

# LAKE WISE

Summer  
2000

NEWSLETTER OF THE CENTER FOR LAKES AND RESERVOIRS AND  
THE OREGON LAKES ASSOCIATION



## We're Back!

Hello Lake Watchers! It's been a while, but thanks to funding from the Oregon Watershed Enhancement Board for the Center for Lakes and Reservoirs we are back in business. It has taken us a while to get back on our feet after being laid low by budget cuts, but we now know our future, at least through next summer.

The new volunteer coordinator, Carrie Haag, has rolled into town from Chicago, and will be contacting all the volunteers to touch base and get up to speed on lakes in Oregon. Carrie will be working on a Masters degree in Environmental Sciences and Resources at PSU. She has experience in lakes.....

## OLA Annual Meeting

- Jim & Stephanie Carpenter -

It is not too early to be making your plans and reservations for the Oregon Lakes Association annual meeting October 6 - 7. This year Upper Klamath Lake, Oregon's largest, plays host to the event. This year's theme: **Charting a Course for a Sustainable Future** will explore the range of perspectives surrounding work in the Klamath watershed and also address issues of state-wide interest.

Upper Klamath Lake is a working model for water quality and quantity, land use, endangered species, invasive species, hydro project and other concerns. Virtually the spectrum of natural resource and economic sustainability issues are in play in the Klamath Basin, yet concerted efforts are underway in many fora to resolve the divergent interests in a shared vision of a fully functioning ecosystem.

Traditional land and water use is undergoing evolutionary (and hopefully not revolutionary) change, driven by the Clean Water Act, Endangered Species Act, adjudication of water rights, tribal treaty rights, and changing economics in natural resources and food production. One way or another, all this is mirrored in the waters of Upper Klamath Lake.

Join us for a few days down here in beautiful Klamath County while we explore the dynamics of the watershed.

The weekend begins at the Klamath Yacht Club with early registration, a no-host mixer and meeting of the Board of Directors. The Club's facilities on the lake offer the best introduction to our water resources, and arrangements have been made by yours truly, Commodores Jim & Stephanie Carpenter, to extend guest privileges for the OLA attendees. The Board meeting is a chance to get acquainted with the nuts and bolts (no reflection on the officers) of OLA's

Continued on page 2

## Inside this issue

<i>Invasive Species Hotline</i> .....	2
<i>Woahink Gets Rid of Geese</i> .....	3
<i>Recipe for a Healthy Lake and Watershed</i> .....	3
<i>Measuring Secchi Transparency With a View Box</i> .....	4
<i>Living Lakes Series: Summer</i> .....	5
<i>OLA Meeting Agenda</i> .....	6
<i>Waldo Lake Featured</i> .....	8

### OLA Meeting

organization and see if you might be interested in being a candidate for one of the upcoming board positions.

Saturday, the action is up the hill on the campus of the Oregon Institute of Technology overlooking the lake. In the Student Union Auditorium a variety of presenters and panels will provide a full day of the "State of the Watershed". Table space and posters will be available in the foyer for related interests.

Lunch is included in your registration and will be provided by OIT's renowned food service team, always a highlight of any conference there.

You are on your own for dinner, and we hope you will stay on Sunday to explore first hand the projects you heard about Saturday. Take a leisurely drive around the lake, or try a little more organized recreation - sailing, golf, canoe trails or birding. Maps and local information will be provided in your registration packets. October is one of the best seasons for field work and fun here in South Central Oregon and we are looking forward to sharing it with the OLA members and friends.

See page 6 for details on the agenda of the Annual Meeting.

## Invasive Species Hotline Up and Running

What do gypsy moths, nutria, hydrilla, zebra mussels, German yellowjacket, green crab, and yellow starthistle have in common? They are all considered "invasive species" in Oregon. Whether it is an insect pest, terrestrial or aquatic weed, or even a non-native mammal, state officials want the public's help in tracking them down. As a result, the Oregon Department of Agriculture is operating a toll-free invasive species hotline that will collect information from Oregonians. That number is **1-866-INVADER**.

