IAGLR
LAKES Letter

*This issue shares stories from the pandemic, including highlights from our first-ever virtual conference*

CONTENTS



# IAGLR past, present, future

*by* **Ed Verhamme**

One question has been burning in my mind since I became president of IAGLR during the COVID-19 pandemic: Who is IAGLR? I've attended 19 IAGLR-hosted conferences, and I thought I knew the answer to that question. Prior to the first-ever virtual IAGLR conference and the Black Lives Matter movement, I would have answered that IAGLR was an inclusive organization for those interested in understanding the Laurentian Great Lakes and other large lakes. However, it is clear there are very real barriers to entry for membership and inclusion in our association. Attending annual conferences in person (often in remote cities throughout the region) requires considerable time and resources, and publishing in our journal also requires an alignment of opportunities and institutional access that aren't equally available. As the premiere research association for the great lakes of the world, we are missing the voices and expertise of Black, Brown, and Indigenous members of our community at almost every level of the association. This is not new information for anyone who has attended the annual conference. The issues that affect the integrity and sustainability of freshwater in our communities are complex, and it's time for our association to strengthen its connection to and involvement from Black, Brown, and Indigenous people, as well as women, LGBTQ+, and other marginalized members of our community.

The IAGLR Board of Directors, along with members and outside advisors, are working to broaden the social and cultural fabric of our association beyond its traditional science-only focus. This work began in 2017 with the hosting of State of Lake meetings to bring the association to local communities throughout the Great Lakes region every fall. These efforts continued into 2018 when IAGLR appointed its first international board member, and recently into 2020 with the hosting of a virtual conference and panel discussion on Justice, Equity, Diversity, and Inclusion (JEDI).

These actions are only the beginning and were all initiated prior to the brutal murder of George Floyd in Minneapolis. Going forward, I expect that IAGLR will continue to examine the answer to the question, Who is IAGLR? As a primarily volunteer-based organization, IAGLR cannot reach these goals without you. We need to hear from you about your experiences and recommendations for actions we can take together. IAGLR needs help to identify and remove barriers and add resources that members can bring to their home institutions to support Black-, Indigenous-, and Brown-led efforts. The JEDI panel discussion and the conversations that led its inclusion in IAGLR 2020 Virtual started a conversation that will continue. Please reach out to me or other members of the board to provide input, volunteer your time, develop resources, and share your experiences. I also need you to hold the association accountable to these shared goals. In the meanwhile, please enjoy this issue of *Lakes Letter,* which features highlights from the JEDI panel and other conference events.

*Ed Verhamme is IAGLR president and a project engineer with LimnoTech.*

PANEL 1

# Great Lakes science and policy through the lens of a pandemic

*by* **Paul Sibley**

Think back to the annual IAGLR conference in Brockport, New York. It was business as usual; the last time we physically gathered to hear about, discuss, and debate the most pressing science and policy issues of the Great Lakes. Who could have predicted the situation in which we now find ourselves? The onset of the pandemic in the early part of 2020 has affected every sector and demographic of global society, and many of us have been forced to modify our lives in ways we neither could have predicted nor imagined. One of the "COVID casualties" was the annual meeting, although this did present the opportunity to gather virtually for the first time in the history of the association. At the time of the meeting, the potential scope and significance of the impacts of COVID on Great Lakes science and policy were beginning to emerge. It seemed fitting, therefore, to delve more deeply into whether and how COVID-19 has impacted research and policy in the Great Lakes basin, and this subject constituted the first panel discussion of the virtual meeting.

The panel discussion was chaired by Dr. Paul Sibley (University of Guelph) and guest panelists included Dr. Gail Krantzberg (McMaster University), Dr. Donald Uzarski (Central Michigan University), and doctoral student Rene Shahmohamadloo (University of Guelph). The discussion was guided, in part, by a series of questions: How has COVID-19 impacted research and policy in the Great Lakes basin? Will the effects of COVID be short-term or long-lasting? Are there opportunities to change how we manage Great Lakes research in the future? Can restoration initiatives be used to stimulate economic recovery after COVID-19?

With an audience of over 150 attending the panel discussion, each panelist was provided an opportunity to relate their experiences and express their concerns about the impact of the pandemic. The emerging consensus was that there is and will continue to be an impact on research and policy, but that it is too early to know the full extent and nature of the impacts. We heard about the difficulty in conducting research in the face of building and office closures, recommendations for physical distancing, and requirements for personal protective equipment (PPE). Early on in the pandemic, PPE was difficult to obtain, which hindered efforts to ensure researcher safety. Agencies that were forced or chose to shut down were no longer able to fulfil their obligations to the research programs in which they were participating. This will lead to a loss of sampling effort and potentially important data for those programs. Further, many government agencies were forced to shut down or significantly scale back activities, including environmental monitoring; these data are now lost, as is the opportunity to better understand how Great Lakes ecosystems might have responded, at least in the short-term, to the significantly reduced inputs of environmental pollutants during the pandemic. Investments in remote sensing platforms, which are largely unaffected by pandemics, may be one way to overcome this monitoring vulnerability in the future. Finally, in Canada at least, the federal government has rightfully directed significant dollars to COVID-related research, but as governments are forced to reconcile ballooning deficits, one wonders how this might affect funding for future non-COVID research programs.

Graduate students, who constitute arguably the most important constituency in creating and

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**Deploying Western Lake Erie Buoy, July 2020.** Cooperative Institute for Great Lakes Research researchers Russ Miller and Heidi Purcell deploy a Realtime Coastal Observation Network buoy in western Lake Erie, 7/14/20. *Credit: NOAA GLERL*

advancing our understanding of the Great Lakes ecosystems, could be significantly impacted, but this will depend on where they are in their degree programs. Later-stage graduate students are less likely to be affected, as they may have completed their research requirements and are focusing on writing and publishing. We heard about students whose entry into graduate programs has been delayed and of those whose programs have been modified to accommodate the situation and new requirements created by the virus. It is the mid-term graduate students who may be most affected, unable to start new experiments or complete experiments or field sampling already underway. Graduate students have expressed much anxiety and fear stemming from the uncertainty forced upon them by COVID. We must keep in mind that considering the mental health implications for students facing significant changes to research and teaching is just as important as the physical and administrative aspects of the research programs. With this in mind, many universities, with assistance from local and federal governments, have offered financial assistance to students whose funding may have been temporarily terminated, and relaxed completion requirements to accommodate the expected longer times to completion.

It is easy to focus on the negative aspects of COVID, but it was also clear that the pandemic represents an incredible opportunity to embrace and enhance Great Lakes research initiatives; this could even fuel economic recovery in the basin. The Great Lakes Restoration Initiative is an excellent example. On the chopping block early on during the current U.S. administration, the governors of the Great Lakes states, community interest groups, environmental groups, and academics initiated a campaign to stop the defunding proposal, which, at ~$300 million, was miniscule compared to the overall U.S. budget. The decision was eventually defeated. Why? Because an evidence-based approach showed that this would lead to job losses (never a politically astute move), and that the return on investment, as shown in a recent IAGLR report, is as much as 3:1. In other words, investment in the environment could be used as an effective tool to promote economic recovery in the Great Lakes basin. Given the economic impact of COVID on the Great Lakes region, a strong argument can be made that funding of restoration and other research initiatives in the Great Lakes basin should be significantly increased. Failing to do so may be a significant opportunity lost. One example presented to the audience is tracking the movement and viability of the SARS-CoV-2 virus in wastewater effluent. What is the virus load in wastewater? We know that it is excreted and likely to be found in wastewater, but not whether the virus is viable and transmissible in this state, and whether it poses a risk to those recreating in areas receiving wastewater effluent.

