

2013 NALMS Notes



February 2013

President's Message – Let it Rain

I just spent the weekend “upsizing” the rain barrels at my house. As you likely already know, there are many environmental benefits associated with collecting rainwater from the roof and using it around your yard and garden. I can avoid using some potable “city water” on my lawn and save a little money on my water bill, too. It’s a little harder to quantify the benefits to nearby lakes and ponds, but consider this...rain barrels help reduce flashy stormwater runoff. Stormwater picks up sediments, nutrients, bacteria, oil, pesticides, etc.. Untreated stormwater runoff may flow directly to lakes, streams, and wetlands, carrying these “hitch hiking” contaminants with it. Hmm – so, attenuating the untreated stormwater flow to the local surface water body actually reduces loading of nutrients and other bad actors. Now, my new, larger rain barrels are great, but some will whip out the spreadsheets and figure up the numbers of rain barrels needed to make a measurable difference. Yes, it’s a lot of rain barrels! But look at this through the other end of the prism – we are



Ann with her new rain barrels

talking about water conservation and water quality improvement...every drop counts! My mom liked to say “many hands make light work”. I think this fits here, too. When it comes to water conservation and water-wise use, we all need to do our part. Plus, my flowers just love that rainwater!

Ann Shortelle
President - NALMS
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WITHIN NALMS

Membership in Motion – Inching Closer to 1,000 Members

Over the last month, we’ve increased our membership to 978 members. Please consider supporting a diverse and vibrant NALMS community by helping us recruit new members.

One essential factor of membership growth is the retention of our current members. Efforts to reinstate members who let their membership lapse on December 31, 2012 were a success, and we added a number of renewals before the Winter Membership Period concluded today (February

15, 2012). For the Winter Membership Period 252 out of 275 members have renewed their memberships – **an outstanding 91% rate of renewal!**

We've also seen 35% of members up for renewal on March 31, 2013 renew early during the Spring Membership Period. This puts us in excellent shape already for Spring, and I'm looking forward to seeing how we do over the coming months.

As always, if your membership has expired or will expire soon please renew today [on the NALMS website here](#) or by [filling out a Membership Registration Form](#) and sending it to our office. Call me at 608.233.2836 or email me at garenz@nalms.org if you ever have any questions.

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

New NALMS Individual Members: Michael Alexander, Nafiun Awal, Dawn Davis, Morgan C. France, Michael Freedman, Holly Halifax, Mark Howard, Jeremy Husnik, Siffat Islam, Ken Kingdon, Lance McAvoy, Steve Miranda, Greg Searle, Anthony Serianni, John Sieweke, David Wong, Tamara Wood

New NALMS Nonprofit Members: Property Owners' Association of Deep Creek Lake

Renewing NALMS Individual Members: Robert Anderson, Alice Battle, Marvin Boyer, Greg Bugbee, Don Clover, Steven Danzer, Paul Davis, Curtis Degaspero, John Derksen, Mark Deutschman, Bruce Durgin, Reesa Evans, Bruce Fletcher, Andrew Gould, Randy Gustafson, Albelee Haque, Tom Hausenbauer, Kate Heilman, Linda Heimburg, Dan Heller, Ernest Hofer, Holly Hudson, Jeff Hudson, Dave Jensen, James Johnson, Heather Kibbey, William Kirkpatrick, Michael Little, Clelia Luisa Marti, Fred Matthaehi, Chris Mayne, Steve McComas, Sherwood McIntyre, Jack McLaughlin, John Mudre, Sandra Nierzwicki-Bauer, Steven Patterson, Leonard Schantz, Paul Skawinski, Naomi Slagowski, Richard Smith, Stuart Stein, Brad Stompe, William Taylor, Scott Van Egeren, Jordy Veit, Joe Vondruska, Calvin Whealton

Renewing NALMS Affiliate Members: New York State Federation of Lake Associations, Inc., North Carolina Lake Management Society

Renewing NALMS Nonprofit Members: City Utilities of Springfield, Lake And Watershed Association Of South Carolina, Normanoch Association Inc., Rideau Valley Conservation Authority

I'd also like to highlight our [NALMS Jobs Board](#) this month. We have had a bit more activity there than usual over the last month. If you are a job seeker, make sure that you check out the posted opportunities today. And if you have an opening or know of one please [fill out our form](#) or send them directly to me, and I will make sure they get posted.

