October 9, 2015
Break-out Session Notes

The Michigan Water Collaboration Workshop included breakout sessions on six topics. Each session was co-facilitated by a Michigan state agency representative and an academic researcher. Participants were charged to address the following questions:

- What opportunities for collaboration related to breakout session topic exist?
- What additional functionality could the tool have to support collaboration in this issue area?
- What types of activities would strengthen the collaborative, e.g., keep people engaged and attract others?

COMMON THEMES

A number of common themes emerged in the breakout discussions. These common themes are identified below, and full notes for each breakout session follow.

Related to opportunities for collaboration:

- Participants in multiple sessions identified coordinated monitoring and a better platform for sharing monitoring data as an important areas for collaboration.
- Researchers noted that they could use the tool to identify others working in similar habitats, not just on similar research questions or subjects.

Related to network tool functionality:

- Participants in several sessions expressed interest in using the tool to identify lab equipment.
- Participants expressed interest in sending and receiving targeted messages via the network, e.g., similar to a listserv.
- There was interest in using the network site as a place to post relevant resources including guiding documents and plans, monitoring protocols, common base data, and inventories of current monitoring efforts and research needs.
- There was an interest in adding a geographical “Where do you work?” field to profiles. It is not clear if this should be lat/long, watershed, county, etc.

Related to activities to strengthen the collaborative:

- Many participants were interested in a future meeting of the network, and agreed that event should include more research-based presentations and poster presentations, along with ample networking opportunities.
- Many participants noted that there is a disconnect between agency needs and academic research priorities, and moving forward it is important to highlight benefits of participating in the collaboration to both groups.

DETAILED NOTES

For each session, we have highlighted some key research questions that emerged from the discussion, as well as suggested improvements for the network tool, and ideas for growing the collaboration. Note that some groups did not address all of the breakout questions.

Physical needs and knowledge gaps[1]

Facilitators

Alyssa Riley, Michigan Department of Environmental Quality
Tom Kovacs, Eastern Michigan University
Dave Schwab, University of Michigan
Jennifer Read, University of Michigan

Opportunities for collaboration may exist in these areas:

Hydrology

- Can large-scale impacts of water withdrawals be evaluated experimentally?
- What are the adverse impacts of water withdrawal on wetlands, lakes, and streams? Participants noted that this is difficult to assess because there is no baseline data to compare to.
- Participants noted that several USGS water gauges are about to run out of funding. The MDEQ pays the "rent" to USGS to fund the gauges.
    - Form an advisory committee that INCLUDES academics that can help build a strong rationale to keep the gauges going. Build a reasoning (data/science based) to help advocate which gauges should be maintained.
    - Identify who is using gauge data to comprehensively demonstrate their value. For example gauge data may be used in academic models, or by recreational users)

Aquatic habitat

- What happens with water draw downs? How does they impact sediment transport, erosion and stream bank blow out?

Geomorphology

- There is a need to develop regional reference curves (channel dimensions, stream flows) for areas impacted by water draw downs
- Sediment rating reference curves are needed
- Developing BMPs and testing BMPs for sediment management (and other areas)

Urban stormwater and green infrastructure

- How does implementation of green infrastructure impact water quality?
- Does road salt in stormwater runoff have adverse impacts on surface water?
- How do green infrastructure practices perform in winter?
- How are benefits of green infrastructure and stormwater management best communicated to decision makers?

What additional functionality could the tool have to support collaboration in this issue area?

- Use the tool to track collaborations and what they produced (e.g., influenced management decisions, secured external grant funding)
- Keep track of what type of communications took place through the network, how many of those ended in productive collaborations
- Use the tool to learn how researchers are utilizing state-collected data.

[1] Notes for the two *Physical* breakout sessions have been consolidated.

- Use the tool to enhance data sharing: The State Water Strategy calls for collaborating or sharing data. Many academic researchers are already collecting water data across the state, often engaging students and leveraging grant funding. Sharing data can reduce redundancy and expand amounts of data available to all parties.
- Create List serves through the tool. These could be based on shared research topics. The state already has committees, possibly that could be a way to organize these list serves.

What types of activities would strengthen the collaborative, e.g., keep people engaged and attract others?

Create a statewide monitoring network:

- Establish protocols for collecting common base data.
- Explore opportunities to use the network tool to better organize data collection across the state.
    - Could universities and community colleges take lead for data collection in certain areas? Some schools may find value in this opportunity.

Highlight mutual benefits of participation to agency personnel and researchers.