**The pandemic represents an incredible opportunity to embrace and enhance Great Lakes research initiatives; this could even fuel economic recovery in the basin.**

Participants also spoke about the advantages and disadvantages of attending a virtual conference. Clearly, with the cancellation of the annual conference, we all lost one of the most important opportunities for attendees—to engage in the hallways, form collaborations, and share personal interactions as we discuss Great Lakes research and policy. This is particularly difficult for graduate students who may wish to speak directly and personally with influential researchers in their field to gain important feedback on their science and methodology, but also in making important connections as they develop into scientists in their own right. On the other hand, a virtual platform is also an opportunity for those who would not have attended in person to participate in the conference; that a virtual delivery model is more accessible is a point underscored by the nearly 550 registrations for the conference. While personal connections may be diminished with virtual delivery, they are not completely lost, and there is always the benefit of a reduced carbon footprint. In the future, it is likely that hybrid formats combining in-person and virtual attendance will become a successful norm for many societies.

As is the case for almost all entities affected by the pandemic, the extent to which research and policy in the Great Lakes will be affected is uncertain. Perhaps it can be compared to a movie with alternative endings; as the editors, we can choose an ending in which we stand as collective champions for Great Lakes ecosystem health by acknowledging the important, reciprocal relationship between the environment and economy and vanquish the enemy of indifference.

*Paul Sibley is IAGLR past president and a professor at the University of Guelph.*

PANEL 2

# Justice, equity, diversity, and inclusion

*by* **Jennifer Boehme**

Panelists who contributed to this article include Alfred Otieno Achieng', Catherine Febria, Donna Kashian, Andrea Kirkwood, Kevin Obiero, Jess Owen, Ali Shakoor, Paul Sibley, and Ed Verhamme

The global pandemic gave heightened awareness to the well-being of the IAGLR community, as the impacts affected many research programs and personal lives of our members. The fact that these impacts are disproportionately affecting marginalized and underrepresented groups contributes to a growing need to understand dimensions of justice, equity, diversity, and inclusion (JEDI) within IAGLR and beyond.

While COVID-19 and Black Lives Matter were top issues during IAGLR 2020 Virtual, IAGLR members had signaled the importance of addressing JEDI within the association a couple years ago in a member survey. As members of the IAGLR family, we are all impacted by what happens to our friends, neighbors, and colleagues. We can no longer remain complacent to issues that negatively affect them nor the communities in which we work and belong. Science-based organizations were called to action in the days and weeks leading up to IAGLR 2020 Virtual. Thus, IAGLR held a panel discussion during the conference both to begin listening to members' experiences and to reflect on how the organization can apply JEDI principles during this critical time and make them a permanent feature of IAGLR practice.

The discussion allowed panelists, who were members of the IAGLR community and its board, to field live questions from members and be an inclusive and open forum for both its people and its science. We seek a path forward to address potential systemic exclusion of Black, Indigenous, People of Color (BIPOC) and other underrepresented groups (e.g., LGBTQ+ and those facing ableism) from full participation in the IAGLR community. As we strive toward further expansion as an international society, we must ensure that our actions and practices reflect the diversity of all IAGLR constituencies and elevate the contributions of all.

Panelists considered the goals of inclusion for IAGLR's international members and BIPOC, noting the importance of early education outreach and mentors to break down systemic barriers. Actions by BIPOC in IAGLR are not the answer, but rather non-BIPOC members are encouraged to act, beginning with authentic and concerted efforts to build trust within the IAGLR community and society. A persistent and consistent presence by scientists in the representative demographic was deemed critical for effective outreach to BIPOC communities to demonstrate an interest in and care for community well-being, as well as to draw a link between science and their place in the natural world.

> Commit to expanding networks to include BIPOC, build trust with local communities, and get to know communities of color in your region, understand their perspectives and expertise as naturalists, and the reasons that they are not taking part in the research and science community.

When asked about disparities between the demographics of our communities and those who apply for science opportunities, panelists noted that exposure and access to science and the natural world by BIPOC communities vary a great deal. Wider recognition of this point is needed to encourage organizations to prioritize steps to retain students from all backgrounds. Panelists encouraged members to commit to expanding networks to include BIPOC, build trust with local communities, and get to know communities of color in your region, understand their perspectives and expertise as naturalists and the reasons that they are not taking part in the research and science community. Moreover, panelists also encouraged individuals to begin to understand the colonial history, Treaty partners and Indigenous rights-holders in the regions where we live, work, and recreate.

Panelists also identified the importance of international participants sharing knowledge from other continents, and in particular, noted the need

*continued*

to increase participation of women from these other continents. Steps that IAGLR could take to further this goal include examining further options to defray travel, membership, or registration costs for IAGLR meetings, and pursuing partnerships with other societies to co-host meetings outside of North America. Such steps could also be considered for BIPOC members.

Participants raised the need for strategies to share these values with home institutions, including ways for those with privilege to use it to open opportunities to broader groups. The sharing of rewards by government scientists and faculty could provide underrepresented students with grant and workshop opportunities as well as field experiences to foster their training and passion for science. The current assignment of value for JEDI work by academic programs and leadership also presents a challenge. If service work is not a higher consideration for tenure, that limits participation for those seeking tenure even if they personally value service. As a community that values JEDI, we need to work to change this paradigm.

To realize a shared vision for a more just, equitable, and impactful IAGLR, a sustained effort will require all hands on deck within the association and include strong participation from the dominant demographic, white men. Panelists also observed that past promotion of colonial voices and perspectives over others via funding decisions is no longer servicing sustainability and science goals. This presents an opportunity for both top-down and bottom-up action to center research on local knowledge holders and needs. Investment in capacity and leadership by early career researchers through mentorship and investment in partnerships are examples of bottom-up actions that can take place immediately.

For JEDI to be a priority for the association, it was recognized that we as members must share the value of a more just, equitable, and impactful IAGLR society. For next steps, panelists will follow up with the IAGLR Board of Directors with recommendations noted below so that IAGLR can restructure its bylaws and charter as needed to codify its commitment to this important initiative. We call on members to continue to share experiences and knowledge and assist IAGLR in taking action.

*Jennifer Boehme is an environmental scientist at the International Joint Commission Great Lakes Regional Office and a member of the IAGLR Board of Directors.*

## Proposed JEDI action items

Panelists indicated that a more welcoming IAGLR must include concrete steps by both the association and its membership. Their suggestions are listed below.

