

2012 NALMS Notes



November 2012

President's Message

This will be my final column for NALMS Notes as President, and provides me with an opportunity to reflect back on the many things that have been accomplished by the board and committees during my term. With no pressing financial, membership, or staffing emergencies, your board has been able to focus on the business of our society. Here are just a few of the highlights over the spring and summer:

- Policies were developed for conflict of interest and travel expense reimbursement.
- Approval of a CLM/CLP seal, with guidelines for correct use of the seal.
- Approval and implementation of a student mentoring program
- NALMS 2007 Strategic Plan has been revised to reflect current realities and procedures, with approval expected in Madison.
- Preparations are being made to incorporate NALMS in Wisconsin instead of Maine, where we have had no active presence for many years.



Maude Lake, Alberta, Aug 2012

I'd like to thank all those that have given so freely of their time to further the goals of NALMS, and helped make my term as President run so smoothly. I'd especially like to thank our Treasurer, Linda Green, who has provided constructive comments on my various columns in *LakeLine* and NALMS Notes, in spite of her busy schedule.

It has been an honor to serve as President of NALMS, and I wish President-elect Ann Shortelle all success in continuing to further NALMS' mission.

Al Sosiak
President - NALMS
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WITHIN NALMS

Membership in Motion

I had the opportunity to provide a brief membership snapshot during the membership meeting at the Symposium in Madison, WI last week. I was happy to report that NALMS membership is slowly growing. While NALMS membership growth data indicates only a 2% rate of growth over the last year, analysis over three years indicates that our membership has grown by nearly 20%. On average about 85% of members up for renewal renewed their memberships over the last year and NALMS gained 183 new members. Currently NALMS is made up of about 950 total members. Our membership goals over the next year include maintaining an 85% rate of renewal and adding 230-250 new members in an effort to boost our total membership over the 1,000 member mark.



Tulum Mexico, Nov. 2011...where I'd like to be again when the weather turns, as I know it will sometime soon

Our newly instituted membership initiatives are well underway for our Winter Membership period and I am already noticing some good early returns. Moving our membership renewal efforts from 45 days out from membership expiration to 90 days has elevated our early renewals. This should allow for better focus on reinstating members who let their memberships lapse once the period is over. Winter Memberships will expire on December 31, 2012 and so far about 40% of members up for renewal have renewed. There are still about 140 members that have yet to renew their memberships though. So please consider renewing today if your membership expiration date is approaching. You may do so by [renewing on the NALMS website here](#) or you may [fill out a Membership Registration Form](#) and send it to the office. Please call me at 608.233.2836 or email me at garenz@nalms.org with any questions

The following is a listing of members that I'd like to thank for joining NALMS or renewing their membership during the last month.

New NALMS Individual Members: Doug Bach, Michelle Balmer, Alesia Casanova, Michael Casanova, Sergio Duarte, Doug Eib, Eric Engbretson, Bruce Halverson, Jeff Holland, Steve Klein, Greg Lamberson, Eric Las, Melissa Malott, Ken Marron, Colleen McDermott, Brian McDonald, Richard Napiello, Jerrod Parker, Dawn Perkins, Rebecca Power, Jeffrey Strom

New NALMS Nonprofit Members: [New Hampshire Lakes Association](#)

Renewing NALMS Individual Members: Darryl Arsenault, Paul Ash, Marilyn Bachmann, Douglas Ball, Chris Beaty, Janet Bowers, Greg Boyer, Darren Brandt, Karen Bray, Mark Brenner, Dan Brill, Karl Bruun, Thomas Buckowski, JoAnn Burkholder, Jim Cadwell, David Casaletto, Chad Cason, Victoria Chraibi, Janie Civile, Bev Clark, Jacquie Colburn, David Cowling, Cathy Crago, Lyn Crighton, James Darlington, Julie Davis, Ray Drenner, Roger Edwards, Joseph Eilers,

