From Jennifer Graham and Keith Loftin Guest the Editors

From the Editor

This summer 2015 issue of *LakeLine* is chock full of information. We continue with our biennial summer tradition of presenting an issue devoted to the latest on harmful algae blooms (HABs). Our guest editors, Jennifer Graham and Keith Loftin, introduce the theme articles in their "From the Guest Editors" article that follows. NALMS is gearing up for its 35th Annual Symposium to be held November 17–20, 2015 in Saratoga Springs, NY. We include four pages of symposium information as well as calls for nominations for the annual NALMS elections and awards. Don't forget to capture your best and favorite lake images to submit to the annual NALMS Photo Contest, which is judged at the Symposium. Have a safe summer and see you in Saratoga!

~ Bill Jones

True to the NALMS biennial tradition for *LakeLine*, the theme of the summer 2015 issue is harmful algal blooms (HABs). It is difficult to believe that our first HAB-themed issue, entitled *Toxic Algae*, was published in summer 2006. The amount of knowledge the scientific community has gained and passed on to the general public about HABs since that first issue is impressive. Harmful algal blooms are now a part of our national dialog. The Harmful Algal Bloom and Hypoxia Research and Control Amendments Act (HABHRCA) was reauthorized in 2014 (S.1254). With the reauthorization, inland freshwater harmful algal blooms have been recognized as an issue of national concern and importance alongside harmful algal blooms in the Great Lakes and marine environments.

The United States Environmental Protection Agency (U.S. EPA) has been mandated by HABHRCA 2014 to:

> *"(1) research the ecology and impacts of freshwater harmful algal blooms; (2) forecast and monitor event response to freshwater harmful algal blooms in lakes, rivers, estuaries, and reservoirs; and (3) ensure that activities carried under this Act focus on new approaches to addressing freshwater harmful algal blooms and are not duplicative of existing research and development programs authorized by this Act or any other law."*
>
> (https://www.congress.gov/bill/113th-congress/senate-bill/1254)

While many academic, local, state, and federal agencies have historically done a tremendous amount of research on and management of inland HAB issues including the U.S. EPA, the time seemed appropriate to see how the U.S. EPA is currently approaching the inland HAB issue and addressing HABHRCA 2014. This HAB-themed issue of *LakeLine* is focused on the wide-range of efforts the U.S. EPA has been involved in to facilitate understanding and ensure safe and reliable water resources well into the future.

We begin this issue with the Senior Policy Advisor for Water at the U.S. EPA, **Ellen Gilinsky**, who gives her perspectives on protecting our water resources from HABs. The second story, by **Antonio Bravo**, with the U.S. EPA Office of Water, describes its HAB Awareness Campaign, which kicked off in 2013 and has been an excellent mechanism for building partnerships. The 2014 HAB Photo Contest is one example of a successful partnership forged as part of the HAB Awareness Campaign. The U.S. EPA teamed up with the National Environmental Education Foundation (NEEF) and NALMS for the contest, discussed in the third story by **Rebecca Long** (U.S. EPA Office of Wetlands, Oceans, and Watersheds), **Jennifer Graham** (NALMS Region VII director at the time of the contest), and **Sarah Blount** (NEEF). The contest was a great success, and several NALMS Inland HAB Committee members served as judges.

Hannah Holsinger, Office of Ground Water and Drinking Water, describes the U.S. EPA drinking water program's risk management processes as well as the building blocks necessary to develop cyanotoxin regulations. Next, **Darren Lytle** and **Nick Dugan**, Office of Research and Development, discuss some of the U.S. EPA's ongoing research about cyanotoxin removal during drinking water treatment processes, with a focus on Toledo, Ohio, which attracted National

LakeLine encourages letters to the editor. Do you have a lake-related question? Or, have you read something in *LakeLine* that stimulates your interest? We'd love to hear from you via e-mail, telephone, or postal letter.

attention last summer when a toxic HAB resulted in a water advisory. In the article that follows, **Betty Kreakie** and her colleagues in the Office of Research and Development explain computational ecology and how it may help identify lakes and reservoirs that are at risk for HAB development.