- Include more BIPOC and international representation in IAGLR leadership
- Support diversity mixers for students
- Be better listeners as scientists
- Center the research and input of diverse scientists on teams and funding opportunities
- Learn the names of Indigenous rights-holders and work towards understanding the relevant treaties in the places where we work, live and research
- Account for community needs when building a research program
- Serve as good role models and mentors
- Include students in future IAGLR JEDI initiatives and encourage people to join this work early in their careers
- Use our privilege to open opportunities to broader groups
- Share rewards via grant and workshop opportunities and field experiences
- Work to change the value assigned by academic programs and leadership to JEDI work
- Provide JEDI seminars at future conferences, including both the annual Conference on Great Lakes Research and the State of Lake conference series

PANEL 3

# Large lakes of the world

*by* **Jessica Ives and Ted Lawrence**

The shift to a virtual IAGLR conference this year came with the unexpected benefit of more researchers from around the world being able to participate. The *Large Lakes of the World* panel discussion was born from the *State of Global Lakes* session, co-chaired by Richard Ogutu-Ohwayo of the Ugandan National Fisheries Resource Research Institute and African Lakes Network. The session featured 13 recorded presentations from experts representing lakes in Russia, New Zealand, Italy, China, and throughout East Africa. These lakes ranged in size from Lake Garda in Italy (370 $km^2$) to Lake Victoria in East Africa (Uganda, Kenya, and Tanzania; 2,750 $km^2$). Each presenter gave an overview of their lake and discussed topics pertaining to it (e.g., land use changes, fishery exploitation, and aquaculture).

Following the session, the one-hour live panel discussion featured a subset of session presenters to discuss commonalities, differences, and shared issues across global large lakes. Panelists included Kevin Obiero (Lake Turkana), Alfred Otieno Achieng' (Lake Victoria), Nikolai Filatov (Lake Onego), Cecilia Githukia (Lake Victoria), Annette Janssen (Lake Taihu), and Yu-Chun Kao (representing a comparative fisheries study of 30+ global lakes). The discussion began with broad thoughts about the shared challenges of the world's large lakes (e.g., climate change, eutrophication, exploitation), and quickly focused in on one particular challenge: data availability. It was clear through the discussion that data availability not only varies widely across the globe, but data access does as well. Participants noted that the data challenge is made up of numerous smaller challenges, including language barriers, data ownership, differing data collection methods that make data uncomparable, and data collection gaps (particularly in the global south where much of the research is patchy and project-based).

Following the discussion, we invited panelists and the audience to submit ideas for concrete actions that IAGLR could take to strengthen its international reach. We received some excellent ideas, which will be directed to IAGLR's International Committee, led by Dr. Ogutu-Ohwayo. The committee is developing a list of recommendations to share with the IAGLR Board of Directors.

One of the key messages that we, as the moderators, took away from the discussion was that IAGLR and other international associations have a valuable role in connecting global players and facilitating data co-collection and sharing. IAGLR should continue to bring large lake researchers together. Not only does IAGLR need to continue to strengthen the areas it does well (a strong North American community, annual meetings, and the *Journal of Great Lakes Research*), but it also needs to grow in new ways that allow more global access and participation in knowledge sharing and network building. In this digital age, and highlighted by the COVID-19 pandemic, we encourage IAGLR to investigate how it can use virtual spaces to connect and strengthen large lake science at a global scale. This could most efficiently be done by partnering with other associations and organizations with networks outside of North America, allowing IAGLR to both retain its existing Laurentian Great Lakes strengths and contribute to the understanding and stewardship of global lakes, some of the world's most precious resources.

*Jessica Ives is a research associate at the Healthy Headwaters Lab at the University of Windsor and secretary of the IAGLR Board of Directors. Ted Lawrence is executive director of the African Center for Aquatic Research and Education.*

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# Opportunities for IAGLR members

## Engage with SAICM

*by* **Brenda Koekkoek**, Program Officer, SAICM, brenda.koekkoek@un.org

There are several ways to engage with the Strategic Approach to International Chemicals Management Secretariat (SAICM), administered at the United Nations Environment Programme.

**SAICM stakeholder.** Become a stakeholder.

**Fifth Session of the International Conference on Chemicals Management.** ICCM5 will take place July 5–9, 2021, in Bonn, Germany. The conference draws 1,000–1,500 policy makers and practitioners from around the world. Decisions on the framework for chemicals and waste beyond 2020 are expected to be taken. Opportunities for side events and networking on the margins of the conference will be updated on the conference website.

**SAICM knowledge management platform.** We invite you to visit our new website: chemicalswithoutconcern.org. This platform is a space to learn about emerging policy issues and their linkages with the 2030 Sustainable Development Agenda. Subscribe as science expert stakeholder and send any recent relevant content on emerging policy issues to be added. Send submissions to knowledgehub.saicm@un.org.

**Communities of practice emerging policy issues.** In collaboration with different stakeholders, the SAICM secretariat will host four communities of practice (CoPs) for dialogue and exchange on emerging policy issues. Topics will focus on highly hazardous pesticides, lead in paint, chemicals in products, and chemicals and Sustainable Development Goals. Register as a member of any of the four CoPs to participate in the online discussions. By signing up, you will receive invitations to the upcoming discussions and their summary digests upon conclusion.

**Engagement of young professionals**. We are keen to get youth more formally engaged in the SAICM process. We would be pleased to speak with any young scientists and any organizations representing young professionals on related pollution and sustainable chemistry topics. Please send any inquiries to saicm.chemicals@un.org. Visit inspira.un.org for UN system internship information.

*Connect with us on Twitter at @ChemandWaste.*

## Lights, camera...public television

*by* **Sandra Svoboda**, Program Director, Great Lakes Now

With our monthly program on 22 PBS stations, *Great Lakes Now* covers the five lakes and their watersheds as well as drinking water quality, affordability, and equity issues with our team of writers, videographers, and producers located around the region.

But as we say in journalism, "We're only as a good as our sources." And the sources for a lot of our favorite stories are the scientists out in the field—or on, in, above, and under the lakes. With guidance from those researchers, we've taken audiences into labs where zebra fish may be helping us understand the health effects of PFAS, alongside oil-spill experiments in remote wilderness lakes, to the bottom of Lake Huron to see sinkholes, and into coastal wetlands with graduate students and faculty.

So how can we join you in your work? Well, there is one major thing we're looking for when we decide what goes on the show: "A person doing a thing." This is Supervising Producer Rob Green's favorite expression, and it really does explain a lot of our program.

It's not enough that you have the most unique, well-funded, groundbreaking study. It's not enough that your research is about the hottest topics in Great Lakes news, like climate change, coastal wetland erosion, invasive species, or drinking water quality. We need to *see* you doing things, preferably in a few outdoor or interesting locations, and by "see" I mean in front of our cameras. We'll have you tell us what you're doing, and we'll shoot it in a flattering way with lights and microphones. And then we need you to explain the "thing" in a way that's relevant and understandable for our audience. (IAGLR conferences have had sessions helping with this.)

