

Harmful Algal Bloom Task Force Meeting **Thursday, October 8, 2020 (9:00am-2:00pm EDT)**

Virtual Meeting Location open to the public: fwc.adobeconnect.com/hab

In Attendance: Barbara Kirkpatrick, Charles Jacoby, Donald Anderson, Duane De Freese, Leanne Flewelling, Rhonda Watkins, Sherry Larkin, David Whiting, Jill Fleiger, Andy Reich, Quay Dortch

Guests and Presenters: Meghan Abbott, FWRI; Mandy Karnauskas & Matthew McPherson, NOAA SEFSC; Rick Clark & Elke Ursin, FDOH; Laila Abdullah & Mike Mullan, Roskamp Institute; and Tom Frazer, Blue-green Algae Task Force

Public participants: 31 in virtual meeting room, also live streamed by Florida Channel

Minutes:

9:00-9:08 a.m. Welcome and introductions

Leanne Flewelling welcomed attendees and notified the public that a dial in number will post at 1 p.m. for comment during the public comment period. She conducted rollcall of Task Force members and reviewed the agenda.

Call to Task Force member for changes to the agenda.

None – agenda approved as posted.

9:08-9:35 a.m. Updates

Flewelling called on individuals to provide brief updates of projects that were funded or initiatives that were developed based on HAB Task Force initial priority recommendations.

Charles Jacoby provided an update on the newly established HAB communications working group initiated by FWC. The group had its first meeting virtually on September 10. The meeting included overviews of current initiatives various communications activities by groups around the State, initial discussion of group objectives and identifying end-users. Objectives are currently being reviewed by members and will be finalized at the next bi-monthly meeting.

Meghan Abbott gave an overview of HAB Grant Program funded project "[Development of a red tide communications plan for Florida](#)" awarded to Florida Sea Grant and noted the project team will be interacting with the HAB Communications Group as they move forward. Abbott provided an update on education efforts. Initial discussions with curriculum experts on long-term educational campaigns for red tide have focused on possible development of K-12 modules as supplementary materials to state youth education and conservation centers programs. Abbott provided an update on the revisions to the 2009 [Resource Guide for Public Health Response to Harmful Algal Blooms in Florida](#) (FWRI Technical Report 14, TR-14). The resource guide will be published as a digital technical report with content updated to capture data since its original publication through July 31, 2020. Chapter revisions are in process and will begin circulating for expert reviews late October early November, with a tentative online publication date of late May 2021.

Flewelling provided an overview of HAB Grant Program funded science projects [“An in situ holographic imaging system for measuring distributions of *Karenia brevis*”](#) awarded to Florida Atlantic University and [“Field deployable measurement of aerosolized brevetoxins from *Karenia brevis* using colorimetric immunoassay”](#) awarded to the University of Florida.

Flewelling and Barbara Kirkpatrick provided an update on the challenges to planning the IOOS hosted workshop for statewide monitoring observation networks. HAB Task Force members were asked for input on hosting virtually or in-person in late 2021.

- Members discussed benefits and challenges of virtual and in-person options, timing, and budget considerations. Members agreed to revisit the discussion following development of a list of potential participants that impacts both planning and ability to successfully host in different formats.

ACTION: Flewelling and Kirkpatrick to develop a list of participants.

9:35-10:30 a.m. Mandy Karnauskas or Matt McPherson, NOAA SEFSC, presented [“Fishermen Perceptions and Observations of Red Tide on the West Florida Shelf”](#) followed by a question and answer period from members of the HAB Task Force.

Members asked what types of microblooms in the Calosahatchee fishermen were referring to. Presenters noted they will need to review the transcripts and email back details.

Members inquired if commercial shell fishermen were included. Presenters confirmed yes, however, as there was an active event, fishermen were not collecting due to closures but had in the past.

Members inquired if fishermen had any comments about management strategies. Presenters noted a few interviewees questioned why in some cases there were extended closures after blooms had dissipated.