Elisabeth Elder, Paal Engebrigtsen, Rebecca Francese, Steve Frank, Harry Gibbons, Maribeth Gibbons, Cathrene Glick, Paul Gray, Jerry Guajardo, Tera Guetter, Dean Hamontree, Imad Hannoun, Willard Harman, Bob Hartzel, Margaret Herder, Amy Hetherington, Martin Hilovsky, William Howland, Neil Hutchinson, Richard James, Lorraine Janus, Cathy Johnson, Malcolm Johnson, III, Jack Jones, Hamish Kassa, Kristen Kavanagh, Marian Keegan, Thomas Kelly, Donald Keppel, Julie Kinzelman, Larry Kovar, Tom Krueger, Steve LaMere, Jim Lanier, Paul Lewis, Owen Lind, Mark Lund, Daniel Lundberg, Laurel Mann, David Matthews, Ryan McCaw, Stephen McCord, Mike Mcghee, Rich Meade, Keith Mierzwa, Rich Miller, William Monagle, Elizabeth Moran, Bob Morgan, Katherine Morris, Raymond Newman, Michelle Nicol, Karen & Richard Norlin, Gertrud Nurnberg, Andrew Paterson, Tina Pierce, Donald Pierson, Al Preston, Beth Proctor, Keith Rains, Elliott Reams, Fred Reimherr, Dana Rizzo, Joel Rohde, David Rosenthal, Orlando Sarnelle, Jeffrey Schloss, Mark Simpson, Amy Smagula, Eric Smeltzer, Patricia Soranno, Nathan Stone, Robert Tillotson, Dale Toetz, Kevin Tucker, C. Russell Wagner, Jeff Walker, Holly Waterfield, Steven Weber, Dave Wright, Cory Zickert, Dennis Zimmerman

Renewing NALMS Affiliate Members: [Michigan Chapter Of NALMS](#), [Oklahoma Department of Environmental Quality](#), [New England Chapter Of NALMS](#)

Renewing NALMS Nonprofit Members: [UW Extension Lakes](#), [NE Interstate Water Pollution Control Commission](#), [Apple Canyon Lake P.O.A.](#), [Highland Lake Watershed Association](#), [MLCA & WAG](#), [Flathead Lake Protection Association](#)

Renewing Libraries: Mikkelsen Library, F. Franklin Moon Library, JT Fyles Natural Res. Lib., Periodicals Department University of Wisconsin

Finally, I want to highlight a NALMS membership benefit that you may not be aware of. During the annual meeting of the board last week there was some speculation as to how many NALMS members actually know about and take advantage of their online member benefits. Every NALMS member is entitled to online benefits. These vary by membership type but can include electronic issues of LakeLine magazine, the Lake and Reservoir Management journal, the member directory, access to NALMS budgets, minutes, and reports as well as a voting module for our annual board elections. You can also update your contact information and include a short bio, a picture, and your company website for inclusion in your membership directory profile. Please be sure to log into the website and explore these online benefits. Our [FAQ page](#) includes password instructions for logging into the website if you have any difficulties.

As always, please don't hesitate to take advantage of all your membership benefits and opportunities! If you have any questions or concerns about your membership, please contact me at 608-233-2836.

Greg Arenz
Membership Services Coordinator
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NALMS Office Notes

By the time you read this the NALMS Symposium in Madison will only be a memory, but I'm writing this on the eve of the conference. It's Sunday night and the NALMS Board has just finished its pre-meeting organizational session. This session allows the board to informally hash out issues that may arise at the next day's board meeting, raise any issues that should appear on the meeting agenda and receive background information on certain agenda items. The big news, though, is that the President of the United States will be in town tomorrow morning with Bruce Springsteen for a campaign rally less than a block from our conference headquarters hotel.



We knew on Tuesday or Wednesday of the week prior to the conference that the President would be in town, but we didn't know until Friday afternoon that the rally would be right in front of our conference facility and the roads in front of both of our hotels would be closed. How would we be able to get our conference supplies to the Monona Terrace? Would our board members and other attendees be able to get to their hotels? Would we be able to hear the Boss perform during our board meeting?

In the weeks and months leading up to a conference, you always encounter a number of challenges. Many, with experience, are foreseeable and easily addressed. Others, like a visit from the President, you can't really plan for ahead of time; you can only adjust your plans to the situation and minimize the impact on conference attendees or find a way to turn it into an advantage. Such is life.

Philip Forsberg
Program Manager

CONFERENCES & EVENTS

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LAKE NEWS & INFORMATION

Pentair Aquatic Systems Business Acquires Point Four Systems Inc.

Sanford, NC, October 15, 2012

The Aquatic Systems global business unit of Pentair Ltd. (NYSE: PNR) announced today its acquisition of Point Four Systems Inc. (“PFS”) – a leading provider of engineered solutions and equipment for water quality monitoring and treatment. Point Four Systems is headquartered in Coquitlam, British Columbia Canada and has international subsidiaries in Puerto Montt, Chile and Suzhou City, China.

“PFS adds critical water quality technology to Pentair’s equipment portfolio while increasing our global reach,” said Karl Frykman, President of Pentair’s Aquatic Systems global business unit. “The combination of PFS along with our recent acquisition of Aquatic Eco-Systems, Inc. allows Pentair to be the single point of contact with the client while adding more technological capability and reaching a more global customer base.”

Robert D. Miller will continue in his role as Chief Financial Officer of Pentair’s Aquatic Systems business and has been appointed to lead the day-to-date operations of its aquaculture business, including PFS. Terms of the deal were not disclosed.

