

Notes from 2023 Science Vessel Coordination Workshop

January 12, 2023

Great Wolf Lodge and Conference Center

Traverse City, Michigan

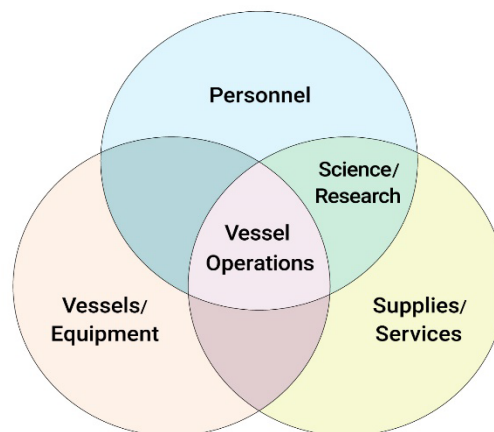
Welcome & Introductions – Tom Crane and Mark Burrows

Tom Crane, Great Lakes Commission (GLC) and Mark Burrows, International Joint Commission (IJC) welcomed the attendees to the 2023 workshop of the Great Lakes Association of Science Ships (GLASS). Crane commented that it has been three years since the last in-person workshop. He mentioned that the previous two years had provided a good opportunity to expand the GLASS network by providing opportunities for the Canadians to participate in GLASS efforts and for new partners to learn about the work that GLASS is doing.

Crane then communicated some housekeeping and logistical items before introducing the first presenters of the day.

Operational Challenges: personnel, platform and mission growth – Dennis Donahue, NOAA’s Great Lakes Environmental Research Lab/Lake Michigan Field Station also welcomed the group and began his remarks by recapping the training that occurred the day before at the Marine Center of Northwest Michigan College. Donahue commented that the feedback that he had received about the training was very positive. The training provided a lot of information that would be covered over the course of a college semester into a single day. A few comments were made by those in attendance. One comment was that the material was extremely valuable and useful but it was more academic and less hands-on oriented. In the future, a more hands-on instruction might add value to the program.

Donahue then talked about the challenges of managing vessels related to personnel, platform and mission growth. He talked about the role of GLASS in helping operators manage these challenges and shared a few examples related to information sharing/networking, technology transfer and sharing information about BMPs. He mentioned that the workshop planning team always try to keep these things in mind when structuring the agenda for the event. He also acknowledged that challenges can sometimes be hard to identify. Donahue introduced the concept of 4 M’s (manpower, methods, materials and machines) to help the audience think about the relationships between these four areas and how weaknesses in one or more of them, contribute to challenges and problems. Donahue displayed a version of the following venn diagram before leading a time of discussion with the audience.



Science and Technology Updates – Steve Ruberg, NOAA’s Great Lakes Environmental Research Lab (GLERL) facilitated a session of short presentations on new efforts surrounding science and technology. In his opening remarks, Ruberg talked about federal aviation administration (FAA) unmanned aerial system (UAS) best practices for unmanned vehicles focusing both on policy and operations. He also briefly talked about NOAA’s Office of Marine and Aviation (OMAO) small boats program which promotes the safe use of small boats and vehicles through risk management. He then introduced Mark Burrows to provide an update on the IJC’s decadal science strategy.

Burrows provided a brief update on the IJC’s decadal science strategy on behalf of the Science Advisory Board, Research Coordination Committee. Burrows said that the report was released in November and circulated to the governments of both the U.S. and Canada and that the IJC will be seeking feedback from the governments. He also mentioned that the goal is to work toward Phase II of the plan which addresses plan implementation and funding allocations. He mentioned that the decadal science strategy includes six priority areas and includes investments of \$100 million U.S. (\$125 million CND) annually over the next 10 years. He concluded by focusing his remarks on the research infrastructure and centers of excellence and the relevance of these priorities to science vessels. He noted that the plan calls for updating the Great Lakes research fleet and associated platforms.

