Inaugural Great Lakes HABs Collaboratory Meeting

Tuesday December 15th 2015
National Oceanic and Atmospheric Administration
Great Lakes Environmental Research Laboratory

Meeting Summary

The main objective for this inaugural Great Lakes HABs Collaboratory meeting was to have members meet and discuss the direction of the group. Specific objectives included discussing questions that could be addressed through the HABs Collaboratory and deciding on next steps that will be taken.

The following items are the next steps that were identified by the group as high priorities for action to be initiated in the next 3-6 months. A leader or leadership team was identified for each action (details in section 7).

a. *Project "speed dating" webinars with short presentations on projects so that PIs with similar interests can connect*
b. *Website links to all projects containing projects description*
c. *"Mythbuster" synthesis paper and follow up management summary*
d. *Within group synthesis and education on toxicity measurement and methods – possibly through webinar*
e. *Synthesis, project description and within group education on N-cycling*
f. *Webinar series for Collaboratory participants with focus on knowns and unknowns to develop a common knowledge basis of current science*
g. *Develop a (or a set of) conceptual model(s) reflecting the state of knowledge on HABs*
h. *Communication committee (outreach to stakeholders)*
i.

Time	Item
9:00 am	**2. Welcome and Overview** a. *For the day, we are using the Harmful Algal Research and Response National Environmental Science Strategy (HARNESS) 2005-2015 definition of HABs.* b. *The name Collaboratory is derived from collaboration and co-laboratory to signify collaboration among scientists and with managers, to link science and management to reduce Harmful Algal Blooms.* c. *It's an initiative from the partnership between the Great Lakes Commission and the USGS-Great Lakes Science Center*
9:30 am	**3. Interactive Introductions** a. *Introductions were done using watersheds posters and post-it. Every participant wrote his or her name, 5 words to describe their work, the timing or seasonality of their work and had to put it in the watershed poster. Results are in the "Area of work" column in the list of Collaborators.*

10:00 am

4. **Overview of Interview Results**

a. *58 interviews were conducted in September and October, either on the phone or with a google doc form. The initial list had 40 persons, and with "who else would you invite to participate to the HABs Collaboratory?" we are up to 120. The overview of the interviews can be found on slides 9 to 20.*
b. *GLC and USGS are there to facilitate conversations, and the success of the Collaboratory will depend on the level of engagement of <u>all</u> the members.*
c. *The questions that were the most heard in the interviews for all 5 topics of panel discussion (Triggers, Nutrients, Toxicity, Ecosystems / Food webs and Management) were presented and can be found in slides 16 to 20.*
d. *Items of discussion:*
    i. *<u>Scope of the group:</u> Need to include engineers, watersheds, agriculture, social scientists, economists, etc.*
    ii. *<u>Questions already answered</u>: For some of these questions, we already have the answers*
    iii. *<u>Human health studies</u>: Hasn't come up that much in the interviews*
    iv. *Prioritize research: Important to not get wrapped up in academic pursues, the questions need to be prioritize. By money? By number of people affected?*

10:45 am

5. Panel 1, Unmet Research Needs

a. Triggers

i. *Tim Davis did a presentation on Future research needs for understanding the environmental drivers of bloom growth.*
ii. *Vincent Denef did a presentation on the Role of dresseneids and microbial communities on HABs*
iii. *The follow-up discussion permitted to identify to following questions:*
    - *Why are triggers important? (Triggers of toxicity or triggers of Microcystis? Seeding from previous years?)*
    - *Do triggers differ across systems and time?*
    - *How much do we need to reduce loadings to eliminate HABs? (Do legacy inputs affect results? What are the implications of holding of P over months? Is resuspension a source of cells, of nutrients or both?)*

b. **Nutrients**

i. *Ed Verhamme presented on The relationship between HABs and nutrients*
ii. *Justin Chaffin presented on HABs and N and P*
iii. *The follow-up discussion permitted to identify the following questions:*
    - *What is the contribution of nutrients cycling to bloom growth?*
    - *How do nutrients control species composition and strain?*
    - *What is the role of N in controlling Toxic vs non-toxic strains of Microcystis?*

1:00 pm

6. Panel 2, Unmet Research Needs

a. Toxicity

i. *Judy Wetrick presented on Human health and freshwater cyanotoxins*
ii. *Greg Dick presented on What are the microbial/environmental xontrols on toxin production?*
iii. *The follow-up discussion permitted to identify the following questions:*