Pentair’s Aquatic Systems business provides leading edge equipment, accessories and water technology solutions to the swimming pools and aquaculture industries. Aquatic Systems produces

a broad line of products from pumps and filtration equipment to thermal products, automated controls, lights, automatic cleaners, water purification and treatment technology, water features, and more. Applications for Aquatic Systems products include maintenance, repair and renovation of existing in-field equipment, as well as new installations in North America, Europe, and emerging markets such as China, Latin America and other countries.

Pentair Ltd. (www.pentair.com) delivers industry-leading products, services and solutions for its customers' diverse needs in water and other fluids, thermal management and equipment protection. With pro forma revenues of approximately \$8 billion, Pentair employs more than 30,000 people worldwide.

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Tens of thousands of fish die in Lake Erie; lack of oxygen cited

*Source: NBC News; By Miguel Llanos,
Published: September 7, 2012*

Tens of thousands of dead fish that washed up on Lake Erie beaches in Ontario, Canada -- and had locals wondering if something or someone had poisoned the water -- were likely killed by a lack of oxygen caused when lake sediment was stirred up, the province reported Friday.



Water samples "do not show evidence of a manure spill or anything unusual in terms of contaminants," Ministry of Environment spokeswoman Kate Jordan told NBC News.

Jordan said it wasn't known if the die-off was unprecedented, but that "it was a significant number -- tens of thousands."

The fish were found along 25 miles of beach, with locals first coming across them on Monday. But three days earlier, residents had complained of a manure-like smell from the water, the Chatham Daily News reported.

"It was rank, so profoundly rank, that it was difficult to stay down there and the next morning we woke up to the smell," Neville Knowles said of his family's weekend trip to Rondeau Provincial Park.

Another park visitor, Frank van den Boorn, said he and his family were at the beach when he noticed the darkened water and smelled something wrong.

"I said to the kids 'We've got to get out of here, there is something wrong with the water'," Van den Boorn recalled. "I scooped up a handful of water and ... you could still smell the body stench on it."

"I just couldn't believe people were letting their kids swim in it," he added.

Jordan said the smell and darkened water were consistent with the natural phenomenon known as "lake inversion" -- where a change in wind can kick up waves that stir up sediment and reduce the oxygen levels for fish.

The wind did change directions last week, she noted, and a local water temperature gauge showed colder water, suggesting it had been churned up from the depths.

The province is also testing some of the dead fish and those results should provide conclusive evidence, Jordan said. The results should be ready next week.

The dead fish included catfish, carp and perch.

http://worldnews.nbcnews.com/_news/2012/09/07/13733019-tens-of-thousands-of-fish-die-in-lake-erie-lack-of-oxygen-cited?lite

Get Ready For Ice-Fishing

Author: Bob Jensen

Source: WWW.lakelink.com November 2012

It's not here, but it's near. Ice-fishing that is. It's November. Many hunting seasons are in full swing. Those are an ice-anglers reminders that it's time to start thinking about ice-fishing. Depending on Mother Nature, we could be ice-fishing in just a couple of weeks in the northern states. Now is the time when we should be getting ready to go ice-fishing. If you get ready now, you'll be able to get out on the ice as soon as it's safe. Following are some of the things you can do now to increase your chances for a productive experience on your first ice-fishing trip of the season.

When you go ice-fishing, you've got to put some holes in the ice. Whether you use a power auger or a hand-operated auger, you need sharp blades. Sharp blades are important whether the ice is three inches thick or three feet thick. Sharp blades get through the ice faster, so you make less noise. Noise can spook shallow water fish, so the less noise you make, the less the fish will be spooked and the more you'll catch. Make sure the blades on your auger are sharp before it's time to go ice-fishing.



Prepare for ice-fishing now and your first trip of the year will be more productive.

If you have a power auger, start it and let it run a bit. We just want to make sure it's in good working condition before you need to put it to use.

Also make sure the battery on your sonar unit is charged. Depth-finders have become a super-important tool for ice-fishing success. They not only show depth, they reveal if there are fish under your hole, and they show how those fish are reacting to your bait. If they come in and look at your bait, but don't eat it, you need to do something different. You need to go to a different jigging action or a different lure size or color or something. Depth-finders are very, very important: Make sure yours is ready when it's time to get on the ice.

Spool up with fresh line. The edges of ice holes can be hard on line, so you want fresh, strong line on that first trip and every trip. In just a short time, Bionic Ice Fishing Line has been proven a reliable, easy to handle line that's a great value. If you prefer a no-stretch line for deeper water, take a look at Bionic Ice Braid. This stuff is sensitive and provides great hook-sets. Make sure you start the ice-fishing season with fresh line.