The next three articles in our themed issue focus on efforts to inform and involve citizens in HAB issues through the development of mobile applications and other innovative approaches. **Lahne Mattas-Curry** and her colleagues in the Office of Research and Development discuss an ongoing project to translate satellite imagery into data that can be used in a mobile application to inform managers and lake users about potential HAB risk. The Phytoplankton Monitoring Network, a National Oceanic and Atmospheric Administration (NOAA) effort supported by the U.S. EPA, relies on citizen scientists, web-based tools, and mobile applications to monitor HABs in coastal areas. **Steven Morton** (NOAA) and **Shawn Gano** (Gano Technologies) describe Network goals, technology, and plans to expand the Network to inland waters. **Hilary Snook**, working under the Office of Environmental Management and Evaluation, describes a regional, citizen-based HAB monitoring program in New England that is utilizing a combination of traditional water-quality sampling approaches and emerging techniques, such as microscope applications for smartphones. These articles demonstrate just how much motivated citizens and innovative approaches can contribute to our understanding of HABs and protect the public from recreational exposure to cyanotoxins during HABs.

The articles in this *LakeLine* issue clearly demonstrate the role partnerships and technology will play in future HAB research. Co-sponsored by numerous federal agencies and other groups, the nutrient sensor challenge is described by **Denice Shaw**, with the U.S. EPA Office of Research and Development. Nutrient pollution is one of many causes of HABs. As nutrient sensors become more reliable, we will be able to describe nutrient dynamics and the role they play in HAB development in unprecedented ways.

Finally, our themed issue is rounded out by a Student Corner article by **Mary Coyle**, a Ph.D. student at the University of Idaho, about *Didymosphenia geminata* (*D. geminata*), commonly referred to as "Didymo" or "rock snot." Many of us tend to associate freshwater HABs with high nutrient concentrations and cyanobacteria in lakes and reservoirs. Mary's article on *D. geminata*, sends a very clear message that this is not always the case. Blooms of this diatom tend to occur in very nutrient poor streams, and phosphorus *addition* is being explored as a potential management tool. This article serves as a reminder that HABs are a complex issue in need of balanced and measured solutions. There are many HAB-forming organisms that may affect aquatic ecosystem health and a solid understanding of the organisms and the causes of bloom formation are critical to developing effective mitigation and management strategies.

Jennifer Graham is a research hydrologist with the U.S. Geological Survey in Lawrence, Kansas. She has studied harmful algal blooms in the United States for the past 16 years. Jennifer serves as a co-chair of the NALMS Inland HAB Program, is an associate editor for *Lake and Reservoir Management*, and served as the Region 7 Director for NALMS from 2011–2014.

Keith Loftin is a research chemist and environment engineer with the U.S. Geological Survey's Organic Geochemistry Research Laboratory in Lawrence, Kansas. He has investigated national occurrence, fate, transport, and effects of harmful algal blooms and associated toxins and developed supporting analytical methods over the past 11 years. Keith serves as the co-lead of the Inland HAB Discussion Group (http://www2.epa.gov/nutrient-policy-data/inland-hab-discussion-group) and an ex officio member representing the USGS on the National HAB committee (http://www.whoi.edu/page.do?pid=13935).

What is NALMS membership about?

Connection

Long-time members value the partnerships and friendships they've made through NALMS most. These connections range from information exchanges all the way to shared vacations. Whether you engage through our conference or social media, it's clear that the connections you make in NALMS will be your most lasting member benefit.

Opportunity

NALMS offers resources to help you become a better professional, to learn about what works, and to boost your profile among your peers. *LakeLine* magazine and the *LRM* journal are rungs as you climb up the professional ladder. As you grow professionally membership also gives you the chance to move us closer to a world that better manages and protects its water resources.

Duty

When you join NALMS you commit to aiding our mission to foster the management and protection of lakes and reservoirs. Even if you can't serve on the board, write a paper, or volunteer, your membership helps grow NALMS and expands the reach of our programs to your personal network.