

LAKE WISE

June
1999

NEWSLETTER OF THE PSU LAKES AND RESERVOIRS PROGRAM
AND THE OREGON LAKES ASSOCIATION



Lake Watch News

Every year for the past five years we have kicked off the Lake Watching season about this time. At this time of year everyone here at "Lake Watch World Headquarters" was gearing up, along with you, for a another season on the lakes.

The Lake Watch Program has had success and failure. We have succeeded in documenting the condition of the lakes of Oregon. Unfortunately, many of our lakes are not in the condition that we want them to be, but at least we know their condition. We have tried to adapt the Program to the changing needs of the State. We joined with Southern Oregon University to provide better statewide coverage of lakes and to allow more frequent visits of our student staff with volunteers. These frequent visits kept us in touch with what is happening on our lakes, provided an opportunity to answer questions, and aided in keeping data quality high. We also included more management planning into the program to deal with finding solutions to water quality problems rather than just documenting their existence. We have failed, however, to demonstrate to state agencies the value and need for an ongoing lake program in Oregon.

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Plan Now for Annual Lake Conference

The annual OLA conference will be at Southern Oregon University on Saturday, **October 2, 1999**. A catered lunch will be available for \$8.50 per person. Two motels have agreed to save some rooms for Conference attendees, and there will be tickets available for Shakespeare Festival plays. Dr. Charles Goldman, from the University of California at Davis has committed to presenting the keynote speech. Dr. Goldman is an internationally recognized limnologist who has worked extensively on Lake Tahoe.

Watch your mail for more information about the Conference, but mark your calendars now. ♦

Oregon Lake Legislation in Limbo

Senate Bill 128, which establishes a Center for Lakes and Reservoirs at PSU, passed unanimously in Senator Tarno's Water and Land Use Committee early in the legislative session.

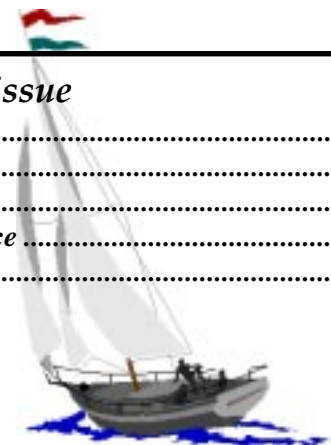
There are many important issues competing for funding in Salem. For those of us who think Oregon lakes should receive some management attention, Senate Bill 128 is a "go home" bill. If we want lakes to receive any attention at the state level, we need this bill to be funded.

Legislators need to hear about lakes and their problems. SB 128 is currently in the Ways and Means, where it is awaiting funding. Budgets are extremely tight and there is a distinct possibility that this bill will be passed over in favor of more high profile bills.

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Lake Watch Volunteers

Citizen Lake Watch depends on dedicated volunteers, who measure basic water quality characteristics in Oregon lakes and reservoirs. Lake Watch provides training to measure water temperature, Secchi transparency, and dissolved oxygen. Volunteers in the Corps of Engineers, Fern Ridge monitoring program perform additional measurements. Volunteers also assist in the early detection of *Hydrilla*. Prospective volunteers may contact Mark Sytsma (503)725-3833 or Michael Parker (541) 552-6796.

Blue Lake: Koren Marthaller

Bradley Lake: Edward and Ruth Ziebell, John Mendonsa

Clear Lake: Elmer Waite

Cullaby Lake: Janette Goolsby

Diamond Lake: James Kerp

Devils Lake: Barbara Hagerman, Al Rice

Emigrant Lake: Christy Sinclair

Fairview Lake: Bettianne Goetz, Jim Graybill

Fern Ridge Lake: Natasha Okonoji, Richard Locke, James Bruvold, Randy Wilson, Todd Yokum

Fern Ridge Lake cont.: Lee Kincaid, Alycia McCord, Clover Wood, Ken Cluck

Garrison Lake: Don Martin

H. Hagg Reservoir: Wally Otto

Howard Prairie Reservoir: Chris Johnston

Hyatt Lake: Mike Hurger

Lake of the Woods: Catherine Hayes, Katherine Wallis

Loon Lake: Richard Kaufmann, Steve Kaufmann

Mercer Lake: Ron Boehi

Munsel Lake: Al Burhans, Roy Fisher

N. Tenmile Lake: Frank Gray, Dan Jordan, John Kelsey

Odell Lake: Vince and Paulette Jesse

Penland Lake: Lee Bogle

Siltcoos Lake: John and Julia Carlson, Paul Cornett, Elizabeth and Dean Kelly, Dave and Linda Lauck