If you're in the market for a new ice-fishing rod/reel, there's something pretty new out there. Frabill has created what they call "Straight Line" reels. They're like a fly reel, so the line comes off the reel in a straight line, unlike a spinning reel where the line comes off in loops. This makes the line more manageable, and also allows lighter lines to be used more effectively. You really need to check these reels out if you need or want a new ice-fishing set-up this season.

The last thing to consider for your first ice-fishing trip of the season: Make sure the ice really is safe enough for you to be on it. Typically, the first guy on the ice is the first guy to fall through. It's not a bad idea to wear a life-jacket on first ice. Be careful, do the gear preparations we just talked about, and your first ice-fishing trip of the year will be a good one.

- Bob Jensen

<http://www.lake-link.com/articles/read/article.cfm/779/Get-Ready-For-Ice-Fishing/>

Mercury in Water, Fish Detected with Nanotechnology

Inexpensive, super-sensitive device detects even low levels of toxic metals in water, fish

Source: Northwestern University; September 12, 2012 | by Erin White

EVANSTON, Ill. --- When mercury is dumped into rivers and lakes, the toxic heavy metal can end up in the fish we eat and the water we drink. To help protect consumers from the diseases and conditions associated with mercury researchers at Northwestern University, in collaboration with colleagues at Ecole Polytechnique Fédérale de Lausanne (EPFL) in Switzerland, have developed a nanoparticle system that is sensitive enough to detect even the smallest levels of heavy metals in our water and fish.

The research was published September 9 in the journal Nature Materials.

“The system currently being used to test for mercury and its very toxic derivative, methyl mercury, is a time-intensive process that costs millions of dollars and can only detect quantities at already toxic levels,” said Bartosz Grzybowski, lead author of the study. “Ours can detect very small amounts, over million times smaller than the state-of-the-art current methods. This is important

because if you drink polluted water with low levels of mercury every day, it could add up and possibly lead to diseases later on. With this system consumers would one day have the ability to test their home tap water for toxic metals.”

Grzybowski is the Kenneth Burgess Professor of Physical Chemistry and Chemical Systems Engineering in the Weinberg College of Arts and Sciences and the McCormick School of Engineering and Applied Science.

The new system is comprised of a commercial strip of glass covered with a film of “hairy” nanoparticles, a kind of a “nano-velcro,” that can be dipped into water. When a metal cation --- a positively charged entity, such as a methyl mercury --- gets in between two hairs, the hairs close up, trapping the pollutant and rendering the film electrically conductive.

A voltage-measuring device reveals the result; the more ions there are trapped in the “nano-velcro,” the more electricity it will conduct. To calculate the number of trapped particles, all one needs to do is measure the voltage across the nanostructure film. By varying the length of the nano-hairs covering the individual particles in the film, the scientists can target a particular kind of pollutant that is captured selectively. With longer “hairs,” the films trap methyl mercury; shorter ones are selective to cadmium. Other metals also can be selected with appropriate molecular modifications.

The nanoparticle films cost somewhere between \$1 to \$10 to make, and the device to measure the currents costs a few hundred dollars, Grzybowski said. The analysis can be done in the field so the results are immediately available.

Researchers were particularly interested in detecting mercury because its most common form, methyl mercury, accumulates as one goes up the food chain, reaching its highest levels in large predatory fish such as tuna and swordfish. In the United States, France and Canada, public health authorities advise pregnant women to limit fish consumption because mercury can compromise nervous system development in the fetus.

Researchers used this system to detect levels of mercury in water from Lake Michigan, near Chicago, among other samples. Despite the high level of industry in the region, the mercury levels were extremely low.

“The goal was to compare our measurements to FDA measurements done using conventional methods,” said Francesco Stellacci of EPFL, co-corresponding author of the study. “Our results fell within an acceptable range.”

The researchers also tested a mosquito fish from the Florida Everglades, which is not high on the food chain and thus does not accumulate high levels of mercury in its tissues. The U.S. Geological Survey reported near-identical results after analyzing the same sample.

“This technology provides an inexpensive and practical alternative to the existing cumbersome techniques that are being utilized today,” said Jiwon Kim, graduate student in Grzybowski’s lab in the department of chemistry at Northwestern. “I went to Lake Michigan with our sensor and a hand-held electrometer and took measurements on-site in less than a minute. This direct measurement technique is a dream come true for monitoring toxic substances.”

This work was supported by the Non-equilibrium Energy Research Center, which is an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under grant number DE-SC0000989.

Authors of this study include: Jiwon Kim, Baudilio Tejerina, Thomas M. Hermans, Hideyuki Nakanishi, Alexander Z. Patashinski and Bartosz A. Grzybowski from the Department of Chemical and Biological Engineering and Department of Chemistry, Northwestern University; Eun Seon Cho and Francesco Stellacci, Institute of Materials, Ecole Polytechnique Fédérale de Lausanne EPFL Switzerland and Hao Jiang and Sharon C. Glotzer, Department of Chemical Engineering and Department of Materials Science and Engineering, University of Michigan.