Members asked if all species were considered during stock assessments. Presenters noted focus was on red tide impacts for grouper.

Members inquired if similar future studies are planned to include recreational sport fishermen. Presenters noted specific studies are not planned but recreational fishing, not just commercial, is something they are aiming to incorporate in general to many future studies.

Members inquired if there was any correlation in terms of how long interviewees had been commercial fishermen and responses. Presenters said generally fishermen had a long history on the water however analysis is not complete.

Presenters stressed they are still in the process of reviewing and coding data from the study. They noted various attributes were captured that will allow for more comprehensive analysis for specific issues or industry similar to the questions being asked.

Members asked if there were plans to cross-reference responses on event duration and severity by location with data to see how it aligns with documented blooms, and if fishermen knowledge base/comments linked to the region they were located/interviewed at. Presenters noted this was

done for the grouper stock assessment and in 2018 as the bloom was ongoing, fishermen perceptions were actually used.

Flewelling thanked the presenters and noted the schedule change following a break period, the Roskamp Institute will present first then FDOH prior to HAB Task Force conversations related to HABs and public health.

Break 10:30-10:45 a.m

10:45-11:15 a.m. Laila Abdullah and Michael Mullan, The Roskamp Institute presented ["Examination of correlation between red tide brevetoxin exposure and chronic CNS effects"](#) followed by a question and answer period from members of the HAB Task Force.

Members asked as the study examines physiology beyond respiratory, what the antibody is likely to alleviate. Presenters noted that respiratory irritation are acute immediate effects from exposure to aerosols, but Roskamp is investigating brevetoxins once they are in the blood. Presence in the blood occurs rather quickly, as seen in animals, the antibody presents in t-cells and is a measure of reactivity to the toxin. Presenters are investigating if the amount of antibodies present is helpful or harmful to human body toxin response.

Members asked if presenters are taking into account all exposure history, e.g. shellfish consumption, for individuals with higher levels of antibodies. Presenters confirmed they are for general consumption, not measuring at a detailed gram level, and currently not seeing any correlation between what they are measuring. During non-bloom time, they are not seeing significant brevetoxin levels.

Members asked if there is any type of cross reaction to those antibodies other than brevetoxin. Presenters confirmed there is not, that they screen very closely to ensure they are not due to other items like Ciguatera. Presenters noted a key test going forward will be to follow-up with those tested and brevetoxins measured when they are exposed during an event to see what happens to the antibody.

Members asked if they are using radiolabeling and if there is a way to see specific areas of the brain impacted. Presenters confirmed their expertise is in CNS (central nervous system) and radiolabeling could be used to investigate how brevetoxins might impact CNS. They have done some work and will be looking at in vitro and in vivo studies to further answer these questions.

Members inquired if presenters had any idea of how COVID and brevetoxins might impact a person, as well as based on acute effects of COVID and exposure to aerosolized brevetoxins possible impacts of that acute base. Presenters noted we know COVID impacts CNS, so they will be measuring for both antibodies as they investigate potential neurological outcomes. In terms of systemic impacts, both impact the lungs, however, the long-term impacts are what Roskamp is investigating e.g., chronic fatigue syndrome. Presenters noted their aim is to have a larger cohort to monitor over the long-term to answer some of these questions.

11:15 a.m. - 12:08 p.m. Rick Clark, FDOH presented [“HABs and Public Health”](#) followed by a discussion with Elke Ursin and Rick Clark, FDOH and members of the HAB Task Force on health priorities and cooperative complimentary efforts that could be developed.

Clark additionally noted the FDOH has received funding from the CDC to develop case definitions for animal exposures to HABs and are working with local veterinarians to better inform them to assist with identifying animal HAB exposures and report cases. Clark noted he gave a general overview of 2019-20 projects and that lead project investigators are available to provide detailed presentations by request. For 2020-21, the FDOH appropriated \$1million for HABs and health and will be extending work with funded universities and possibly having an external call for proposals.