South Twin Lake: Jude Fulghum

Sunset (Neacoxie) Lake: Lee Smith

Tenmile Lake: William Emblen

Thornton Lake: Henry Pollak, Jack White

Woahink Lake: Bob Anderson

Lake Watch continued from page 1

It appears that 1998 may be the last year for the Lake Watch Program. Our proposal to the Department of Environmental Quality was not selected for funding for 1999. The failure to receive funding was not unexpected. The Environmental Protection Agency has long noted that the federal funds that the State has been using to support the Lake Watch Program are not intended to provide program support, rather, the funds are intended for individual projects.

We have been unable to identify any other sources of funding to maintain the Program, but we are haven't given up yet! Portland State University has worked with the Oregon Lakes Association to establish a Center for Lakes and Reservoirs. With the help of Senator Veral Tarno, a bill to establish the Center passed through the Water and Land Use

Committee of the Senate and is currently in the Ways and Means Committee. If the Center receives funding, PSU will be able to provide technical assistance on lake management. In some cases, collection of pertinent water quality data may be appropriate and volunteers may be able to conduct the sampling, as in the current Lake Watch Program. At this point, that is the only silver lining that we can see in the clouds that have lowered over Lake Watch.

We encourage Lake Watchers to continue to monitor their lakes and to be advocates for better lake management in Oregon. Unless the funding situation changes, however, we will not be able to provide assistance to you.

Thank you for all the good work you have done over the years. ♦

Water Flea Invasion

Thinking like military historians, limnologists at Cornell University have documented the invasion by an exotic species, "*Daphnia exillis*," in one of North America's dirtiest lakes — an invasion that ultimately failed when a polluting industry cleaned up its act.

Their report in the May 1999 issue of the journal *Limnology and Oceanography* describes how diapausing (or dormant) eggs of the crustacean were:

- Hauled from the toxic bottom of New York state's Onondaga Lake by Cornell students,
- Hatched in the laboratory to yield healthy crustaceans, and
- Genetically traced to one pioneering organism that

OREGON LAKES ASSOCIATION NEWS

Notes From The President: Activities for 1999

by Andy Schaedel, OLA Past President

I just want to give a brief update on the progress that we have been making on our work plan for 1999 -- I think that we have gotten off to a good start!

- Development of an Oregon Lake and Reservoir Program (Contact: Mark Sytsma, 503-725-3833) - great news, Senate Bill 128 was passed by the Senate and referred to Ways and Means (see article in this newsletter).

- 1999 Annual Conference (Contacts: Jake Kann, 541-482-1575; Michael Parker, 541-552-6796) - off to a good start with plans for the conference to be held on the Southern Oregon University campus in Ashland on October 2, 1999. Save that date, more details will be announced shortly.

- Improve membership and membership services (Contact: Andy Schaedel, 503-229-6121) - a membership mailing went out in May, please encourage friends, neighbors and others to join as well.

- Continued improvement of the web site and newsletter. Many thanks to Susanna Breiling for her good work she has done. Susanna has moved on to a "real job". Mark Sytsma will be handling the newsletter and web site for the near future (Contact: Mark Sytsma 503-725-3833).

- Development of a Lake Report Card (Andy Schaedel, 503-229-6121) - work will start on this shortly. Please let me know if you are interested in working on this concept to make it into a reality.

- Have all Board Positions filled by the next annual meeting (Any Board Member) - we have some openings and always looking for good volunteers - please contact any Board member if interested.

As you can see, a great deal is happening. With additional support, even more can get done. For example, Bob Storer (503-618-2634) has started a new job and does not have time to work on the development of a Lake Appreciation Week in Oregon. This would be part of a national effort. If you are interested in developing this concept for Oregon, please contact Bob or Andy..