<http://www.northwestern.edu/newscenter/stories/2012/09/mercury-water-fish-nanotechnology.html>

Global Warming and the Great Lakes

The Great Lakes are a crown jewel of North America, holding nearly one-fifth of the planet's surface freshwater. They have nearly 11,000 miles of shoreline and harbor, more than 530,000 acres of coastal wetlands and the world's largest freshwater delta (in Lake St. Clair). They range from the cold and deep waters of Lake Superior to the relatively warm and shallow waters of Lake Erie.

The watershed drains more than 200,000 square miles ranging from heavily forested areas to mixed urban and agricultural development, and supports approximately 6,000 species. The lakes are home to numerous fish, including species undergoing restoration efforts such as lake trout and lake sturgeon, and species that are popular in commercial or recreational fisheries, including lake whitefish, walleye, muskellunge and several introduced salmon species.

The Great Lakes are important sources of drinking water, economic livelihood and recreation opportunities for millions of Americans and Canadians. Recreational boating in the eight Great Lakes states produces more than \$35 billion in economic activity annually, and fishing, hunting and wildlife watching amount to more than \$18 billion in annual economic activity in these states.

Threats from Global Warming

Source: National Wildlife Federation

Global warming adds yet another stress to a Great Lakes system already struggling with aquatic invasive species, deleterious land use changes, nonpoint source pollution, toxic chemical contamination, and coastal habitat degradation/wetlands loss. Potential global warming impacts include reduced water levels (due in particular to decreased winter ice cover allowing more evaporation), increased frequency of intense storm events (altering the timing of inflows), and warmer water temperatures.

Already, Lake Superior has increased water temperatures and an earlier onset of summer stratification by about two weeks in just the past 30 years. Within another 30 years Lake Superior may be mostly ice-free in a typical winter.

Lake Erie water levels, already below average, could drop 4-5 feet by the end of this century, significantly altering shoreline habitat. Global warming could change internal water cycling in the

Great Lakes with longer summer stratification potentially leading to larger dead zones (lacking in oxygen). Other potential consequences include less habitat for coldwater fish, more suitable temperatures for aquatic invasive species and hazardous algal blooms, and more mobilization of contaminated sediments as well as nutrients and toxic chemicals from urban and agricultural runoff.

Threats to specific wildlife habitats include:

- **Declining Moose Populations in Minnesota** - In a recent study of moose at the southern edge of their range in northwest Minnesota, researchers found that over the past 40 years, declines in population growth are related to increases in mean summer temperature with winter and summer temperatures increasing by an average of 12 and 4 degrees F (6.8 and 2.1 degrees C), respectively over this period. Lack of food resources and increased exposure to deer parasites associated with warmer summer temperatures appear to be the primary cause of their decline. The authors suggest that the northwest Minnesota moose population likely would not persist over the next 50 years and that the southern distribution of moose may become restricted in areas where climate and habitat conditions are marginal, especially where deer are abundant and act as reservoir hosts for parasites.
- **Physical Changes to Lakes Will Impact Aquatic Organisms** - In future scenarios for a doubled CO₂ climate, researchers projected significant changes to characteristics of the Great Lakes. Physical changes, such as decreases in water level (0.65-8.2 ft or 0.2-2.5 m) and ice cover, and increases in water temperature 2-12 degrees F (or 1-7 degrees C) at surface, up to 14 degrees F or 8 degrees C at depth) will in turn affect phytoplankton, zooplankton and fishes. Some warm-water fish species could move north by 300-400 miles (500-600 km); invasions of warmer water fishes and disappearances of colder water fishes should increase. Climate change effects interact strongly with effects of other human-caused stresses such as eutrophication, acid precipitation, toxic chemicals and the spread of exotic organisms.
- **Disappearing Cold-Water Fish Species** - Scientists projected changes to the distribution of fish species under a 2xCO₂ climate scenario at 209 locations in the contiguous United States. Cold-water fish habitat is projected to persist in deep lakes near the northern border of the United States, but is likely to be eliminated from most shallow lakes in the contiguous states, reducing the number of lakes that have suitable coldwater and cool-water fish habitat by up to 45 percent and 30 percent, respectively. On the other hand, warm-water fish habitat is likely to increase. Good-growth periods are projected to increase on average by 37 days for cool-water fishes and by 40 days for warm-water fishes.
- **Potential Changes to Fish Populations** - Researchers used historical data to predict how growth of warm-water (e.g. smallmouth bass and yellow perch) and cold-water (e.g. lake trout) fish species may change under changing climatic conditions. In years with warmer air temperatures and early on-set of warm surface waters, smallmouth bass and yellow perch grew bigger and faster than normal. Lake trout growth was poorer likely due to early on-set of water stratification –trout fry had fewer days to feed on prey species in surface waters due to rapid warming.
- **Yellow-Headed Blackbirds** - Researchers found that during a dry period in the Prairie Pothole region in Iowa, yellow-headed blackbirds (*Xanthocephalus xanthocephalus*), which



solely breed in wetlands, nested later and laid fewer eggs, in part due to lack of food. Far fewer chicks hatched and fledged during these years primarily due to nest predation – more predators found and fed on more eggs and chicks during years with low water levels.

