the regulatory limit. This farm is located about 15 miles north of Ketchikan. Overall, they are seeing activity earlier than usual but it has just been in that one commercial farm.

Update from the AHAB Network Coordinator

Kayla Schommer (AOOS) provided a few last minute updates and reminders for the AHAB Network. We have not heard back from MERHAB proposal submitted in February. We are assuming that means we did not get it.

We would also like to gauge interest in having NOAA host a 1-day “risk communication” training to help network members communicate HABS to the communities. This would hopefully coincide with the annual AHAB Network workshop next year. If anyone is interested, please let Kayla know.

Lastly if the working group leaders could please reach out to there working groups. It is time to move forward with the objectives developed during the workshop.