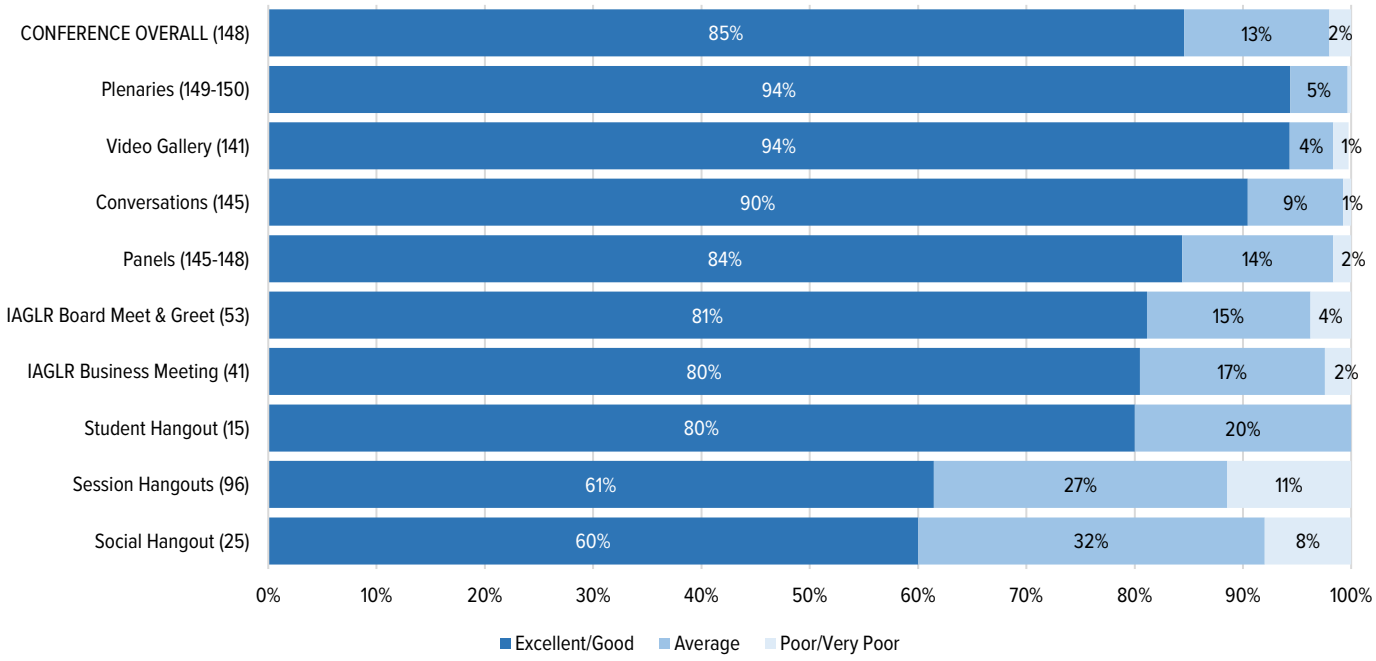
We're always looking for segment ideas, especially as they help audiences understand how science and environmental issues connect across the region. If you've got a pitch, email me at ssvoboda@dptv.org and we'll set up a call. If it's a Zoom, I might want to *see* you doing the thing as we talk about it!

# Post-conference survey highlights

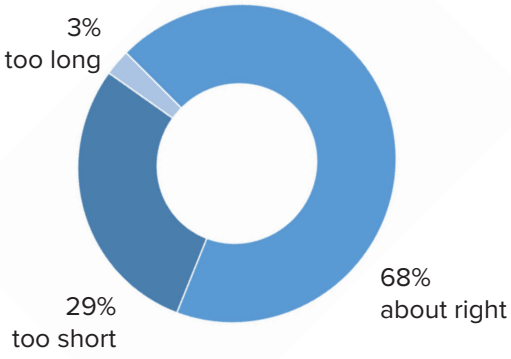
When the COVID-19 pandemic forced the difficult decision to cancel the annual Conference on Great Lakes Research in Winnipeg this year, we decided to hold the event online. Despite a looming deadline, we felt it was important to still come together to share great science. This was a first for us and likely won't be the last virtual offering. To help us learn from this experience, we invited the 541 conference registrants to share their views on the conference, and 150 responded. Below is what they told us.

We asked respondents to rate the overall conference, as well as individual events and features. The following chart shows the breakdown between positive ("excellent" or "very good"), average, and negative ("poor" or "very poor") responses.

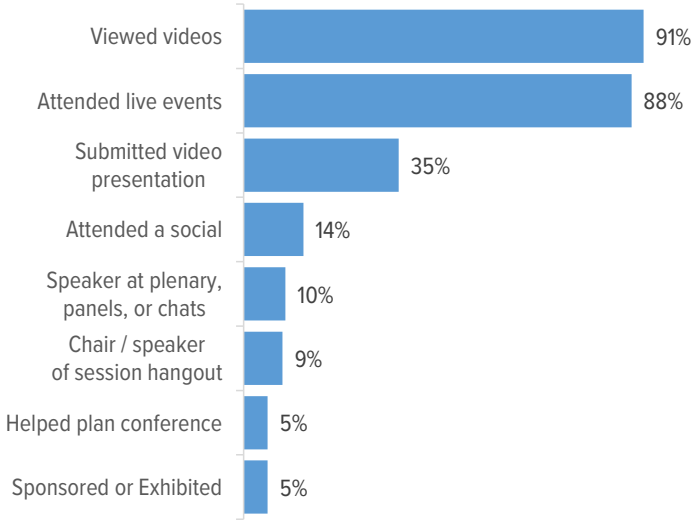
## RATE THE FOLLOWING




### Were the session discussion hangouts too short, about the right length, or too long?

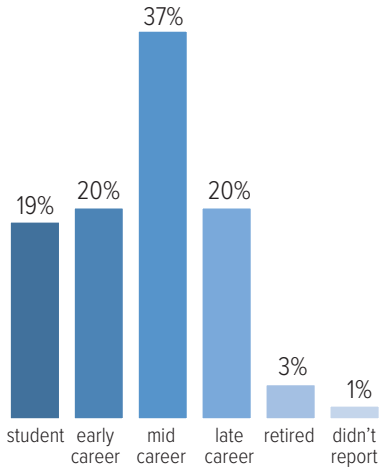



### Which of the following did you do at IAGLR 2020 Virtual?

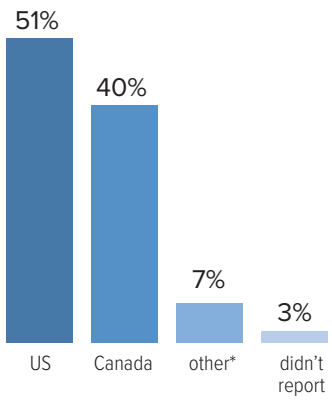


# Who are the 150 respondents?

## CAREER STAGE

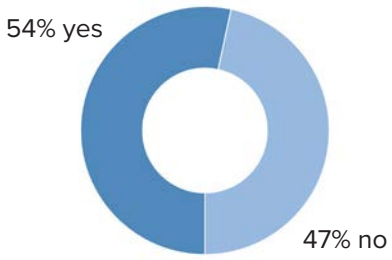



## COUNTRY

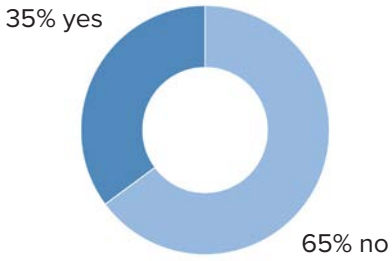



* Albania, Democratic Republic of the Congo, Iran, Kenya, Netherlands, Russia, Rwanda, and Spain

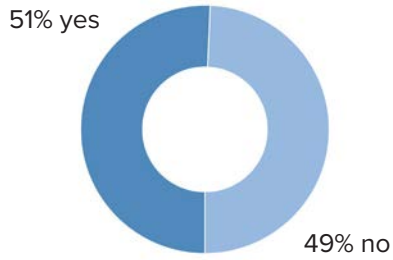
### Were you planning to attend in Winnipeg?