Finally, 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
garenz@nalms.org

NALMS Office Notes

This is most definitely winter in Wisconsin. I spent more than an hour this morning clearing our sidewalk, driveway, and vehicles of snow, yet again. We're in the midst of a stretch where we've had some snow nearly every day, usually just enough that we have to clear the sidewalk lest we get a ticket from the city, with more snow to come tonight and tomorrow afternoon. For someone prone to mild SAD (seasonal affective disorder, for those of you burdened with living in areas with abundant sunshine), these seemingly endless grey snowy days are not pleasant.

It should come as no surprise, then, that I've been spending a lot of time lately looking at photos of sunny beaches and palm trees. For many of us in the Upper Midwest, this is part of an annual ritual to plan a week away in some warm, snowless destination – for me, it will be Arizona in early March for spring training baseball. This year, I also get to do it for work as I put the finishing touches on the call for abstracts for our annual symposium, which will be held in San Diego this fall. I look forward to the symposium each year no matter where it's held, but right now, with snow all around, San Diego seems like the perfect place to hold a conference.

Right around the time you receive this newsletter, you should also see the San Diego call for abstracts in your inbox. We have an excellent local team from the California Lake Management Society hard at work on this symposium, and they will bring a uniquely western/Southern Californian flavor to the symposium program and local events. We look forward to sharing more about the symposium with you in the months to come, but until then start thinking about submitting your abstract! They're due May 17.

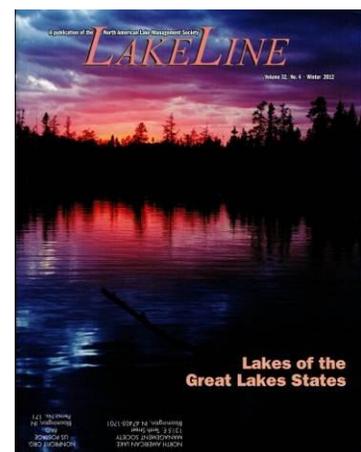
Philip Forsberg
Program Manager

What's New in *LakeLine*?

Madison, WI – January 2013

NALMS is proud to announce the final issue of the 32nd volume of *LakeLine* magazine. *LakeLine* is a quarterly publication of NALMS. Every NALMS member receives the magazine and as such NALMS uses it to inform and educate readers about current issues related to lake management as well as to keep NALMS members informed on the Society's business and activities.

This issue of *LakeLine* has the theme of "Lakes of the Great Lakes States" and features the following articles:



- *An Ice Age Legacy*. Steven E. Brown, Donald E. Luman, & William W. Shilts.
- *The Birge-Juday Era*. David G. Frey.
- *NLA Results for the Upper Midwest Area*. Paul J. Garrison, Caitlin Carlson, Ralph Bednarz, & Steve Heiskary.
- *East Alaska Lake, Wisconsin*. Tim Hoyman.
- *Cedar Lake – A Lesson in Persistence*. David Bucaro.
- *Planning for Protection in SE Wisconsin*. Thomas M. Slawski, Jeffery A. Thornton, & Hebin Lin.
- *Student Corner – Marl Lakes and Marl Mining in Indiana*. Ryan Largura.

Are you interested in becoming a LakeLine author? Bill Jones, the editor of LakeLine, and Dana Bigham (former NALMS Student Director) are putting together an issue of LakeLine with the theme of education. They are looking for contributors that are involved in the scholarship of teaching and learning. Anyone involved in any aspect of education, ideally in lake management but more broadly in environmental education is encouraged to submit an article. The deadline is April 1, 2013. Learn more about [submitting to LakeLine on our website here](#) or contact Bill Jones at joneswi@indiana.edu.

The FOCA Elert: Get the news you need

FOCA is the Federation of Ontario Cottagers' Associations, celebrating 50 years as the province-wide voice of waterfront property owners.



FOCA represents 50,000 families who own and steward a total of 15,000 kilometres of shoreline and 50,000 hectares of environmentally important lands. Our mission: to protect thriving and sustainable waterfronts across Ontario.

The **FOCA Elert** (“e-alert”) is a free electronic news update, sent monthly. Join thousands of subscribers who rely upon the Elert to keep up-to-date about important issues, events, and breaking news. Topics range from environmental notices to policy updates and much more.