LCMR Kit Pace U.S. Coast Guard provided an update on the Coast Guard’s new Center of Expertise which is jointly housed at GLERL in Ann Arbor and at Lake Superior State University at Sault Ste Marie, Michigan. Pace mentioned that the Center for Expertise has a fairly narrow focus on oil spills specifically how oil responds in fresh water and cold weather/under ice research. He said the overall purpose of the Center is to operationalize innovative ideas in research that improve oil spill responses in freshwater and arctic environments. He mentioned that current priorities that include the advancement of technologies and how they can be used in Great Lakes research especially related to the operation and use of unmanned autonomous vehicles. Another priority mentioned by Pace is oil spill modeling especially under-ice modeling. He concluded by saying that the Center’s funding is specifically tied to oil spill research, but he recognized that research isn’t done in a vacuum and things tend to branch out. He mentioned that this is both exciting but also a challenge to keep research efforts manageable.

Ruberg then introduced Travis White and Hayden Henderson from Michigan Technological University (MTU) to talk about challenges and advancements in the operation and use of unmanned vessels Autonomous Underwater Vessels (AUVs) and Autonomous Surface Vessels (ASVs). White began by introducing a collaborative partnership called the “Smart Ships Initiative”(SSI). The SSI is a stakeholder partnership between industry, government agencies, academia and nongovernmental groups. The goal of the SSI is to bring groups together to collaborate on opportunities to apply technology issues of concern with regard to employing technology and working toward common solutions. In essence the SSI serves as a forum to share information promote technology transfer and share lessons learned. The SSI is also promoting international collaboration especially with Canada, the Baltic Sea countries and Scandinavian countries. Policy and best practices are also discussed to address issues surrounding the lack of regulations for AUVs/ASVs.

White then talked about an initiative dealing with a marine autonomy test bed managed by MTU to explore use of autonomous vehicles. The space is designed to encourage collaboration with groups pioneering applications of both new and mature technologies. He then pitched an idea about how to get GLASS more involved in the SSI through a series of roundtable workshops. White says the group would like to hear what folks are doing with these technologies. Then White volunteered to report back to the GLASS group at the 2024 workshop.

One comment that came up in discussion is the issue of different rules and best practices with regard to deployment of AUVs. It was suggested that an agreement between researchers and captains/operators might be a good way to start addressing this issue.

Liability issues were also raised as a concern by the operators in the room.

Mutual aid agreements may also be valuable and a way to increase collaboration and reduce liability with regard to the deployment and use of autonomous vessels.

White concluded by inviting those present to participate in an information roundtable that will be scheduled for later in the Winter/Spring.

In wrapping up the session, Ruberg asked for any last comments from the audience about the any of the presentations. Heather Stirratt, Director of the Great Lakes Office of the IJC encouraged the audience to communicate the importance of the decadal science plan to their constituents. She commented that it is important for the U.S. Congress and the Canadian Parliament to take responsibility to ensure that the science agenda has adequate resources to accomplish the things that the group has been talking about, especially with regard to meeting the fleet needs.

Captain Luke Clyburn of the research/education vessel “Pride of Michigan” gave a luncheon presentation on the history of the Noble Odyssey Foundation and its 50 years of service in developing a maritime interest with American youth and Great Lakes underwater research. Clyburn talked about his more than 50 years of work working with youth interested in maritime service. Congress created the U.S. Navy Sea Cadet program for that purpose. Young people could get involved in the program in high school or younger and then go into the Navy or the Coast Guard. Early on in the life of the Noble Odyssey Foundation, Clyburn partnered with an historian from Ford Motor Company to begin producing undersea documentaries to tell the story of the Great Lakes.

Brandon Bastar, Wisconsin DNR facilitated a session on managing vessels and costs to meet science and education needs. Bastar introduced the first speaker Amy Eliot, UW-Superior.

Eliot introduced herself as the Associate Director of UW-Superior’s Lake Superior Research Institute (LSRI). She provided a bit of history about the LSRI. The Lake Superior Research Institute (LSRI) that has been around for more than 50 years. The LSRI operates a certified lab and conducts field research. It is supported almost entirely by extramural (outside) funds which can occasionally be a challenge in the management and operation of the facility. She talked about the ballast water research initiative that is part of the Great Waters Research Collaborative (previously the Great Ships Initiative). Eliot then talked about the history of education research and the RV LL Smith Jr. which was operational from 1991-2010. The Smith was permanently docked in 2010 due to staffing changes, lack of funding and age.