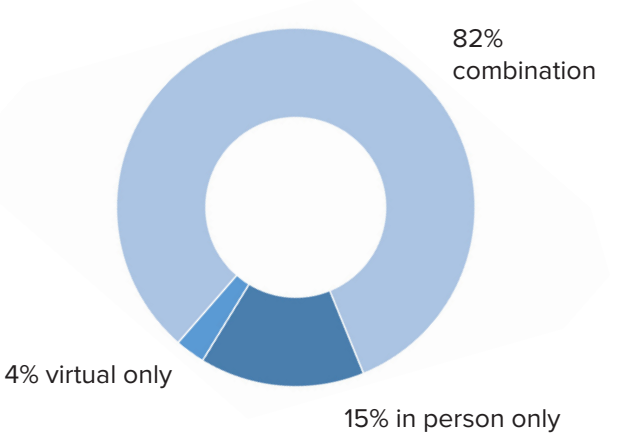

### Is this your first IAGLR conference?




### Current IAGLR member?




## PREFERRED CONFERENCE FORMAT




Respondents were asked which format they would prefer for future conferences: in person only, virtual only, or a combination of the two. The majority of respondents (82%) indicated they would prefer a combination. When looking at the responses of those at different career stages, students were more likely than other groups to select the in-person option: 36% of the student respondents preferred this option, compared to just 10% of the other respondents. As one respondent commented, "I am a Ph.D. student, looking to make connections in academia, and I found this to be difficult in the virtual format."

# Comments from survey respondents

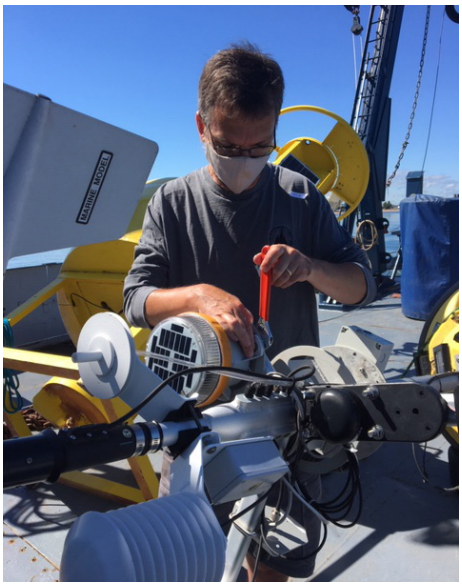

Of the 150 survey respondents, 103 took the opportunity to make a comment. Over half were of the general "good job" variety, and nearly a third suggested improvements for the session hangouts. These especially focused on improving the consistency of the session hangouts and developing a common format. Better integration between the session hangouts and the accompanying video presentations was also desired. Respondents noted the learning curve for participating in a virtual conference and suggested further training for session chairs, panelists, and participants to reduce the fumbling that sometimes occurred. Technical glitches and confusing instructions were also noted.

Respondents also noted missing the in-person connection and networking potential of face-to-face meetings; some suggested that if the virtual model were carried out again, we should offer more ways for participants to connect for conversation and networking. Several respondents commented on the benefits of a hybrid model for future conferences, including events held online between the regular annual conference.

Respondents also noted several benefits of virtual conferences, especially in facilitating participation by a wider group of people, both geographically and for those who may have limited time or funds to travel. Virtual conferences can also address accessibility issues, particularly by providing transcripts of all talks. The environmental benefits of not traveling were also noted.

In general, people expressed support for the prerecorded video presentations, although some respondents indicated they would have preferred more live presentations. Respondents also noted that they would have liked earlier access to the gallery so they could have had more time to view the presentations before the session discussions, and to have even longer access to the gallery after the conference to view the presentations at their leisure.

# Adapting during the coronavirus pandemic




**University of Minnesota, Duluth, Large Lakes Observatory**. As part of the Great Lakes Observing System, the UMD's Large Lakes Observatory deploys two meteorology buoys in the western arm of Lake Superior *(left)*. "Normally, these deployments take place in early spring," notes Jay Austin, UMD, LLO. "This year we were delayed until late July due to COVID-related restrictions." The crew of the *R/V Blue Heron* after the cruise are pictured at right. Face masks were worn inside the vessel at all times and on deck when working in close proximity. Other safety procedures were implemented as well. This cruise felt very different than previous ones due to these changes, notes Austin, who submitted these photos, taken by Lisa Sundberg.

**Lake Erie Water Sampling, July, 2020.** NOAA Great Lakes Environmental Research Laboratory ecologist Paul Glyshaw collects field data aboard a NOAA research vessel. Collecting and analyzing water samples during the harmful algal bloom season plays a key role in NOAA's efforts to forecast and monitor the bloom as it develops and changes over time. *Photo courtesy of NOAA GLERL.*


**Water quality lab work July 2020**. Cooperative Institute for Great Lakes Research (CIGLR) Benthic Ecology Research Technician Glenn Carter filters for chlorophyll-a, an indicator of phytoplankton abundance and biomass in water. These water quality observations are essential for documenting the growth and spread of harmful algal blooms. *Photo courtesy of CIGLR.*

**Sampling in Lake Michigan.** Despite a delayed field season due to COVID-19, Harvey Bootsma and Graceanne Tarsa (University of Wisconsin-Milwaukee) and Ben Turschak (Michigan Department of Natural Resources) were able to collect and analyze samples in August for a project with the National Park Service to understand the effects of invasive species on nearshore community structure and function in Lake Michigan. Lab work was done, albeit with a smaller crew than usual, at the Capt. Thomas M. Kelly Biological Station at Inland Seas Education Association in Suttons Bay. *Photos courtesy of Ryan Busch, Great Lakes Outreach Media (top, bottom left) and Harvey Bootsma (bottom right).*



**IAGLR 2020 Virtual.** Even a power outage didn't stop us on day three, thanks to a generator and Ed Verhamme's make-it-happen persistence. It was definitely a conference to remember!

**Kenya Climate Smart Agriculture Project.** This initiative aims to sustainably increase productivity, build resilience to climate risks, and reduce greenhouse gas emissions through multiple projects in 24 counties in Kenya. Kevin Obiero—team leader for the project's aquaculture value chain—led a team of scientists from Maseno University, Egerton University, and the University of Eldoret to conduct a baseline survey in July 2020 to select project beneficiaries on the Kenya portion of Lake Victoria. At left are project team members at Anyanga Beach in Siaya County, with net pen cages in the background. At right is the project team at the Mulukoba Beach cages managed by Busia County. This project promotes the use of high-density polyethylene (HDPE) fish cages to increase aquatic biodiversity and fish productivity while enhancing food safety. This innovative floating fish cage technology will be used to replace current metallic cages prone to erosion and metallic pollution. The HDPE cages are used widely around the world because of the versatility of the materials used, the relative simplicity compared to conventional pond-based systems, and the comparatively longer durability. *Photos courtesy of Jimmy Brian Mboya (left) and Kevin Adwera (right).*

MEMBER PROFILE

# Dulcinea Avouris

Post-Doctoral Researcher, University of California, Merced

I use remote sensing data to look at different water quality issues. My most recent focus was on the cyanobacterial and harmful algal blooms that recur annually in Lake Erie and in South Florida. We can use the data captured by the sensors to distinguish different in-water constituents like pigments, sediment, and colored dissolved organic matter. Now I am part of a project that tracks mercury in the San Francisco Estuary using proxies that we can detect with remote sensing instruments.