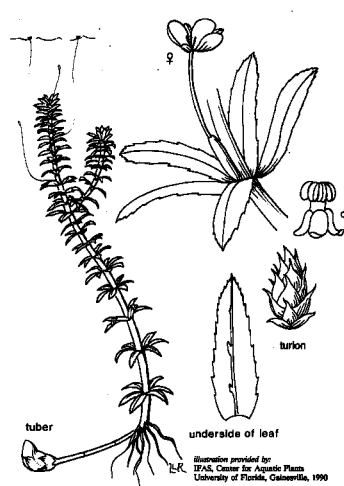
"What we are talking about is a form of pollution-- biological pollution," says Dan Hilburn, administrator of the Oregon Department of Agriculture's Plant Division. "An invasive species is a biological pollutant. It establishes, spreads, and just

keeps going. It displaces native plants and animals. It changes the ecosystem."

Many state and federal agencies have specific programs targeting some of these invasive species. The Hotline will collect information from the public on suspected sightings of invasive species. Officials hope the hotline will help identify early introductions of biological pollutants in Oregon.

The invasive species hotline is located within ODA's Plant Division. During business hours, callers will be able to reach ODA staff. After hours and on weekends, callers will be asked to leave a voice mail message with return calls made as soon as possible.

# HELP HALT HYDRILLA



If you see this plant, please call

**1-866-INVADER**

## The Invasive Species Hotline

**It's toll-free!**



## Woahink Lake gets rid of Geese! – A major culprit for lake eutrophication

- Bob Anderson -

Woahink Lake Association had their annual barbecue July 16, 2000. The event was held at Honeyman Parks yurk which is very conducive for group gatherings. Forty-seven members plus several guests attended, food was great and all had a good time.

The guest speaker was Shirley Stentz, Honeyman Park Manager. Last fall Woahink Association voiced concern over the large number of full time geese on Woahink Lake. Honeyman Park took the initiative, got ODFW and the association together and explained what and how they planned on getting rid of the geese. Shirley explained at the meeting what was done. During June when the geese are molting and cannot fly they were drugged, rounded up banded and transported to Eastern Oregon. ODFW did all the

planning and furnished boats and trucks for the event. The young were shipped to a

separate site from the adults as they have a low percentage of returning. They expect some adults to return but will again capture and relocate them. Sixty-one geese were captured, there are approximately 38 that eluded capture.

It is well documented that geese affect water quality, Shirley explained they excrete 30 - 40 % of their weight each day, thats a lot of poop! Shirley also asked for volunteers to help revegetate the shoreline this fall, a positive response occurred.

An update on the state of Woahink Lake was also presented at the meeting. During the past 10 years there has been little change in water clarity, temperture, dissolved oxygen and

turbidity. Water clarity's best recording was 38 feet in 1993 and 1998. The worst was 1 foot 10 inches recorded in the first arm after heavy erosion during the winters of 1995 and 1996. This year clarity is slightly better than last year, temperature and dissolved oxygen are consistant with past years. The weed situation is of concern with the members. They are looking forward to getting information from The Center for Lakes and Reservoirs. This year it appears the third arm at the North end of the lake has the largest infestation of parrot feather. The parrot feather is in approximately 12 feet of water and therefore hard to pull without breaking off the stem. Members are pulling the pests in the shallows. The lake also has an increasing number of grass in the shallow areas.

## A Citizen's Recipe for a Healthy Lake & Watershed

A good ole fashion ingredients list that can work for YOU and your Lake!

- Robert Storer -

### Ingredients

1. One consistently used and calibrated secchi disk, dissolved oxygen meter and precipitation gage. A few dedicated souls able to invest the time to learn all about their lake & watershed and willingness to educate others.

2. 4 sets of up-to-date maps including: lake bathymetric; USGS topo; local landuse; and aerial photos. One well informed volunteer to collect

and analyze algae samples and conduct macrophyte surveys. Several outdoor-type volunteers who are willing to collect long-term lake (nutrients and others) and watershed (hydrologic and others) information even during the hot summer and cold and wet winter months\*.