So if you have any interest in any of the above topics, please let the contact list know about your interest. Hope you have a good Spring! ♦

North American Lake Management Society Meetings

*19th International
Symposium*

**Water: 21st Century Gold
December 1 - 4, 1999
Reno, Nevada**

**Plan for Reno
and Seattle
NOW!**

Regional Conference

**April 13-15, 2000
Seattle, Washington**

The Oregon Lakes Association is a nonprofit organization dedicated to lake protection and management in Oregon. For additional information on OLA, to get involved, or to obtain a membership application form write to:

OLA, PO Box 345, Portland, OR 97207 or visit our web site at <http://www.ola.pdx.edu/>

OREGON LAKES ASSOCIATION NEWS

State Lake Management Program Conference

*Joseph Eilers, Region X,
Director for NALMS*

I had the good fortune of attending the 12th Annual National Conference "Enhancing the States' Lake Management Programs" held in Chicago from April 20-23. The formal portion of the conference provided practical information for states in managing their lake resources. The focus of the meeting was on nutrient strategies for lakes and reservoirs. EPA's current approach, as presented by Dr. George Gibson, is to develop nutrient criteria that are specific to different ecoregions (similar to physiographic provinces such as the Cascade Mountains) and to use these criteria as a basis for states to manage their lakes. A counterpoint presentation by Jay Stauber of North Carolina highlighted the potential problems in implementing nutrient criteria including the differences between types of lakes within the same ecoregion (eg. lakes vs. reservoirs), spatial variations in lakes, and seasonal variability. The lively discussion that followed these presentations foreshadows the future national debates that are likely to proceed

implementation of nutrient criteria.

I attended two other meetings before and after the conference related to lakes. The first was a TMDL (Total Maximum Daily Loads) workshop on the concepts and implementation of TMDLs. This process requires states to deal with water quality issues defined as those lakes and streams listed on the "303d" list of impaired waters. The TMDL process involves application of systematic procedures ranging in numerical complexity from spreadsheet calculations to use of sophisticated simulation models to define how much of a given pollutant (*e.g.*, phosphorus) should be input into a lake or stream to maintain its beneficial uses. The level of complexity for any given application will probably depend, in part, on the costs associated with the proposed implementation of restoration measures.

The third element of the Chicago trip involved the semi-annual board meeting for NALMS. I am serving the

balance of the term vacated by Bob Storer who was unable to continue in the position following his move to a new job. We thank Bob for his excellent contributions during his term.

Increasing membership in NALMS is a major focus of the current board both as a means to increase visibility of the organization and as a means of securing its financial stability. I encourage all OLA members who are currently not members of the parent organization to consider joining and receiving the full benefits of the NALMS, the premier national lake management organization.

If there are lake-related issues you wish to have brought to the attention of the board, please feel free to contact me at (W) 541-758-1330, (H) 541-745-7140, or via email at jcheadwaters@proaxis.com. ♦

Lakes in Limbo continued from page 1

SB 128 will provide funds for technical assistance on lake management with particular emphasis on aquatic nuisance species. To see the full text of the bill go to the OLA web site at <http://www.ola.pdx.edu/>

Remember the old saying that the squeaky wheel gets the grease? Well, it is never more true than in the case of funding priorities with the legislature. If ever there was a time to squeak for lakes it is now. ♦

Members of the Natural Resources Subcommittee of the Ways and Means Committee include:

Rep. Bob Jenson	Sen. Ted Ferrioli
Rep. Al King	Sen. Gary George
Rep. Ken Messerle	Sen. Veral Tarno
Rep. Susan Morgan	Sen. Rick Metsger
Rep. Ben Westlund	Sen. Thomas Wilde

You can contact them via the Capital switchboard at (800) 332-2313.

Daphnia continued from page 1

hitchhiked east in the 1920s.

“These little guys are real survivors, considering that they successfully colonized a lake far from their natural habitat and banked their eggs for the future in a place that became a Superfund toxic cleanup site,” says Nelson G. Hairston Jr., the Frank H.T. Rhodes Professor of Environmental Science at Cornell.

Hairston was leading a team of Cornell biology students and professional limnologists in a U.S. Environmental Protection Agency-funded survey of organisms in lake-bottom sediments when Meghan Q. Fellows found the eggs of one creature that “didn’t belong” in Onondaga Lake — or anywhere east of the Mississippi.

The *Daphnia* discovered by Fellows, a Cornell undergraduate at the time and now a graduate student at San Diego State University, were known to inhabit shallow, fishless salt ponds in the western United States. Like other diapausing organisms, adult *Daphnia* produce eggs that can “sleep” for years until they sense favorable conditions for hatching, a useful trait for repopulating ponds that periodically go dry. Adult *Daphnia* are less than 1/8th inch long, and their diapausing eggs, called ephippial cases, are microscopic.