- Discussion related to this point highlighted the reality that agency personnel are constrained by their mandates, and that research carried out or supported by those agencies must have a purpose and/or application related to the mandate.
- In academic settings, researchers are expected to carry out novel research, to publish results in peer-reviewed journals, and to bring in grant money.
- It is important to find that overlap where baseline data collection and applied project work (needed by the State) AND experimental projects (sought by academics) can take place simultaneously and result in research papers/ publications.

<u>Chemical needs and knowledge gaps</u>

Facilitators:

James Johnson, Michigan Department of Agriculture and Rural Development
David Karpovich, Saginaw Valley State University

Opportunities for collaboration may exist in these areas:

Monitoring

- Participants noted that Michigan only has one edge of field monitor to track runoff and chemicals coming from agricultural fields. Collaborating with researchers who are also collecting edge-or-field data could inform and enhance water chemistry research and management.
- The state is only able to sample a relatively small percentage of Michigan waterways, and stores data in the Michigan Surface Water Information Management System, MISWIMS
- Participants noted interest in a more comprehensive, collective database that would allow researchers to upload data, e.g., something like EPA STORET. State personnel identified some challenges associated with this idea, including:
    - The state does not currently have resource or data capacity to store large amounts of data.
    - The state is concerned about funds required to implement and maintain a collective database.
    - Researchers are not always forthcoming with their data, and may not share even if there is process in place to do so.

    - It is difficult to ensure data from multiple sources are of high quality, collected according to accepted protocols, and are therefore comparable.
- A useful exercise at this time may be to inventory the data being collected by state agency personnel and academic researchers, to identify monitoring sites, parameters measured, and methods, and to make this available via the networking tool as a resource to those looking for new data sets.

What additional functionality could the tool have to support collaboration in this issue area?

- More fully develop the options for chemical expertise. There are too few choices, especially compared to the biological research area.
- Academic researchers may be looking for a greater level of detail than what is currently available to answer new and more complex questions. Enhance opportunities to provide that greater level of detail via the tool to make it more useful by faculty.
- Use the tool to connect students to "capstone projects" developed by clients.
- Recognize that watershed councils may be additional users of the tool, especially when they are looking for researchers and resources on certain topics.
- Enhance the “lab capacity” element of the site to allow easier identification of equipment such as mass spectrometer and boats to encourage trading of resources as appropriate.
- Include user reviews of relevant lab equipment.

What types of activities would strengthen the collaborative, e.g., keep people engaged and attract others?

- A future workshop either needs to be smaller (fewer people) or longer to better facilitate meaningful conversation and networking with new people.
- The workshop could model a small regional conference and include a day of poster and research presentation.

<u>Biological (macro) needs and knowledge gaps</u>
Facilitators:
Gary Whelan, Michigan Department of Natural Resources
Carl Ruetz III, Grand Valley State University

This breakout session focused less on specific research gaps and questions, and more on ways to enhance collaborations.

Opportunities for collaboration may exist in these areas:

- Academic and other researchers need to apply for permits to collect certain organisms. Information in the permit applications should be readily available and accessible since they provide a record of past and present work. Much detail is required to complete the necessary forms, and this information might be valuable to others. At the same time, the forms can be made more user-friendly and consistent. Access to permit applications would foster collaborations.
- Government survey data should be placed into a format that is consistent (standardized) and readily accessible. The first step in this process would be to document all the surveys that the state routinely conducts. However, a concern from the state’s perspective regarding accessibility is protecting the integrity of data sets. There are internal barriers and IT restrictions on data sharing that need to be addressed.

- While much information on habitat exists that is relevant to biological communities and distributions, this information needs to be consolidated and made accessible. Much emphasis is placed on collaborations of those working on similar biological components, but a similar emphasis should be placed on those working in similar habitats.

What additional functionality could the tool have to support collaboration in this issue area?

- Provide ship schedules with specific dates, locations, purpose, and tasks. This would encourage collaborations and maximize efficiency of ship usage.
- Have a tab that links to ongoing/planned studies that may be looking for a partner/collaboration. Also, providing an open forum for discussion would facilitate interactions.
- Provide a way to access information about all surveys/studies within a given geographic region and/or water body.
- Provide a way to access information not only about surveys dealing with a specific biological entity, but also about surveys focusing on a specific habitat.
- Can the web tool provide links to seminars/webinars so they can be prioritized?
- Provide a link to currently-funded proposals that involve state government personnel or are funded by the state.