Not yet in the loop? Simply visit www.foca.on.ca and find the red “SIGN UP” box at the right side of the webpage under the FOCA logo. Enter your email address and click “SIGN UP” to get on the list today. Note: FOCA respects your privacy and does not share this list with third parties.

UPCOMING CONFERENCES & EVENTS

Call for Abstracts for NALMS 2013 Symposium in San Diego

CALL FOR ABSTRACTS has arrived! This is a great way to convince your work to send you to sunny San Diego. Send in an abstract and give a paper at the 33rd annual symposium.



[Read the Call for Abstracts here](#)

[Submit an Abstract here](#)

The NALMS 2013 organizing committee has been busy working to identify special topics for invited and contributed sessions that will be of interest to those attending the conference. Potential organizers have been contacted for sessions like Lake Management in China, a repeat of the sessions on International Lakes, Stormwater Impacts, Responses to Environmental Change in Zooplankton and Phytoplankton, Invasive Species Impacts, and the organizing theme of Uncertainty.

We are working towards an ambitious and interesting program, look for the call for abstracts soon. If anyone would like to help organize a special or invited session for the 2013 Conference please email us at NALMS2013@NALMS.org.

U.S. EPA Announces Call for Proposals for 2013 EPA Community Involvement Training Conference

The U.S. EPA announces the call for presentation and training proposals for the 2013 EPA Community Involvement Training Conference which will be held July 30 - August 1, 2013 in Boston, Massachusetts. This dynamic conference seeks to inform and train EPA managers and staff as well as Agency stakeholders and partners who plan and implement community involvement, partnership, stewardship, outreach, and education programs. The three day conference features plenary sessions with guest speakers, topical discussions, multiple 90-minute information sessions, and interactive training sessions. Additionally, there will be field trips demonstrating effective community involvement and cooperative conservation efforts in the Boston area, a poster session, exhibits, a technology demonstration area showcasing new tools, technology, and software, and a variety of networking opportunities.

Presentation and training proposals for the conference are being accepted through February 22, 2013. If you are interested in submitting a proposal, visit:

http://www.epa.gov/ciconference/cfp_instructions.htm.

For more information on the conference itself, visit: www.epa.gov/ciconference/index.htm.

National Groundwater Awareness Week, March 10-16, 2013

Although most people know very little about it, groundwater is worthy of public recognition because of the role it plays in human lives and the environment, including lakes.



The drinking water supplies of 44% of Americans rely on groundwater, the water that fills cracks and other openings in beds of rock, gravel, and sand below the ground's surface. In rural areas, the number is about 96%. Those facts alone justify the need for Groundwater Awareness Week, started 15 years ago by the National Ground Water Association (NGWA).

Groundwater is important in many other ways as well. Consider:

- An estimated 99% of all available fresh water in the world is in the form of groundwater.
- Groundwater provides much of the flow of many streams; often lakes and streams are "windows" to the water table. Groundwater adds 492 billion gallons per day to U.S. surface water bodies. In large part, the flow in a stream represents water that has flowed from the ground into the stream channel.
- Scientists estimate U.S. groundwater reserves to be at least 33,000 trillion gallons, equal to the flow into the Gulf of Mexico by the Mississippi River in the past 200 years.
- The United States uses 79.6 billion gallons per day of fresh groundwater for public supply, private supply, irrigation, livestock, manufacturing, mining, thermoelectric power, and other purposes.
- Groundwater is tapped through wells placed in water-bearing soils and rocks beneath the surface of the Earth. There are nearly 15.9 million of these wells serving households, cities, business, and agriculture every day. Wells are constructed by the 8,100 contracting firms employing nearly 45,000 people dedicated to providing and protecting our nation's groundwater supplies.
- Irrigation accounts for the largest use of groundwater in the United States, about 67.2% of all the groundwater pumped each day. Some 53.5 billion gallons of groundwater are used daily for agricultural irrigation from more than 407,913 wells. Irrigation is a major reason for the abundance of fresh produce and grains that we all enjoy.
- One ton of groundwater used by industry generates an estimated \$14,000 worth of output.

These facts underscore the important role people play as stewards, or managers, of groundwater. People can adversely affect the resource. Fortunately, there are simple steps that will help protect groundwater. Groundwater protection is particularly important for people with water wells that provide their household water supply:

- Keep hazardous materials away from any well. Never dump such materials, motor oil, or anything else that could impact water quality onto the land surface, into a hole or pit, or into a surface water supply.
- Always use licensed or certified water well drillers and pump installers when a well is constructed or serviced or when the pump is installed or serviced.