Members asked when the FDOH expects to have final reports from the funded 2019-20 projects. Ursin confirmed they have been received and can be requested through public records, however, noted the ability to conduct work was impacted by COVID so there are some limitations to results.

Members requested if the contact and information card being shared with veterinarians can also be provided to the HAB Task Force to assist with informing the public, such as when DEP staff are in the field interacting with pet owners. Clark confirmed he will provide the note cards, and added the project is being expanded from the initial pilot to other counties along the coastline so more counties will be involved.

Members asked if the signage for red tide is the same as the examples presented for blue-green algae, and what the action levels are for red tide posting. Clark confirmed signs have a similar look, color and layout, and posting is based on cell counts with a caution sign posted when *K. brevis* cells are between 10,000-100,000 and an alert when cell counts are above 100,000. FDOH relies on offshore sampling for these counts and posts signs in the nearest corresponding coastlines.

Members asked if there was any discussion of changing the model to consider more than just FWRI cell counts and including other models and forecasts such as NOAA aerosol forecasts. Clark confirmed FDOH is taking and considering all feedback for best practices.

Members asked if FDOH can share the signage and posting decision matrices so it is available to local stakeholders for feedback. Flewelling noted the FWC was part of the discussion in determining signage posting guidelines and broader vetting of language but it is still being piloted to determine how effective these guidelines are. Clark added the FDOH is actively engaging with the HAB communication working group and taking feedback for consideration and incorporation. All signage and other resources can be accessed online through the FDOH aquatic toxins site <http://www.floridahealth.gov/environmental-health/aquatic-toxins/index.html>

Members noted extensive beach access limits the ability to get signs to all sites to be effective, particularly if posting only at nearest sampling sites, for example Collier County only samples for red tide at 5 of the 44 beach access sites. Clark noted FDOH is looking at options to expand signage and how to use networks for this to effectively reach impacted areas. Flewelling noted

public access points of information could also help inform signage posting integrating other models such as the NOAA aerosol forecasts. Clark confirmed he will bring it forward to the HAB communications working group for input.

Members noted for 2019-20 studies, prior to COVID, the CDC was in discussion for funding a study similar to the UM study and asked for an update on that project status. Ursin confirmed they are aiming to start the project in January and are working to secure a contractor. She noted it is similar to both the UM and FAU 2019-20 studies.

Members asked if the appropriated HAB health FDOH funding this year will just continue to support the 2019-20 project or if the FDOH is planning to broaden projects with a call for proposals, as well as what the review process is to determine project funding. Ursin noted the FDOH is monitoring the budget situation, but if there are remaining funds after committed project dollars they plan to have an external call. Ursin noted the review process in 2019 was more informal as projects were limited to the state university system, however, public calls will likely include external reviewers.

Flewelling noted the HAB Task Force's initial recommendations document regarding red tide include public health priorities and asked the FDOH how HAB Task Force efforts can support or compliment FDOH priorities going forward. Flewelling furthered FWC would not solicit health proposals directly but would want to partner with FDOH to provide additional resources, possible complimentary funding on shared priorities for example. Ursin noted the HAB health funds appropriated by FDOH are very general to all HABs and not specific to cyanobacteria although that was primarily funded in 2019-20. FDOH is definitely interested in expanding to red tide health concerns. Ursin noted successful past agency collaborations including pooling funds and partnering on larger projects with different science and health elements.

Clark informed the HAB Task Force that a HAB health workgroup led by FDOH is still initiating and one of its first priorities will be to solicit input from scientists on messaging and types of projects needed.

Flewelling recapped the HAB Task Force initial priorities related to public health included two key elements: identifying research needs for HAB health; and more aggressive training for health professionals. Flewelling inquired how the FDOH is addressing the second item. Ursin noted the FDOH is working on refining case definitions for human HAB exposures as its first step to assist with informing medical providers, and actively working on this as part of a broader communication and dissemination strategy.