- **Zebra Mussels Respond Favorably to Warmer Waters** - Growth and survival of zebra mussels (*Dreissena polymorpha*) in southwestern Lake Erie and the Ohio River (KY) were studied in different water temperatures (within expected range of temperature increase for lakes of 3-7 degrees F or 2-4 degrees C). Experimental increases in temperature significantly enhanced growth rates in fall and early winter and increased mortality in the summer-fall season. Based on these experiments and related laboratory studies, the authors predicted northern populations of zebra mussels will probably benefit from predicted climatic change and may extend their range to higher latitudes and altitudes.

Conservation Investments to Minimize Global Warming Impacts

Global warming-induced water level declines increase the need to adopt the Great Lakes-St. Lawrence River Basin Water Resources Compact to protect against large-scale out-of-basin diversions, and implement programs to reduce agricultural and urban water use through conservation. As lake levels decline and shoreline wetlands are lost, efforts will be needed to enhance protection, restoration, and development of wetlands at lower water levels to retain their many functions including wildlife habitat and water purification.

The potential for new exotic species to take hold as the water warms could exacerbate an already serious aquatic invasive species problem. Adequate programs to prevent the introduction of new species (e.g., through adequate screening, early detection and rapid response, and treatment protocols) and restrict movement for those invasive species already in the region are essential.

Global warming has the potential to profoundly influence water supply and its quality for the Great Lakes from the surrounding watershed. To maintain healthy lakes it will be important to monitor and manage impacts in the watershed, such as storm surge inputs and erosion. The altering of hydrological cycles by global warming may even require that stormwater and wastewater treatment infrastructures are redesigned or upgraded.

The Great Lakes Regional Collaboration process recommended major restoration of the Great Lakes at a cost of about \$20 billion over five years. If implemented, this could result in \$80-\$100 billion in short and long-term economic benefits to the regional and national economies and is a worthy cause. However, to be effective, these assessments and the restoration efforts must take into account global warming.

<http://www.nwf.org/Global-Warming/Effects-on-Wildlife-and-Habitat/Great-Lakes.aspx>

Water Privatization: Let's Cut the Hysteria

Posted by [Brian Richter](#) of The Nature Conservancy and University of Virginia in [Water Currents](#) on November 1, 2012

In an [editorial published this week](#) in *Nature*, Frederick Kaufman, a journalism professor at the City University of New York, cries out against the perils of a global water futures market. He cautions that “Financial forecasters perceive that much like traditionally traded commodities — precious

metals, for example — the useable water of the future will be so scarce as to need to be mined, processed, packaged and, most importantly, moved around the world.”

Kaufman goes on to say that “The reverberations of a global water futures market can hardly be imagined. This much is clear: a water betting game will leave crops thirsting and push the global price of food far beyond the peaks of the past five years.”

Calm down, professor. It ain't gonna happen that way.

It is highly unlikely that water will be traded globally – it certainly won't be shipped around the world — nor will its price exhibit the market volatility of oil or corn, for many reasons. I'll highlight three big reasons here.

1) Water Is Too Heavy to Move

Water weighs 8.34 pounds per gallon. That makes it very expensive to ship or otherwise transport to distant markets. We move oil around the world because it has very high monetary value that far exceeds its shipping cost. Crude oil is selling for more than [two dollars a gallon](#), but it costs only about [five cents](#) a gallon to ship it.

The most expensive source of water— desalination of seawater or brackish groundwater – costs less than a penny per gallon to produce. That's why we don't see tanker ships moving bulk water around the world: shipping is expensive, and it doesn't cost all that much to access water locally, even in the most water-scarce regions of the world.

But investors could build pipelines or canals and move it long distances across land or under sea, right? Not likely to happen in most places. Long-distance water importation is the next-most expensive way to supply water. It takes a helluva lot of energy to push water over long distances. The California State Water Project – which moves water from northern to southern California – and the Central Arizona Project – which moves water from the Colorado River to Tucson – are the biggest electricity hogs in those two states.

Water will never be bought, sold, and moved around the planet in volumes similar to other market commodities unless its price escalates exponentially.