For more information on groundwater, visit www.ngwa.org, or www.wellowner.org. Individual state groundwater statistics and information can be found at <http://www.ngwa.org/Professional-Resources/state-info/Pages/default.aspx>.

LAKE NEWS & INFORMATION

Lazy Algae Freeload Off of Kin

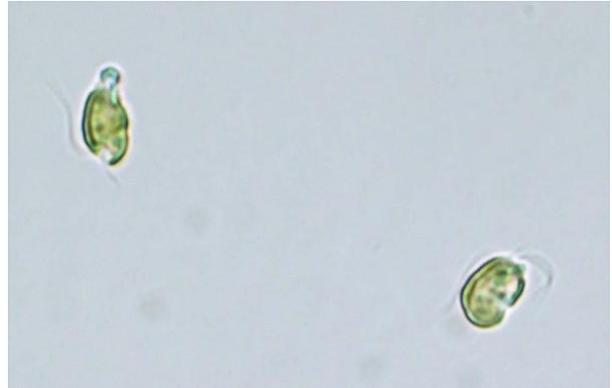
Source: Stefan Sirucek in Weird & Wild on January 22, 2013

<http://newswatch.nationalgeographic.com/2013/01/22/lazyalgae/>

Prymnesium parvum, a distant cousin of phytoplankton and giant kelp, is typically found in the ocean. Occasionally, certain conditions, such as an increase in nutrients in the water, can spur the algae to reproduce rapidly, causing harmful "blooms" that can be toxic to ecosystems. *P.*

parvum has also recently bloomed in freshwater environments, where they've had devastating effects, such as fish kills.

Upon examining several strains of *P. parvum*, also known as “golden algae” due to metallic-looking pigments, biologists at the University of Arizona have discovered that while most members of an algal bloom produce a defensive toxin, certain strains do not.



While their cohorts in the algal bloom are busy producing toxins to ward off competitors or attack prey, the freeloading floaters just enjoy the ride, dedicating precious resources toward other functions such as accelerated growth and reproduction, all while benefiting from their fellow microbes' hard work. They go on the road trip without chipping in for gas, so to speak.

What has researchers puzzled is how the lazy behavior evolved and why it hasn't taken over, since it seems to confer an advantage. “Producing toxins only makes sense if the entire population does it,” said Driscoll, whose study recently appeared in the journal *Evolution*. “Any given individual cell won't get any benefit from the chemicals it makes because they immediately diffuse away. It's a bit like schooling behavior in fish: A single fish can't confuse a predator, you need everyone else to do the same thing.”

One theory is that toxic and nontoxic algal strains evolved for different aspects of the boom-and-bust cycle that algae go through, since the toxins are useful when attacking prey during an algal bloom but less useful afterward, when most prey has been eliminated. Driscoll drew an analogy with cancer cells, which can “thrive” short term but threaten the health and survival of the system in the long term.

The microscopic moochers may yet redeem themselves however. Scientists speculate that learning more about the genes that account for switched off toxicity could yield new ways of combating toxic algae blooms that have devastated fisheries.

UK Bans Sale of Five 'alien' Aquatic Plants

Source: Michael McCarthy, *The Independent*, January 29th, 2013,

<http://www.independent.co.uk/news/uk/home-news/uk-bans-sale-of-five-alien-aquatic-plants-commonly-bought-for-ornamental-garden-ponds-8471691.html>

They sit in your garden pond, adding a bit of exotic charm, but they are deadly. Five popular aquatic plants will no longer be available from nurseries, as the threat they pose to Britain's environment is just too great.

The five, all non-native species, meaning they come from other parts of the world, are water primrose, floating pennywort, parrot's feather, water fern, and Australian swamp stonecrop. All have the potential to cause immense damage if they escape into the aquatic environment, choking watercourses and crowding out and killing other wildlife.

U.S. Water Supply Not as Threatened as Believed

Source: *Science News*, January 30th, 2013,

<http://www.sciencedaily.com/releases/2013/01/130130184031.htm>

Although reports of drought conditions, water wars, and restrictions have often painted a bleak picture of the nation's water availability, a new University of Florida survey finds that conditions aren't quite so bad as believed.