## My Pandemic Story

My work was largely unaffected by the pandemic, because my research is primarily computer based! I had my laptop and a Wi-Fi connection and was able to work from home without a lot of fuss. I was teaching one class in the spring, an introductory oceanography class, and migrated it online for my students.

However, just because I can easily work from home doesn't mean that this time has been easy. The realities of ongoing societal-level uncertainty driving multiple layers of stress, worry for both loved ones and students, looking for a new job, and managing a changing household situation have a big impact. My oldest child moved home so she wasn't isolated in an apartment while she worked remotely. My next two, college age students, were abruptly dislocated (one from a study abroad program in Scotland).

In total, seven of us needed space and quiet to be able to continue to work and finish the school year. It is not an easy situation, but we are incredibly privileged to live in an area where we have the space in our house and the means to support our family. That privilege has also served to highlight the incredibly high level of inequality and financial disparity in our country and society—for families, scientists, and persons of color. This inequality has been both a source of further concern and a call to action for me personally and for my family.

There have been some wonderful personal benefits during this time as well. I did get a new position with a principal investigator (PI) who is already proving to be an excellent mentor. My previous PI remains a part of my professional success, and my network grows! And at home, my partner has been taking over the cooking, and household tasks are more evenly distributed. We have been able to complete some projects as well. I know that this is very much a cliché, but it is true, and one way to help cope with the stress of the pandemic. I have also begun to find ways that I can help enact real change in our society. I am hopeful that change can occur and be real.

## A look to the future

I think that one of the most important impacts of the pandemic was to pull back the curtain on the realities of our lives. Scientists are people—with interests, relationships, and responsibilities outside of their scientific research. As a community, we need to be better at recognizing and valuing those things. We need to work to change the expectation of research as a priority for which everything else is sacrificed. For example, we should focus on increased access to conferences, a normalization of the challenges of childcare or eldercare, and attention to race and gender issues.

MEMBER PROFILE

# Yakuta Bhagat

Senior Environmental Scientist, EnviroScience Inc.

I work at an environmental consulting firm near Akron, Ohio, in the capacity of a senior scientist and project manager. My work typically involves conducting water quality and habitat assessments, biological community evaluations, and ecological risk assessments for natural resource sites as part of routine monitoring studies, and for industrial facilities as part of compliance evaluations for environmental permitting.

## My Pandemic Story

At the onset of the pandemic, it was very difficult managing my project workload at home while also taking care of my two preschool-age children. As was the case with most families, my husband and I were thrust into a situation that was completely unfamiliar and were forced to quickly adapt to our very unusual circumstances. My project work at the time involved conducting analyses and writing reports. Homeschooling my kids during the day and working at odd hours of the night proved unsustainable after a few short weeks, at which point it became necessary to significantly reduce my work hours and take a pay cut as a result. The passing of the Families First Coronavirus Response Act in April helped in providing resources such as partial paid family leave to facilitate managing work while schools were shut down. In some respects, I am quite fortunate to be able to work remotely and have a flexible schedule so, while there have indeed been some challenges, I have been able to adapt to a new normal and take solace in the fact that my family members and I have managed to remain healthy and safe during this rather precarious time.

As we approach the start of the school year and with the continuing rise in the number of cases, the possibility of a second wave of the pandemic and an inevitable second shutdown is something that has been on my mind lately.

During the shutdown and even now, my family and I rely heavily on social networking platforms such as FaceTime, Skype, and Zoom to stay connected to extended family members, friends, and teachers. This has helped tremendously in coping with the situation with which we are faced and bringing a sense of togetherness and solidarity.

An unexpected silver lining in the midst of this very challenging and uncertain time has been the ability to slow down the pace and spend quality time at home with my family, engaging in fun and creative activities on a daily basis that our normal schedules may not have allowed.

## A look to the future

We are fortunate to live in a time where technology has proven to be a saving grace. The virtual conference held by IAGLR in June demonstrated how the scientific community can still convene to share ideas and have important discussions on ongoing research and topics of social importance. This pandemic has taught us all lessons in humility, sustainability, and our inherent need to stay connected. It is important for the research community to continue fostering communication and finding new and innovative ways of conducting research independently and collaboratively.

MEMBER PROFILE

# Jasmine Mancuso

Graduate Student, Annis Water Resources Institute, Grand Valley State University

My master's thesis research focused on the harmful algal bloom (HAB) impairment in Muskegon Lake (Muskegon, MI), a Great Lakes Area of Concern. The first objective was to gain a historical understanding of the trends of HABs on Muskegon Lake (2003–2019) both in terms of abundance and composition. The second objective was to determine how the anomalous weather patterns of 2019, a very cool and wet year, affected the phytoplankton community and HABs in Muskegon Lake.

## My Pandemic Story

When campus officially closed in March, we were told it was a temporary measure. I hadn't any idea I would only return to campus one more time to clear my desk months later.

One of the most challenging realizations for me was that my graduate school career would not conclude with months of me working hard alongside my peers as we rallied to finish our theses, but rather with me trying to focus at an impromptu desk in my living room, alone. It was a struggle to maintain efficiency, and I began working long days finishing up data analysis and tackling the writing portion of what would turn out to be a 200-page thesis.

While the seemingly constant distractions of the news, my cats, and the other members of my household (who were also trying to figure out how to work from home) made it difficult to maintain a strong work ethic, I can't help but feel lucky that all of the work that needed to be done to finish my thesis could be done remotely. With all the time in the world and no reason to leave my home, it actually made for a timely opportunity to focus on writing and preparing for my defense. I found that the most important thing to maintaining sanity and productivity was to follow a strict schedule, not work for too long at a time, and take the weekends off. With the amount of time saved from not commuting to campus or the lab and the conclusion of classes, I was able to pick up old hobbies, tend to my plants, read more, make puzzles, go birding and hiking in the mornings before working, watch shows I'd earmarked, frequent the beach, and spend time with my family.

In realizing all of the things that I, and many others, have lost during the course of the pandemic—the energy of the campus environment, the ability to go out with friends, celebrations for concluding our graduate school journey—I found that I actually gained things as well. For the first time since beginning my academic endeavors, I had time. Whereas my days used to be filled with driving to and from campus and the lab, completing class requirements, performing field and lab work, going to the gym, engaging in social activities, and more, they were now filled with seemingly endless amounts of time. At first, it was daunting and overwhelming, but it also provided endless opportunities to appreciate the world around me, and I believe I am a more adaptive, flexible, and self-sufficient person for it.