Flewelling asked how the HAB Task Force can assist FDOH in this endeavor. Clark noted that in many ways this is already being accomplished through initiatives such as the HAB communications working group and interest in assisting with public health funding. Clark noted it would be beneficial to have further discussion identifying what projects need funding and put a call out. Ursin added there is a need for funding for local health department permanent signage not able to be funded by FDOH. Members suggested permanent signage be explored through the Florida license plate program.

Flewelling asked if there were any final questions or comments. None.

Break 12:08-12:30 p.m.

12:30-12:46 p.m. Tom Frazer provided an update to the HAB Task Force on the Blue-Green Algae (BGA) Task Force Update activities.

Frazer noted the BGA Task Force last met on July 29. That meeting included an update on the Clean Waterways Act which incorporates a lot of the elements of their recommendations, followed by discussion on algal toxins and EPA recommendations for recreational and ambient water quality for health project priorities including notifications. Both Task Forces have offered similar recommendations related to communications, such as clear messaging and location of signage and ensuring collaborative input, consistent messaging and standardizing deployment of signage. Moving forward the BGA Task Force's next meeting is expected to be hosted virtually in mid-November. Topics will include further discussion of signage and communication, but will focus on evaluating a cyanobacteria bloom model that is being developed by the Army Corps of Engineers

Members of the HAB Task Force inquired about continuation of a specific project for sensors going into Lake Okeechobee in January and how such project may be supported past current funding cycles. Frazer noted challenge with funds being annually appropriated and not recurring and the current budget challenges. However, he confirmed water quality is a high priority of the Governor so remains hopeful and efforts will be made to ensure funds are secured for continuity of larger scale long-term projects.

Members asked if the technology grant program is anticipated to continue. Frazer confirmed funds were secured again this fiscal year, and while it is difficult to get recurring funds if good investments continue to be made, dollars should continue to be allocated for the program.

12:46-1:00 p.m. HAB Task Force Discussion

Flewelling noted key items for member discussion included potential funding calls for 2021-22 and next Florida HABs to address.

Flewelling proposed potential FWRI HAB Grant Program funding call timelines for 2020-21 for project awards in 2021-22. Suggested timeline includes HAB Task Force considering continuing year 2 funding of current projects and setting call targets for remaining funds at the January 2021 meeting; posting the next call for proposals for approximately 6 weeks in early March/April; panel reviews conducted over 3-4 weeks in late April to early May with full panel rankings meeting by mid-May; funding recommendations forwarded to the FWRI Grants Committee for funding decisions by the end of May; and award negotiations in June for projects start dates July 2021.

Flewelling called for input from the HAB Task Force. Hearing none, FWRI will plan as outlined.

Flewelling noted following the public comment period the HAB Task Force discussion will focus on other Florida HABs to address next, considering coastal and estuarine issues as the BGA Task Force will continue to prioritize freshwater issues. Flewelling reviewed slides from Kate Hubbard's presentation to the HAB Task Force at the September 19, 2019 meeting ["An](#)

[overview of Florida's Marine Harmful Algal Blooms](#)" in preparation for the discussion this afternoon

1:00–1:05 p.m. Public Comment Period

The public comment dial-in number and instructions were posted, and phone lines were opened for comment. No calls were received after a 5-minute period. Lines were closed.

1:05-1:49 p.m. HAB Task Force Discussion

Flewelling opened the discussion of HAB Task Force members for determining the next Florida HAB issue to address. Tom Frazer was invited to be a part of the discussion.

Members asked what FWC considers most important in terms of response. Flewelling reviewed the list and added the new bloom species in the Indian River Lagoon (IRL).

Jillian Fleiger, FDACS, noted from a shellfish perspective *Pseudo-nitzschia* would be a priority as other states have paralytic shellfish poisoning (PSP) problems but with another species. Currently the most common and significant shellfish issue in Florida is NSP (neurotoxic shellfish poisoning).