Jim Jawitz, a UF soil and water science professor and Julie Padowski, who earned her doctoral degree from UF and is now a postdoctoral researcher at Stanford University, knew that previous assessments of urban water supplies typically used what is known as a "runoff-based approach," which takes into account factors such as river flows and rainfall amounts.

Jawitz and Padowski knew that those assessments did not consider the infrastructure used to maintain urban water supplies, such as water stored in aquifers, lakes, reservoirs, or water that's pumped in to an area and stored. So for 225 U.S. metropolitan areas with populations of more than 100,000, that's what they did, and their findings have been published online by the journal *Water Resources Research*.

When assessing cities using the runoff-based approach, the UF study found that 47 percent of the total U.S. population is vulnerable to water scarcity issues, however, when infrastructure was accounted for, the number dropped to just 17 percent of the population. Residents in the top 225 metropolitan areas make up the bulk of the U.S. population.

Jawitz, a faculty member with UF's Institute of Food and Agricultural Sciences, said they expected to find fewer areas vulnerable to water shortages than past studies had because of the different methodology, but some of their findings surprised them.

They didn't expect Atlanta, where legal battles over water rights with neighboring states initially prompted the researchers to tackle the survey, to fall near the middle among the 225 cities they studied for water access and vulnerability.

Another unusual finding: Miami, with its lush, tropical landscape, landing in the top 10 most vulnerable cities. Jawitz, a South Florida native, said although the Miami area generally enjoys an abundance of rain, it's not stored anywhere. That means during periods of drought, the area becomes vulnerable.

A website that ranks the 225 largest U.S. urban areas based on water availability and vulnerability can be found at soils.ifas.ufl.edu/hydrology/cities. The list is a combination of results of where each city falls on a 0-to-100 water-accessibility scale as well as a water-vulnerability rating of low, medium or high.

The researchers also had a modern twist to their study. Padowski created a media-text analysis to search online news archives for reports for each city, looking for stories about water restrictions or drought conditions.

They found that the media reports backed up their method of analysis but did not correlate significantly with estimates made using the runoff-based approach.

The study was funded by the Florida Agricultural Experiment Station and the Adaptive Management of Water, Wetlands, and Watersheds IGERT program.

Intelligent Robotic Fish Detect Pollution

Source: <http://www.roboshoal.com/>

SHOAL, a consortium of six European organizations, has developed intelligent robotic fish capable of working together to detect and identify pollution in ports and other aquatic areas (see www.roboshoal.com). Artificial Intelligence enables the artificial fish to manage multiple problems, including avoiding obstacles, knowing where to monitor pollution, identifying sources of pollution, maintaining communication distance from the other robotic fish, and returning to be recharged. Each individual robotic fish has an array of sensors and external information that allows it to navigate the environment. Each fish can map where it is and where it needs to go; identify where it has taken samples and what the chemical composition of the samples are; and communicate the information back through shallow water to a base station, to the other robotic fish, and to the user interface.



Oil Sands Development Pollute Nearby Lakes

Source: *Corporate Social Responsibility*, JAN 17, 2013 <http://www.justmeans.com/Oil-Sands-Development-Pollute-Nearby-Lakes-New-Study-Shows/57541.html>

One of the biggest environmental campaigns in Canada focuses on the development of Alberta's oil sands, which critics say create environmental hazards such as toxic sludge ponds, destruction of boreal forests, and greenhouse gas emissions.

Exploitation of the oil sands started in 1978 and the industry has ever since been defending itself in relation to contamination of nearby ecosystems, saying that it was natural, that it would happen anyway, regardless of any extraction activities. But a new study financed by the Canadian government has found that lakes surrounding oil sands activity contain increased levels of cancer-causing compounds. Further, the contamination area was wider than previously thought, wrote The New York Times.

The study was published earlier this month and showed a rise in cancer-causing polycyclic aromatic hydrocarbon (PAH) deposits since the tar sands started being developed industrially. The researchers analyzed sediment dating back about 50 years, sampling from six small, shallow lakes located north of Fort McMurray in Alberta, the epicenter of oil sands exploitation activities. This way, they could develop a historical record of the contamination.

The data compiled shows that the levels of those PAH deposits have been steadily rising since large-scale oil sands production began in the late 1970s. One of the samples analyzed was found

to show 2.5 to 23 times more PAHS in current sediment than in layers dating back to around 1960. The studies also showed that the wilderness lakes were now as contaminated as lakes in urban centers.