2) When the Price of Water Goes Up, Demand Goes Down

Which leads me to the second reason why water markets won't behave like commodity markets: we already waste so much that when someone raises the price, it's easy for us to simply use less.

Because water conservation is by far the cheapest way to meet growing water demands, cities, farmers and everyday citizens will much prefer to exhaust their potential water savings before paying to import water, desalt it, or ship it from some far-distant country.

Many cities have been able to cut their water use by 20-30% with little pain, and savings of 10% or more can be found on most any farm. Because so much water is consumed in agriculture, a savings of just 10% on farms would free up as much water as is presently being used in all the cities on Earth.

So, if someone is trying to profit from speculating in water, potential buyers like cities and farmers will respond first by using less.

3) Exporting Water Will Churn Up Local Resistance

The idea of exporting water from one place to another is a lightning rod for inflaming local opposition. When communities perceive that their future needs and opportunities could be foreclosed by the export of water from their local freshwater sources, they will not be complacent.

One example: In 1998, when the Ontario government in Canada issued a permit to a company seeking to ship 160 million gallons of Lake Superior water each year to Asia, the resulting public outcry was so strong that it catalyzed [an international agreement among eight states and two Canadian provinces](#) sharing the Great Lakes. The Great Lakes Annex will make large-volume exports of water from the Great Lakes highly unlikely in the future and intense scrutiny a certainty.

San Antonio's famous River Walk uses reclaimed water, part of a broader strategy of water conservation that has halved the city's consumption. Photo: Anthony Ortiz/My Shot



Water is Local, Not Global

Despite these realities, water markets are not such a bad idea. In fact, there are some very good things that can result from well-managed and transparent water market systems. But water markets and those who profit from them will necessarily be local in nature, not just because water cannot be profitably transported over long distances but also because a successful investor will need to spend considerable time getting to know the nuances of the local water situation before making a smart bet.

I'll illustrate the benefits and challenges of local water markets with a real case study. In 1993, a federal court case over endangered species resulted in a cap, or limit, on the total volume of water that could be withdrawn from the Edwards Aquifer in central Texas, the source of water for San Antonio, Austin and other smaller cities. That's a key element of a viable water market: limiting the supply.

The Edwards Aquifer Authority was subsequently formed to manage water extractions from the aquifer, which included the issuance of water permits to cities, industries, and agricultural operations that specified the allowable usage of water. That created another key element of a water market: well-defined property rights that could be bought or sold.

In the first decade of the Edwards Aquifer Authority, the value of water in the Edwards Aquifer climbed six-fold. If you were smart enough to acquire an aquifer permit from a willing seller during that period, you would have made a nice profit. But these windows of investment opportunity can be very short-lived.

As the price of water in the Edwards Aquifer started going up, everyone started conserving it. This is one of the very attractive benefits of water markets: they can be powerful catalysts for water conservation. The San Antonio Water System (SAWS) has been the biggest buyer of Edwards Aquifer water, but as the price of that water rose, they soon realized that they could do better by getting their customers to use less. SAWS helped San Antonio residents cut their water use by nearly half. SAWS also tapped into alternate local sources of water at lesser cost than buying Edwards permits. Because SAWS has managed and diversified its water supplies so well, its customers enjoy water utility rates that are among the lowest in the country. (See “[San Antonio’s Popular River Walk Relies on Recycled Water](#).”)

The bottom line for investors: if you got into and out of the Edwards market at the right times, you would have made a pretty profit. But you might be losing your shirt now that your biggest buyer is going elsewhere. To understand and profit from these ups and downs, you would need to pay very close attention – not something that an investor on the other side of the world is going to be able to do.

The Sober Realities of Water

Professor Kaufman is not the first person who has raised the alarm over the false bogeyman of water privatization. Even the chief economist at Citigroup expressed similar prophesies of global water trade in his speech at last year’s World Water Forum in Marseille.

Voicing or publishing such scenarios may grab headlines and alarm the unknowing, but obfuscating the physical, economic, and political realities of water only diverts attention from the real problems posed by water scarcity.

Water scarcity does create investment opportunities, for better or for worse. But the best way to make money from water is to invest in technologies and programs that enable us to use or waste less of it.

The only way out of water scarcity is to consume less water. If investors and markets can facilitate or incentivize that, let the games begin.

<http://newswatch.nationalgeographic.com/2012/11/01/water-privatization-lets-cut-the-hysteria/>

Website of the Month – <http://coloradocity.lakesonline.com/Level.asp>

Lake Colorado City’s website shows the affects of drought on the water level. Also on that webpage is the graphics from the U.S. Drought Monitor for Texas and the U.S.

NALMS Professional Certification Program

Looking for a Certified Lake Manager (CLM) or Professional (CLP) in your area?