- *What are the methods for toxin assessment? (Need for education within and outside the group)*
- *What are the reasons for producing toxins?*
- *What controls the proportion of toxic vs non-toxic?*
- *What are the toxin breakdown products and pathways?*

b. Ecosystems / Food webs

i. Joe Duris presented on Effects of HABs on ecosystems

ii. Tomena Scholze presented on the impacts of HABs on fish

iii. The follow-up discussion permitted to identify the following questions:

- *How does feeding and growth of fish and zooplankton change in vs out of bloom area, and before vs during vs after a HAB bloom? Are different life stages affected differently?*
- *What are the effects on secondary production?*
- *What are the effects on hypoxia?*
- *What is the shift of energy from grazing to detrital food web due to grazing resistance (not a toxin effect, turb., size)*

c. **Management**

i. Beth Hinchey Malloy presented on strategy and management needs

ii. Sonia Joshi presented on bridging gaps between managers and scientists

iii. The follow-up discussion permitted to identify the following questions:

- *What is the set of management decisions that can change the situation?*
- *How can we best communicate both what we know and what we don't know?*
- *Importance of including local experts and develop clear expectations for how involved they will be*
- *Need for monitoring and adaptive management?*
- *Need to be able to answer the questions (for e.g.): Is it safe to eat the fish? Is water safe to drink?*
- *Need for a rapid toxin detection test*

2:45 pm

7. **Strategic discussion – Next steps and/or items**

The following items are the next steps and items that were suggested by the group and that have some volunteers.

a. Project "speed dating" webinars with short presentations on projects so that PIs with similar interests can connect. Ideas include OH Sea Grant funded projects (with presentation either by the PIs or with Chris Winslow giving an overview), GLRI funded projects, others.

i. Leadership: Chris Winslow, Ed Verhamme

b. Website links to all projects

i. Site with links to funder's pages containing projects descriptions

ii. Could be an encouragement for Collaboratory members to list their work in the IJC project inventory

iii. Leadership: Chris Winslow

c. "Mythbuster" synthesis paper and follow up management summary

i. Synthesis paper focusing on myths about HABs

ii. Leadership: Mark Rowe, Doug Kane, Joe Ortiz

d. *Within group synthesis and education on toxicity measurement and methods*
    i. *Compilation of methods of analysis for toxins*
    ii. *Education of the group then possibly managers through webinar*
    iii. *Leadership: Paul Zimba, Greg Boyer, Judy Westrick, Heather Raymond, Tim Davis*
e. *Synthesis, project description and within group education on N-cycling*
    i. *Leadership: Silvia Newell, Greg Boyer*
f. *Webinar series for Collaboratory participants with focus on knowns and unknowns*
    i. *Initial topics: triggers of toxin production, microbial food webs*
    ii. *Other topics ideas: big data initiatives, evolutionary reason for toxin production*
    iii. *Leadership: Ed Verhamme*
g. *Develop a (or a set of) conceptual model(s)*
    i. *Conceptual model that can help see the state of knowledge on HABs, can be updated when new research is available*
    ii. *Leadership: John Bratton, Joe DePinto, Mary Anne Evans*
h. *Communication committee (outreach to stakeholders for e.g.)*
    i. *American Society for Microbiology could be a good model for communication*
    ii. *Leadership: Michelle Stelzer, Laura Johnson, Jeff Reutter, Heather Raymond*

The following items are the next steps and items that were suggested by the group and that do not have volunteers at the moment.

i. *A FAQ or individual paragraphs with answer to various questions that were raised as "unanswered" during the meeting but that can actually be answered*

3:30 pm

8. **HABHRCA session**

a. *Per the requirements of the Harmful Algal Bloom and Hypoxia Research and Control Amendments Act (HABHRCA) of 2014, the Interagency Working Group on HABHRCA (IWG-HABHRCA) is finalizing a comprehensive research plan and action strategy for addressing these issues in marine and freshwater systems across the US. There is an input opportunity for the next report (due in June). Send out Annotated bibliography or general RFIs related to state of the science on Improving scientific understanding, Modeling and prediction, Mitigating the causes/effects and Socioeconomics in relation to HABs and Hypoxia.*