## A look to the future

To me, one of the most important and obvious things to emerge from the pandemic is the realization that scientists have the ability to pull together and work hard to fast-track necessary research for the common good, all while facing criticism, mistrust, and disbelief from the public. There has long been a movement to try to better connect the scientific community to the community it serves, and I believe we have made progress in that regard and can use the momentum to tackle challenges like climate change. I think the key is collaborative efforts and a united front.

MEMBER PROFILE

# Mark Olokotum

Research Scientist, National Fisheries Resources Research Institute; Ph.D. Student, Makerere University

I undertake activities to generate information on the trends of fish stocks, biomass, and biodiversity. My colleagues and I carry out routine aquatic biodiversity assessments for all human developments to ensure "ecological good status/ potential" and compliance with legislation. My Ph.D. research assesses the patterns of phytoplankton diversity, dynamics of cyanotoxins, and associated health risk. In addition, I advise on the interaction of algal blooms and fisheries production.

## My Pandemic Story

The COVID-19 pandemic led to several presidential directives in Uganda, including a national lockdown that took place while I was traveling from the field to the workplace. The following week, researchers were designated at essential service providers and allowed to operate at 30% workforce. During this period, our workload was high, but we had limited working time due to a 7 p.m. curfew (when factoring commuting time).

I started working from home, where my little girl was always my biggest challenge as she needed to play, in addition to the house chores. It was also the first time I experienced a feeling of "retirement" at an early age. All learning institutions were closed, and closure of Makerere University affected my mandatory cross-cutting courses that required physical classes and meetings with other Ph.D. students.

With the cancellation of commercial flights, my plans for final data analysis and subsequent write up at the Museum National d'Histoire Naturelle in Paris, France, were put on hold. In addition, airport closures and subsequent flight cancellations would have kept me from attending the IAGLR conference in June if it had proceeded in person. Either way, I could not share in person with an international audience the ongoing assessment of the patterns of phytoplankton diversity and the dynamics of cyanobacteria. As a Ph.D. student, presenting my work to an international audience is a university requirement. This wasn't possible during the peak of the pandemic.

To keep up with my work and Ph.D. progress, I've held regular meetings with my work colleagues to manage workplans and budgets for recently approved projects. I adopted weekly Skype and Zoom meetings with supervisors; however, this was hindered by the high cost and poor internet connectivity.

Although I have embraced e-working environments, airport closures still limit my ability to travel for my data analysis and to attend other international conferences to complete my Ph.D. studies. At work, we have embraced the World Health Organization standard operating procedures and recommendations of the Ugandan Ministry of Health as we exercise our mandate. However, we are still challenged, as our problems and those of fisher communities are far beyond just the COVID-19 pandemic. These challenges include increasing water levels and floods, poor fisheries management, post-harvest losses, lack of alternative livelihoods, health risk associated with cyanotoxins, and inadequate financing. Unfortunately, the pandemic has diverted funds and support away from these other challenges.

## A look to the future

We must embrace working smarter within the different situations with the numerous webinars that have been used to reach researchers and stakeholders. I have participated in several online conversations and presentations that received good viewership. In addition, learning institutions in developing countries should embrace virtual meetings and presentations for subsequent assessments.

MEMBER PROFILE

# Judith Perlinger

Professor, Michigan Technological University

I am a professor of civil and environmental engineering at Michigan Technological University (Michigan Tech), located in Houghton on the Keweenaw Peninsula of Michigan's Upper Peninsula. I teach courses in sustainable engineering, environmental chemistry, and meteorology. My research deals with transport and transformation of legacy and emerging pollutants in the Great Lakes region.

## My Pandemic Story

The pandemic has affected my work in causing me to work from home for both teaching and research. I learned that Michigan Tech would be going to online teaching Wednesday of spring break. I had until the following Monday to inform my students how the course would function for the remaining seven weeks of the semester. Luckily, the course I was teaching was conducive to an online format, but, not surprisingly, I was not prepared for online teaching. I had to increase my online presence in the learning management system, learn how to hold synchronous and asynchronous class meetings, conduct online assessment, run student group meetings using Zoom breakout rooms, work in Google Docs and Sheets for classwork, and more, in a short time frame.

Through those weeks, it became clear to me that I needed additional training in online teaching. At the end of the spring semester, Michigan Tech required all faculty to obtain certification to teach online, and so I obtained the Quality Matters (QM) certification by taking their seven mini courses in May and June. Taking the QM certification courses did increase my confidence in online teaching. The biggest challenge for me in this pandemic has been delivering courses online that are of similar quality as face-to-face courses. The litmus test for success in dealing with the challenge will be the start of fall term, when I am required to deliver courses both face-to-face and online.

Michigan Tech is hosting the IAGLR conference May 17–21, 2021. Noel Urban, also a faculty member at Michigan Tech, and I are co-chairing the event, and so the conference has been on my mind a lot lately. If it occurs in person, it will be the largest conference ever hosted by Michigan Tech. We have held numerous planning meetings this summer, and I have been amazed at the outpouring of interest and help with the preparations. We will not know whether the conference will be held face-to-face or online until January, so we are preparing contingencies for both cases. IAGLR 2020 Virtual was outstanding, and I would personally like to thank President Ed Verhamme (an alumnus of our environmental engineering program, I am proud to mention) and the IAGLR staff for the key roles that they played in making IAGLR 2020 Virtual a reality. I admit that we hope that IAGLR 2021 can be held face-to-face, as we would very much like the IAGLR community to see and experience the natural beauty and rich history of the Keweenaw Peninsula in person.

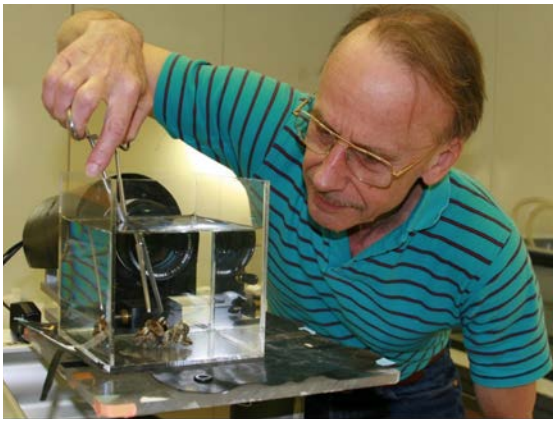
## A look to the future

During this time of upheaval, how can we as a research community emerge stronger than before? The seemingly contradictory answer to this question is that standing together in solidarity means, quite literally, standing apart. Social (aka physical) distancing remains the most effective means to stop the pandemic. Given the distances across and between great lake basins, and as IAGLR 2020 Virtual so aptly demonstrated, the IAGLR community is already adept at standing apart in solidarity. Looking forward to seeing you at IAGLR 2021, whether it be in person or virtually!

MEMBER PROFILE

# Henry Vanderploeg

Research Ecologist/Chief of Ecosystems Dynamics Branch, NOAA Great Lakes Environmental Research Laboratory



I supervise 12 research scientists and support staff as well as carry out research as a lead or co-PI on internal and external projects. These projects include studying the spatial structure and function of the food web, from microbes to fishes; invasive species impacts, particularly *Dreissena* and *Bythotrephes*; harmful cyanobacteria blooms and grazer interactions; and 'omics applications to understand food web function.