Eliot then talked about the Sadie Ann, UW-Superior’s new boat designed as a floating classroom and research vessel. Eliot talked about the preparation for the project which included a considerable amount of research and networking including numerous interviews with contractors and naval architects. The build estimate was about \$4 million. More than \$24 million was raised through the UW-Superior Foundation and the Swenson Foundation. The decision was made to procure the vessel using foundation funds. Ran into problems with shipyard quotes for building the vessel. Finally connected to Incat Crowther (design) and Midwest Marine located in Louisiana which were contracted with the build the vessel. The vessel will be on the water in early 2024. Next steps will be to hire a captain and a program manager.

Grant Pecoraro, Program Manager from Incat Crowther in Louisiana joined the meeting to discuss the Incat Crowther experience in designing the Sadie Ann for UW-Superior. A variety of hybrid solutions were evaluated in order to meet the needs of vessel propulsion and to stay within budget.

Patrick O'Neal, Michigan DNR boat captain out of Charlevoix, Michigan, provided an update on a new vessel build for MDNR. He gave a brief presentation on the history of the RV Steelhead, the vessel being replaced. The reasons for replacing it are vessel age (almost 55 years old) and increased operation/maintenance costs. Michigan is happy with the current platform and would prefer a similar platform on a new vessel, Michigan went through an analysis of costs comparing refurbishing/retrofitting the current vessel versus a new build. O'Neal finished his costs with some take home points; secure funding, do your homework, create a vessel build team and (most important) be patient.

Ben Hale, from the Inland Seas Education Association provided an update on activities of the Inland Seas Education Association (ISEA). ISEA is a non-profit organization whose mission is to inspire Great Lakes curiosity, stewardship, and passion among the region's youth and citizenry. Students develop an appreciation for the Great Lakes aboard ISEA's traditionally-rigged tall ship schooners, along the Lake Michigan shoreline. Through hands-on, experiential learning activities for people of all ages, participants gain the knowledge needed to understand the commitment necessary for the long-term stewardship of the Great Lakes. He let the GLASS audience know that he can make the dock at Suttons Bay available with advance notice. He talked about some challenges that the Association had with the vessel "Utopia" a donated vessel that required so much work that it is now used only for dockside programs. He concluded with news about the purchase of the vessel "Alliance" which is a three-masted schooner purchased out of Yorktown, VA. The Association will be bringing the Alliance into the Great Lakes via the St. Lawrence Seaway in the spring.

Maxwell Morgan, University of Wisconsin-Milwaukee (UWM) and Captain of the RV Neeskay talked about the research mission of the Neeskay and talked about some recent maintenance of the Neeskay. He also UWM's next generation research vessel the 120 foot RV Maggi Sue. UWM is promoting the Maggi Sue as one of the nation's most technologically advanced freshwater research vessel – and (soon to be) the flagship of UWM's fleet.

Prior to conducting new business, the GLASS workshop concluded with a video presentation from the Noble Odyssey Foundation documentary film on Great Lakes, Ancient Shores Reefs and Lake Levels.

New Business

There was no new business to report.

Workshop Wrap Up and Action Items

Crane and Burrows that those in attendance and talked about how the GLASS workshops continue to be a great forum for networking, information sharing and discussion.

Action items:

There were several suggestions made during the workshop that merit further discussion and follow-up. These included:

- Inter-agency mutual aid agreements to assist with engineering, manning, and operational issues; associated training needs.
- Implementing a mechanism to communicate with early adopters of new technology on RVs to see if it is worth the investment.

- Sharing tech & engineering support expertise – library of resources.
- Crew retention & development – relief crews, need for berthing spaces on RVs conducting 24/7 surveys during field season.
- Communication of transient dockage information, costs, availability, problems, and options.
- Partnership with Smart Ships Coalition to address regulations, control, and liability for autonomous vessel operations.
- Subcommittee for developing training programs in conjunction with annual workshop.

Crane and Burrows ended the workshop with the following:

- Email suggestions should be made to Tom Crane and Mark Burrows regarding the workshop and ideas for future meetings/workshops
- Presentations from the workshop will be posted to the canamglass.org website
- Workshop summary notes will be compiled and posted to the canamglass.org website

Adjourn

With no further business, the meeting was adjourned at 2:55 p.m. EST.