The National Resources Defense Council welcomed the study and wrote that with its results, "it's more important than ever for the governments of Alberta and Canada to get to the root of the cancer issue in Fort Chipewyan". Cancer rates are going up in neighboring communities, such as Ft. Chip, home to the Mikisew Cree First Nation and the Athabasca Chipewyan First Nation. A study found a 30% increase in cancers in the region. Bile duct cancers, which are typically caused by petroleum and PAHs, have seen a seven-fold increase.

It is also hoped that the study will persuade the American government to say no to the controversial Keystone XL pipeline, which would move oil down from Canada through the west of the United States down to the refineries along the Gulf Coast, or an alternative pipeline that would transport the oil from landlocked Alberta to British Columbia for export to Asia.

Can you Explain it?

Every lake and reservoir is unique. See if you can explain why this reservoir does what it does. We all might understand the general physics, biology, and statistics when it comes to limnology and lake sciences, but can you truly explain why this reservoir behaves the way it does?



Abraham Lake, at the foot of the Canadian Rocky Mountains, is famous for its unusual ice cover, captured in these images by photographer Chip Phillips (sunset) and Frank King (standing on ice). Methane bubbles rise from the bottom of the man-made lake and then freeze as they come closer to the surface, creating beautiful, intricate patterns. This natural phenomenon makes the reservoir a prime destination for photographers between November & March.

So why does Abraham Lake do this? Why don't other lakes have this methane gas bubble phenomenon during the winter as well? Or are there more lakes/reservoirs that do this? More information about this reservoir and other lakes in the Alberta area can be found at http://en.wikipedia.org/wiki/Abraham_Lake and http://en.wikipedia.org/wiki/Lakes_of_Alberta.

Lake Winnipeg most Threatened in World in 2013

Source: CBC News, Feb 2, 2013 <http://www.cbc.ca/news/canada/manitoba/story/2013/02/02/mb-lake-winnipeg-most-threatened-in-world.html>

Lake Winnipeg has earned a disturbing new title from the Global Nature Fund (GNF), as the Threatened Lake of 2013. GNF, the organization that created the International Living Lakes network, chooses the most-threatened lake in the world every year. Lake Winnipeg was nominated by Living Lakes Canada.

Past Threatened Lakes of the Year:

2012: Lake Titicaca, Bolivia and Peru
2011: Laguna de Fúquene, Colombia
2010: Pulicat Lake, India
2009: Lake Atitlan, Guatemala
2008: Mahakam Wetlands, Indonesia
2007: Pantanal, Brazil, Paraguay and Bolivia
2006: Dead Sea, Israel, Jordan and Palestine
2005: Lake Victoria, Kenya, Tanzania and Uganda
2004: Lake Chapala, Mexico

Protecting Washington's Alpine Lakes Wilderness

Source: Jean Williams, January 27, 2013,

<http://www.examiner.com/article/protecting-washington-s-alpine-lakes-wilderness-draws-bipartisan-effort>

Senator Patty Murray (D-WA) and Congressman [Dave Reichert](#) (R-WA) reintroduced legislation called the Alpine Lakes Wilderness Additions and Pratt and Middle Fork Snoqualmie Rivers Protection Act.



This legislation would expand the Alpine Lakes Wilderness and designate both the Pratt and Middle Fork Snoqualmie Rivers as Wild and Scenic.

The Alpine Lakes Wilderness is a [massive area](#) stretching across 390,000 acres along the Cascade Mountain Range and includes such scenic gems as the Wenatchee National Forest and Snoqualmie National Forest. Murray and Reichert are joined in the effort by Co-sponsors Senator [Maria Cantwell](#) (D-WA) and Congresswoman Suzan DelBene (D-WA1).

Key elements of the new Alpine Lakes legislation include:

- Providing the protection of the Wilderness Act of 1964 to lower elevation lands. It will bring a richer diversity of ecosystems, including deeply forested valleys, into the wilderness area and increase its overall biodiversity. The addition of these 21,000 acres of public land into wilderness has the direct effect of protecting a broader array of outdoor recreational opportunities easily accessible for wilderness enthusiasts.
- Designating the Pratt and Middle Fork Snoqualmie Rivers as Wild and Scenic, which would permanently protect the rivers' free-flowing character, water quality and outstanding recreation, fisheries, wildlife, geological and ecological values. This designation provides for many recreational activities including unique backcountry hiking, kayaking, and white water rafting that is unheard of so close to a major urban center.