## My Pandemic Story

This was to be one of the NOAA Great Lakes Environmental Research Laboratory (GLERL) ecosystems research team's most ambitious years for doing both field and lab work until COVID-19 surfaced. We know that NOAA is not alone in our frustrations, but it has been challenging. As with our Great Lakes and oceanographic colleagues around the globe, much of our spring field season plans were dashed, and many projects were postponed and needed to be reworked. We all focused on doing our part by staying home and staying safe.

Our long-term, seasonal monitoring program on Lake Michigan carried out by Lake Michigan Field Station staff is finally underway as of early July, and it feels great to be back at it.

In Lake Erie and Saginaw Bay, GLERL and Cooperative Institute for Great Lakes Research colleagues are carrying out a greatly scaled back version of our usual harmful algal blooms monitoring and forecasting project. Funded by the Environmental Protection Agency Great Lakes Restoration Initiative, this work is necessary to address the critical problem of predicting the distribution of toxic cyanobacteria in western Lake Erie for the Harmful Algae Bulletin. Other experiments and projects have also been put on hold due to their intense demand for lab work.

One of the biggest challenges I face as the program lead is the intensive planning for carrying out mission-critical functions in the COVID-19 environment. Although one might imagine that limited field and experimental work might free up time to get major work done on data analysis and manuscript writing, this has not really been possible for me due to the additional contingency planning and other new tasks. It is hard to keep up with my email inbox! Also difficult has been the blending of telework and home life and the need to spend extra time in both arenas because of COVID-19.

It hasn't been all bad. We did receive increases in funding for a few research programs, and we are certainly adapting to new ways of working together.

## A look to the future

Looking forward, I think we might want to consider virtual meetings as a routine option from the point of view of saving on expenses and reducing our carbon footprint. Although I do miss the camaraderie of face-to-face meetings, I thought the virtual IAGLR meeting was very effective, especially considering the short time in which it was put together.

# Kudos

Congratulations to the following IAGLR members on their accomplishments.

**DAMIEN BOUFFARD** (Swiss Federal Institute of Aquatic Science and Technology) for his appointment to the editorial board of the *Journal of Great Lakes Research* as associate editor in May.

**JASMINE MANCUSO** (Annis Water Resources Institute) for successfully defending her master's thesis titled "Bloom or bust: Search for phytoplankton community drivers using long-term time-series observations and field measurements in a model Great Lakes estuary."

**KEVIN OBIERO** (Kenya Marine and Fisheries Research Institute) for becoming chair of the African Center for Aquatic Research and Education Board of Directors.

## New Members

Welcome to the following members who joined IAGLR between May and July 2020.

Syed Ahmad
Ian Crumrine
Brittanie Dabney
Eva Enders
Daniel Gurdak
Ashley LaCroix
Jasmine Mancuso
Kimberly Montgomery
Kirsten Robinson



## IAGLR AWARD RECIPIENTS

**JAN CIBOROWSKI** (University of Windsor, Professor Emeritus) for receiving the 2020 IAGLR Lifetime Achievement Award for important and continued contributions to the field of Great Lakes research over a period of 20 years or more.

**INTERNATIONAL JOINT COMMISSION GREAT LAKES REGIONAL OFFICE** for receiving the 2020 Anderson-Everett Award for outstanding contributions to IAGLR.

**DULCINEA AVOURIS** (Kent State University) for receiving the Elsevier Early Career Scientist Award for 2019 Most Notable Paper in the Journal of Great Lakes Research for "Validation of 2015 Lake Erie MODIS image spectral decomposition using visible derivative spectroscopy and field campaign data."

**MATTHEW FUTIA** (University of Vermont) for receiving the Elsevier Student Author Award for 2019 Most Notable Paper in the Journal of Great Lakes Research for "Evaluation of adult and offspring thiamine deficiency in salmonine species from Lake Ontario."

# IAGLR scholarship and award opportunities

## Nominate a notable paper

The Chandler-Misener, JGLR/Elsevier Early Career Scientist, and JGLR/Elsevier Student awards all recognize papers published in the *Journal of Great Lakes Research* based on the following criteria:

- Originality, an outstanding original piece of work;
- Contribution, a substantial body of theoretical, experimental, or field research;
- Presentation, clarity of literary style, and illustration.

Did you read a paper published in 2020 that excels in these categories? Nominate it for an award! Nominations can be submitted at any point and will be considered for the appropriate award based on the career status of their lead author at the time of acceptance.

## Nominate a candidate for lifetime achievement or outreach award

Nominations are also encouraged for the Lifetime Achievement Award and the John R. (Jack) Vallentyne Award. Read up on the criteria and consider nominating someone for either of these prestigious awards. Nominations are due in March. See the awards page for details: iaglr.org/awards/


## Apply for an IAGLR scholarship

Are you a student studying large lakes of the world? IAGLR offers the following scholarships, with more than $13,000 available:

- Norman S. Baldwin Fishery Science Scholarship
- David M. Dolan Scholarship
- IAGLR Scholarship

The deadline to apply is **December 1**. View the scholarships page for details: iaglr.org/scholarships/

# Our 2021 Conferences

## March
1-3

We're heading to downtown Toronto for the 2021 State of Lake Ontario Conference.

iaglr.org/sol/solo2021

#SOLO21

## May
10-17

IAGLR's 64th annual Conference on Great Lakes Research heads to Houghton, Michigan, and the campus of Michigan Technological University.

iaglr.org/iaglr2021

#IAGLR21

## September
13-19

IAGLR and the European Large Lakes Symposium will co-sponsor an international conference in Petrozavodsk, Russia.

iaglr.org/ells-iaglr/2021

#ELLS_IAGLR21

*IAGLR is committed to providing a safe and healthy atmosphere for all our members and conference attendees. Due to the coronavirus pandemic, we will continue to evaluate recommendations from local, state, and federal health authorities and may adjust meeting dates and venues as needed.*

# IAGLR joins PAGSE

The Partnership Group for Science and Engineering (PAGSE) is thrilled to welcome IAGLR to our network of over 20 science and engineering societies across Canada, including the Canadian Rivers Institute, the Society of Canadian Limnologists, the American Fisheries Society – Canadian Aquatic Resources Section, and the Canadian Conference on Fisheries Research.

PAGSE's mandate is to educate and inform senior elected officials and policy makers on science and engineering research. Founded in 1995, our two key programs are the Bacon and Eggheads breakfast series through which we bring a leading academic to Parliament Hill in Ottawa to give a talk on their research and address questions from members of Parliament and senators on the policy implications. Our first speaker in 2020 was Dr. John Smol, who shared about the urgency of climate change. We also publish *SciEng Pages*, short briefs that summarize the state of knowledge and global policy landscapes around particular topics.

The Great Lakes are critical to North America and we look forward to working with IAGLR to help educate and remind Canadian leaders of their importance. — *Jérôme Marty, PAGSE Chair*



*Lakes Letter* is published quarterly by the International Association for Great Lakes Research, a scientific organization made up of researchers studying the Laurentian Great Lakes, other large lakes of the world, and their watersheds, as well as those with an interest in such research.

Edited by Paula McIntyre, IAGLR Communications Director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