Andrew Reich added in terms of public health, NSP, PSP (paralytic shellfish poisoning), and Ciguatera are surveilled and need to be addressed. Reich added Ciguatera poisoning has numerous cases reported annually in Florida but is probably underreported so it would benefit to have a better grasp as it has direct human health impacts and as a reportable disease can be surveilled. Additionally, longer-term impacts are unknown. He added while no cases of ASP have been documented in Florida, it is deadly so improving our understanding would be beneficial. ASP is not a reportable disease so currently don't test for exposure but if physicians had biomarkers to do this, a better understanding could be gained.

Flewelling noted that, in addition to red tide and cyanobacteria blooms, the IRL HAB issues are among the biggest issue affecting the public. Many issues impacting IRL including *Pyrodinium*, brown tide blooms in the northern part (which might not have human health threats but ecological impacts are significant), the new nanocyano issue, and other challenges.

Duane DeFreese added the human health aspect of IRL shouldn't be ignored as IRL issues are challenged by what we don't know as much as by what we do know, and human health could be impacted in unknown ways.

Members noted some other considerations include:

- the importance of figuring out how items other than cyanos or red tide are handled between the agencies;
- filling the gap in knowledge on issues that have unknown public health impacts so FDOH can focus on priority human health HAB issues;
- gaining a better understanding of HAB health impacts of concern;
- focusing on answering "why" events are occurring as a science and public information need (similar to the BGA Task Force nutrient loading considerations)

Frazer noted in terms of collaborative/cooperative effort, focusing on IRL would be a priority need that would complement task force efforts.

Members continued to discuss the IRL. With the extensive amount happening there (events, research and other contributions such as monitoring), there will continue to be ongoing issues in the IRL. Could the HAB Task Force do a comprehensive review of coordinated efforts, issues, etc.? Is there a need for a centralized data portal? How integrated is the current monitoring, communications and data sharing systems between the various organizations and agencies including but not limited to DEP, FWC, NEPs, and WMDs? What are the gaps the HAB Task Force could assist with?

DeFreese noted the IRL is moving towards a high level of integration of raw and metadata, as well as communication for water quality monitoring but research gaps remain. There is a need to understand how species respond to available nutrients. Simply measuring nutrient loads will not give the answers to solve the issues.

Charles Jacoby added following the 2011 bloom, the IRL has strong funding and support for research and coordinated efforts but much remains to be done. Figuring out how to manage a system like the IRL would have significant transferable data for quality water systems globally.

Flewelling recapped the discussion noting three issues were raised to consider: IRL, *Pseudo-nitzschia*, and Ciguatera.

Members noted it would be possible to address all three in a tiered approach as some are more direct issues. Suggested presentations to be given at the January meeting to better inform the discussion.

ACTION: Invite Mike Parsons to January meeting to present ongoing work related to the Greater Caribbean Center for Ciguatera Research. Meghan Abbott to follow-up with Flewelling.

ACTION: DeFreese and Jacoby work with Kate Hubbard to develop a presentation for the January meeting on IRL including current issues, monitoring, coordination, and gap analysis.

ACTION: Invite a presenter from the west coast to present on *Pseudo-nitzschia* issues and shellfish management strategies. Abbott to follow-up with Flewelling and Dortch.

Flewelling called to members for other comments and topics to consider.

Members added sargassum as a potential issue to address. Sargassum can have significant financial issues for localities, it has also been raised as a public concern by various SeaGrant outlets.

ACTION: Kirkpatrick to follow-up with researchers for January presentation.

Flewelling listed other **ACTION** items resulting from discussions:

- Flewelling and Kirkpatrick to develop a list of potential participants for IOOS workshop.
- Finalize January meeting location as virtual or in-person.
- Flewelling and Frazer to discuss possibility and focus of joint meeting of the HAB and BGA Task Forces.

Flewelling asked members if they had any additional agenda items for the January meeting that will focus on setting next HAB priority issues and determining funding priorities for HAB Grant Program 2021-22.

Flewelling noted the current tentative quarterly meeting dates for the HAB Task Force for 2021 as January 13, April 21, July 14 and October 13.

Flewelling asked members for any final comments, discussion topics or remarks. None.

1:49 p.m. Meeting adjourned