Awakening decades-old eggs from Onondaga Lake was not a problem, once the scientists found the right combination of temperature, water chemistry and light. But the crustacean Rip van Winkles provided no clues about how their salt-loving ancestors got to a freshwater lake in upstate New York until a few historic facts came to light, and were further illuminated by a genetics-tracing technique similar to DNA fingerprinting:

For decades in the 1900s, Onondaga Lake was about 1/10th as salty as sea water because a lakeshore factory used geologic deposits of sodium chloride salt and limestone to manufacture soda ash. Massive waste beds of calcium carbonate and sodium chloride were left at the water’s edge, raising the salinity of Onondaga Lake to a level that *Daphnia* would find comfortable. Indeed, even before this salt pollution of the industrial era, sodium chloride deposits from ancient inland seas were exploited by Native Americans and European settlers, giving Syracuse the nickname Salt City.

The soda ash factory, known locally as the Solvay Process plant, was owned by Rowland Hazard, who in the 1920s also owned a lead mine in Missouri, at the eastern edge of the natural range of the exotic *Daphnia*. Mine operators sometimes transferred machinery from one site to another, and with the equipment could come debris from the previous location.

Genetic analysis of animals hatched from the dormant eggs showed that they — and probably all the billions of *Daphnia* that temporarily thrived in Onondaga Lake — were related to a single, pioneering individual, a kind of Adam (or Eve) of a salty water garden. “Our hypothesis is that a few *Daphnia* eggs hitched a ride in the dry mud on Mr. Hazard’s lead-mining machinery, all the way from Missouri, and one lucky egg found a suitable home here and started it all,” Hairston says. “Since they can reproduce without sex, all it takes is one.”

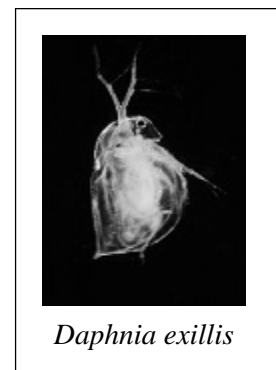
He notes that a year-by-year analysis of sediments from the lake bottom indicates the presence of millions of *Daphnia* the first year, an

unexplained absence of *Daphnia* eggs from 1927 to 1940, and a major resurgence that peaked around 1970, when there could have been billions of *Daphnia* in the lake.

Then the *Daphnia* declined and disappeared from the lake water by the early 1980s, leaving only diapausing eggs as a record of their failed invasion. The chemical industry had stopped depositing waste salts along the shore of the lake. Today the salinity level of Onondaga Lake is close to normal.

However, other toxic pollutants remain, and one — mercury — could account for some of *Daphnia*’s reproductive difficulties. Beginning in 1946, mercury waste was created from a process that produced chlorine gas, and hundreds of pounds of the toxic heavy metal were dumped in the lake each year until 1970. Of all the *Daphnia* eggs recovered from lake-bottom sediments by the Cornell scientists, only those deposited less than 25 years ago are still viable and can be hatched. The rest probably are dead.

Daphnia eggs will rise again, Hairston predicts, every time a boat anchor stirs up sediment on the lake bottom. But the invaders won’t get far. Unless the Salt City’s lake turns saline again, the best place to see swimming “*D. exilis*” east of the Mississippi is in a Cornell laboratory. ♦



Daphnia exilis

Lake Alert ! Lake Alert !

With the failure of the Lake Watch proposal to receive funding for 1999, the lake program in Oregon depends upon funding of the Center for Lakes and Reservoirs bill by the Oregon legislature. Thanks to the help of Senator Veral Tarno, the bill flew through his committee on a unanimous vote.

The bill (Senate Bill 128) was referred to the Ways and Means Committee. As you may know, the legislature is debating a number of big ticket items and smaller budget items, like our lake program, has been waiting in the wings. The time is drawing near for final budget decisions to be made, however, and now is as good a time as ever to let your Senator and Representative know about your interest and concern for Oregon lakes.

We have come so far... don't let Terry Witt's prediction come true. Be a part of a new future for Oregon's lakes. Help convince the legislature to

Vote for Clean Lakes!
(See the Page 1 for more info)

"The aquatic weed bill is an excellent measure that will likely fail to pass due to lack of general fund dollars being available to implement."

*Terry Witt,
Oregonians for Food and Shelter*

Lake Alert ! Lake Alert !

LAKES AND RESERVOIRS PROGRAM
ENVIRONMENTAL SCIENCES AND RESOURCES
PORTLAND STATE UNIVERSITY
POST OFFICE BOX 751
PORTLAND, OREGON 97207-0751

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