<u>Biological (micro) needs and knowledge gaps</u>

Facilitators:

Sarah Holden, Michigan Department of Environmental Quality
Gary Fahnenstiel, University of Michigan and Michigan Technological University

Opportunities for collaboration may exist in these areas:

Harmful and nuisance algal blooms

- Focusing on Lake Erie as well as inland waters, where are problems? What lakes are more likely to have blooms? What are different toxins produces at different times? How can blooms be prevented and treated?
    - Does lake aeration reduce algal blooms?
    - What are other major concerns in inland lakes (besides Microcystis)?
        - Remote sensing opportunities
    - Can you predict bloom size or severity from nutrient monitoring data? Is there a threshold?
- MDEQ is working on whole-body contact guidelines for Microcystis.
- There is some interest in determining the safety level of Microcystis in the surface water used for food crop irrigation.

Monitoring

- Utilize students in pre- and post-restoration monitoring efforts.

What additional functionality could the tool have to support collaboration in this issue area?

- Capture geography of where people work (GPS coordinates, HUC-12 watershed)
- Post state priority documents
- Post papers and presentations on key topics
- Targeted mailings, e.g., listserv
- Call for ideas (state could post)

What types of activities would strengthen the collaborative, e.g., keep people engaged and attract others?

- Make the workshop an annual event, but maximize opportunities for sharing of research through poster sessions and a few plenary talks.
- Introduce "speed dating" approach to enhance networking

Student pathways to careers in water resources

Opportunities for collaboration may exist in these areas:

- Connecting students with public health departments and health-focused departments on campuses
- Providing students with field experiences, particularly on research vessels, which are extremely expensive
- Enhancing opportunities for students to gain certification training and skills
- Enhancing opportunities for experience and education in some under-represented water-related fields including hydrology, environmental law, and environmental economics
- Participants noted that the state of Michigan, especially the MDEQ will have many, many, job opportunities here in the next few years because many employees are reaching retirement age.

What additional functionality could the tool have to support collaboration in this issue area?

- Post opportunities for field based courses
- Develop and share a list of water-focused courses being taught in the state – instructors can share syllabi, coordinate and share lab data, e.g., to perform comparative analyses of aquatic systems in different areas of the state.

What types of activities would strengthen the collaborative, e.g., keep people engaged and attract others?

- Part of a future workshop could include a session on teaching and outreach
- Showcase student research in a poster session
- Provide opportunities for small groups of students to meet with researchers and practitioners working in their areas of interest.

Human dimensions needs and knowledge gaps

Facilitators:

Emily Finnell, Michigan Office of the Great Lakes
Erin Dreelin, Michigan State University

The Michigan Office of the Great Lakes is asking the following "Big Questions," which could potentially be answered through collaborative partnerships.

- What are the new methods for integrative water management across the state (in terms of governance). If we could build a new system today for managing things like drains, waste water, etc, what would it look like?
- Where does citizen water stewardship look like in the state? What are people's approaches to water stewardship? How do you foster it?
- How do we understand people's relationships to water, and how do we develop and strengthen those relationships?
- What are the messages that motivate individuals and alter their decision making?
- Are our conservation programs working? Are they successful?

- How do we make sure that infrastructure investments are seen as important? How do we communicate about infrastructure investments?
- How do we design and build water infrastructure that is resilient in the face of climate change? What will the future look like, and how will we manage water in that future?
- How can we design successful ecological restoration?
- How do we develop methods and mechanisms to address water conflicts and design water efficiency? (Particularly large groundwater withdrawals)
- How do we value (in terms of economics) water resources?
- How do we evaluate effectiveness of BMPs?
- How does the word "place making" work into water resource management? How does place making strategies impact water resource?
- What are the long-term strategies for funding? What models have worked in other states?

Following presentation of these questions, session participants focused on the following topics:

Blue economy

- Is it possible for blue water economy to form blue business councils? This would be where business people provide funding and credibility, state academics provide knowledge analysis, and state government provides safe space. This could be about any key issue (water and energy, water withdrawal, water quality, etc.). We have a competitive advantage in this state (for businesses) and we need to take advantage of it. To do so requires a systematic approach that fosters collaboration among the different stakeholders.

Outreach to general public

- Public perception is a challenge. Many people do not perceive water resource problems until they can see them or are affected by them. How do we expand perceptions about water issues?
- How do we get general public to be concerned about water issues?
- How do we enhance stewardship of water resources?
- Is there an outreach and communication role for this group (agency personnel, academic researchers)? If so what is the message?

Research informing water resources management

- There seems to be a disconnect between researchers at academic institutions and state quality of life agencies. When researchers develop research questions, they do that to expand their expertise base. They then publish paper, and their work may not make it into the hands of decision-makers or practitioners who could use it. What incentivizes researchers to take that extra step, to do truly applied work?

What types of activities would strengthen the collaborative, keep people engaged, and attract others?

- Provide continued, formalized opportunities for partnerships to form - continuity across time and chances to meet with people to follow up. Partnerships may spur agency personnel and academic researchers to collaborate on applications for federal grant dollars.