USGS Assesses Lake Mead

Source: Bob Berwyn, February 2, 2013 <http://summitcountyvoice.com/2013/02/02/water-usgs-assesses-lake-mead/>

Better sewage treatment in Las Vegas, long-term treatment of persistent pollution from industrial sources, and development of artificial wetlands have all helped protect water quality in Lake Mead, according to federal scientists who recently released a report on the status of the last big storage bucket in the Colorado River's plumbing system.

Overall, the U.S. Bureau of Reclamation said that Lake Mead's water quality is good and that fish populations are holding their own. Lake Mead is even providing habitat for an increasing number of birds.

But the report also acknowledges that invasive quagga mussels have become the dominant lake-bottom organism, posing significant threat to the Lake Mojave and Lake Mead ecosystems. The report also acknowledges the long-term threat of climate change, which will bring reduced water supplies to the entire Colorado River Basin.

Lake Mead stores water that's critical for more than 25 million people in three western states (California, Arizona, and Nevada). Storage within Lake Mead supplies drinking water and provides for the generation of hydropower to deliver electricity for major cities including Las Vegas, Phoenix, Los Angeles, Tucson, and San Diego. It also provides water for irrigation of more than 2.5 million acres (almost 4000 square miles or more than twice the size of the state of Delaware) of croplands.

Major findings detailed in the report include the following:

- Basic water-quality parameters are within good ranges of Nevada and Arizona standards and EPA lake criteria. Potential problems with nutrient balance, algae, and dissolved oxygen can occur at times and in some areas of Lake Mead.
- Legacy contaminants are declining due to regulations and mitigation efforts in Las Vegas Wash. Emerging contaminants, including endocrine disrupting compounds, are present in low concentrations. While emerging contaminants, such as pharmaceuticals, personal care products, or plasticizers have been documented to cause a number of health effects to individual fish, they are not seen at concentrations currently known to pose a threat to human health.
- Lake Mead and Lake Mohave continue to provide habitat conditions that support a rich diversity of species within the water, along shorelines, and in adjacent drainage areas, including organisms that are both native and non-native to the Colorado River drainage.
- Sport fish populations appear stable and have reached a balance with reservoir operations over the past 20 years and are sufficient to support important recreational fishing opportunities. Native fish populations within Lake Mohave are declining, but the small native fish populations in Lake Mead are stable without any artificial replenishment.
- Lake Mead and Lake Mohave provide important migration and wintering habitat for birds. Trends include increasing numbers of wintering bald eagles and nesting peregrine falcons. Lake Mead water-level fluctuations have produced a variety of shorebird habitats, but songbird habitats are limited. Although some contaminants have been

documented in birds and eggs in Las Vegas Wash, mitigation efforts are making a positive change.

- Invasive quagga mussels have become the dominant lake-bottom organism and are a significant threat to the ecosystems of Lake Mead and Lake Mohave because they have potential to alter water quality and food-web dynamics.
- Climate models developed for the Colorado River watershed indicate a high probability for longer periods of reduced snowpack and therefore water availability for the Lake Mead in the future.

The report was prepared cooperatively by the U.S. Geological Survey, National Park Service, U.S. Fish and Wildlife Service, Bureau of Reclamation, Nevada Department of Wildlife, Southern Nevada Water Authority, BIO-WEST, University of Nevada, Reno, and University of Nevada, Las Vegas