Browse our list of CLM's and CLP's at <https://www.nalms.org/home/programs/list-of-certified-lake-managers-and-professionals/>

Interested in becoming a CLM or CLP?

Find out how to establish yourself as an expert in the field of lake management at <https://www.nalms.org/home/programs/professional-certification/professional-certification.cmsx>

Lake Photo of the Month

Swiftcurrent Lake, Mt. Grinnell, Glacier National Park

<http://www.flickr.com/photos/daryl-hunter/8073781481/sizes/l/in/pool-1871432@N22/>

By [Daryl L. Hunter - The Hole Picture](#)

To be considered for NALMS' Lake Photo of the Month please submit your photo to the North American Lake Management Society (NALMS) Flickr Group. Be sure to include the name or location of the lake in the title.



NALMS on Yahoo Groups!, Facebook, Linkedin and flickr

To learn more about these and other NALMS social and discussion groups navigate to the following links!

http://tech.groups.yahoo.com/group/lake_management/

<http://www.facebook.com/pages/North-American-Lake-Management-Society/159923186867>

http://www.linkedin.com/groups/North-American-Lake-Management-Society-3809234?gid=3809234&trk=hb_side_g

<http://www.flickr.com/groups/nalms>

NALMS Bookstore

If you're looking for some great Lake Management Resources check out the NALMS Bookstore!

<https://www.nalms.org/home/publications/bookstore/book-store-and-subscriptions.cmsx>

NALMS Affiliate Member Newsletters

Looking for information on your local NALMS Affiliate member organization? Check for local news you can use on our Affiliate Newsletter Page at

<https://www.nalms.org/home/publications/affiliate-newsletters/newsletters.cmsx>

To submit a Newsletter please send a PDF version to Greg Arenz at membershipservices@nalms.org

Looking for a Job or have a Job to post?

NALMS maintains an online Job Board for job seekers at <https://www.nalms.org/home/programs/job-board/job-board-home.cmsx>

Do you have a job that you would like to post on the NALMS Job Board?

Simply fill out the Job Posting Form found at <https://www.nalms.org/media.acux/98e37b01-3af1-4557-a2bd-610cdc244a1d> and fax it to 608.233.2836, mail it to PO Box 5443 Madison, WI 53705, or email it to info@nalms.org.

Post an Event

Do you have an event that you would like to share on the "Upcoming Events" page on the NALMS website? Let us know at events@nalms.org

Update Contact information

NALMS members can now go online to correct their own contact information and are encouraged to do so. Please tell your friends and colleagues who are NALMS members to check and update their records. If they are not getting LakeLine, the Lake and Reservoir Management journal, or NALMS Notes something is wrong. If they don't have access to fix their own contact info, they can call the NALMS office at 608.233.2836 or email Greg Arenz at (garenz@nalms.org) to get changes made. This goes for postal service mail as well.

Open Invitation to Add to the Next E-newsletter

If you are having a conference, have a lake-related question, need advice, looking for similar lake problems/solutions, have an interesting story to share, or just want to be heard throughout NALMS, please send your material to Steve Lundt at slundt@mwr.dst.co.us. All e-newsletter material is due to Steve Lundt by the first Friday of each month to be considered for inclusion in that month's e-newsletter. The newsletter goes out electronically monthly.

NALMS Notes is Co-edited by James Vennie & Steve Lundt

James Vennie

James recently retired from the Wisconsin Department of Natural Resources, Lakes Partnership. He worked on Wisconsin Lakes for 32 years. He is a Professional Hydrologist, Limnologist, Hydro geologist, and WI-DNR's expert on Algal Toxins. James graduated from University of Wisconsin - Stevens Point in Water Science. He is the past Chairman of NALMS Technology Transfer Committee for many years. Also, started the first NALMS website and supported E-Mail distribution system Lakes-L for decades.



Steve Lundt

I was born and raised just west of Mt. St. Helens. By growing up in the lush Pacific Northwest, I enjoyed all things wet (which was about everything) - rain, fog, fishing, mountain biking, baseball, hiking, and lakes. I stayed in the Portland area for my undergraduate degree in Sociology and Chemistry. I then explored Hawaii and Yellowstone for a couple of summers and ended up in Denver as a bicycle messenger. After a couple of years working in various labs, I went to Indiana University and received a MSES at the School of Public and Environmental Affairs. I do have to admit that I have to basically thank Bill Jones for everything after 1997 - my education, involvement with NALMS, and for my career on lakes. I have worked on Oswego Lake (Portland) and a couple of downstream reservoirs in Denver over past 14 years. I have been lucky to have a career where it seems like I drive a boat more than a car. I live in Denver with a great wife and two boys, 10 and 7. From managing lakes to raising kids, the little things do matter the most.