Water from an Antarctica Lake

Source: Andy Soos, ENN, January 30th, 2013

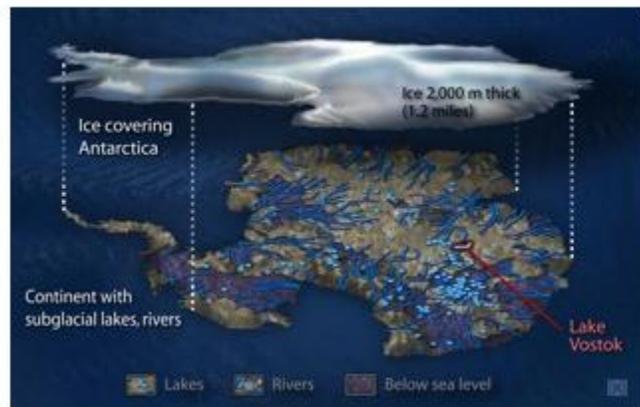
In an amazing feat of science and engineering, a National Science Foundation (NSF)-funded research team has successfully drilled through 2,600 feet of Antarctic ice to reach a subglacial lake and retrieve water and sediment samples that have been isolated from direct contact with the outside world for many thousands of years. Scientists and drillers with the interdisciplinary Whillans Ice Stream Subglacial Access Research Drilling project (WISSARD) announced January 28th that they had used a customized clean hot-water drill to directly obtain samples from the waters and sediments of subglacial Lake Whillans. Upon study this may reveal a unique perspective on life and how it evolves.

Whillans Ice Stream is one of about a half-dozen large, fast-moving rivers of ice pouring from the West Antarctic Ice Sheet into the Ross Ice Shelf. The ice stream is the subject of different

glaciological studies, one of which is looking at subglacial lakes that researchers believe may be speeding the movement of the ice as they periodically fill and drain.

Around 250-300 subglacial lakes are currently known in Antarctica. There are currently three projects to directly sample subglacial lakes in Antarctica. These are the British led Subglacial Lake Ellsworth project, the U.S. led Whillans Ice Stream Subglacial Access (WISSARD) and the Russian led Lake Vostok program.

This water exists because geothermal heat flow from below, coupled with pressure, movement, and the insulating nature of the ice sheet above, is great enough to maintain some areas at the base of the ice sheet above the freezing point, even in the extreme cold of Antarctica. In



topographic depressions there are hundreds of lakes, both large and small; some are isolated, but many are interconnected by water channels and large areas of saturated sediments, the water eventually running out into the Southern Ocean as the ice sheet becomes a floating ice shelf.

The achievement is the culmination of more than a decade of international and national planning and 3 1/2 years of project preparation by the WISSARD consortium of U.S. universities and two international contributors.

The WISSARD team will now process the water and sediment samples they have collected in hopes of answering seminal questions related to the structure and function of subglacial microbial life, climate history and contemporary ice-sheet dynamics. This information may also foretell how life may exist on other worlds where similar under ice water bodies may exist.

A team of engineers and technicians directed by Frank Rack, of the University of Nebraska-Lincoln, designed, developed and fabricated the specialized hot-water drill that was fitted with a filtration and germicidal UV system to prevent contamination of the subglacial environment and to recover clean samples for microbial analyses. In addition, the numerous customized scientific samplers and instruments used for this project were also carefully cleaned before being lowered into the borehole through the ice and into the lake. The key is to collect a good sample without contamination and without contaminating the sub glacial lake.

For further information see Whillans

www.nsf.gov/news/news_summ.jsp?cntn_id=126697&WT.mc_id=USNSF_51&WT.mc_ev=click.

Websites of the Month - water.usgs.gov/wateralert and water.usgs.gov/waternow

USGS WaterAlert allows you to receive updates at any of the sites where the USGS collects real-time water information. Daily or hourly updates are sent via email or text message when the current conditions meet or surpass a threshold of concern that you set. For example, if you know at a certain flow rate in the river the turbidity gets too high and you don't want to divert that water into your lake or reservoir. You can set up a WaterAlert to tell you when the flow is at that rate and you get a message to warn you.

You can also text any USGS gage site number to waternow@usgs.gov, and they will send you real-time data of that site back to your phone or computer within minutes. Just put the site number in the Subject line. Go to water.usgs.gov/waternow to learn more about this feature.

NALMS Professional Certification Program

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

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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>

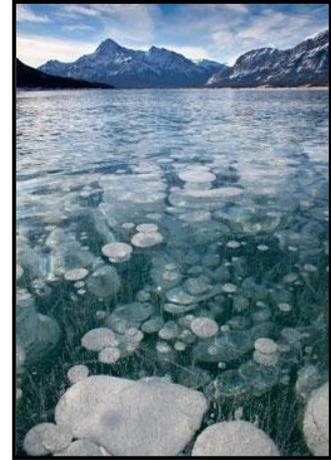
Lake Photo of the Month

By tyblue90, Title of the photo is “They Came from Below”. Taken at Abraham Lake, Alberta.

Image can be found at

<http://www.flickr.com/photos/23244590@N05/8427690545/in/pool-nalms>

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.