3. Concerned lakeside and watershed residents who are committed to responsible ownership and stewardship by protecting a riparian buffer adjacent to their lakeside

properties. One dedicated volunteer who can articulate the problem, seek solutions, and rally others to join the cause for the long-term.

2. One holistic group of lake and watershed residents who want to see that beneficial uses of their lake and watershed are no longer degraded but restored and sustainable.

3. Several committee's of con-

continued on page 4

Recipe continued

cerned lake enthusiasts who can contribute their time to understand the planning process and to become active in local planning issues.

4. One local lake group who demands enhanced inspection and stricter enforcement of local erosion prevention and sediment control regulations. Several well researched, written, and timely articles for the local media. One very enthusiastic science school-teacher wanting to develop a curriculum around your lake and its watershed.
5. One very informative boat tour with your local representatives. One locally committed lake association who is willing to reach out and partner with local agencies, businesses, and others to write grants and solicit funds for lake monitoring and improvement projects.

Procedure

Mix all ingredients together and stir well. Add a little of your own dedication and \$ by supporting OLA and writing to your local and state representatives for long-term support and funding for the Center for Lakes and Reservoirs. Bake these issues on high and do not let cool or settle. Serves only a few so double the ingredients for best results.

\* No substitutions for lack of toughness or funds.

## Measuring Secchi Depth by Viewer Box

- Roger Edwards -

*Among the benefits afforded to members of the North American Lake Management Society is receipt of their quarterly magazine LakeLine. A regular feature of this publication is a list of recently published papers about lakes and lake management. In the latest issue, I found a reference to the use of viewers when taking Secchi depth readings. This subject has long held my interest, so I obtained the paper and would like to summarize its findings in hopes of stimulating some discussion between OLA members.*

The paper was written by two employees of the New York City's Bureau of Water Supply as part of their routine work in monitoring four of the reservoirs that serve NYC. Observations were made between July and September of 1997. Measurements were made at up to six sites in each reservoir between the hours of 0900 and 1300. The viewer was described as a box with a transparent lens at one end and a face seal at the other. The lens was placed in the water and the distance in centimeters between its bottom surface and the mean depth of the disappearance and reappearance of the Secchi disk was recorded as the Secchi depth. Readings were made with and without the viewer, and on both the shady and sunny side of the boat. The mean depth of all 156 readings were, sunny w/o viewer, 3.94 m; sunny w/ viewer, 4.54m; shady w/o viewer, 4.07m; shady w/ viewer, 4.68m. So they found the use of a viewer on the shady side of the boat gives the largest reading. By measuring wave height each time a series of observations were made, they also found that increasing wave height increased the difference between readings made with and without the viewer.

that Secchi readings must be made in a consistent manner to provide consistent data. They concluded the paper with five recommendations.

- 1) Secchi depth is defined as the mean point between disk disappearance and disk reappearance.
- 2) If more than one observer is present, readings should be agreed upon by all present.
- 3) Readings should be taken on the sunny side of the boat.
- 4) A viewer should be used.
- 5) The diameter of the disk should be dependent on the visual clarity of the water.

Their recommendation #3 was justified by saying that taking readings on the shady side of the boat adds an error to the measurement because the water between the disk and the surface is both shaded and unshaded, and the water column must be uniform in order to make the most accurate reading of water clarity. Naked eye readings are often made on the shady side to reduce the effects of surface glare and glitter. But these problems are eliminated by the use of a viewer. Use of a viewer also minimizes the effect of surface turbulence on the Secchi depth, and so recommendation #4 is made in the interest of eliminating confounding factors that decrease the accuracy of Secchi readings. Recommendation #5 receives little discussion in this paper, but gives credence to the use of disks with diameters greater than the 20 cm standard in lakes with high water clarity, such as Crater L.

*The paper reviewed here was written by David Smith and Creighton Hoover. It is titled, "Use of a viewer box in Secchi disk measurements" Published in volume 35, number 5 (October 1999), pages 1183-1189, of the Journal of the American Water Resources Association.*

The real point of the paper was

## Living Lakes: Summer

- John Salinas -

The sun! The sun warms the Earth and our summer season begins. With the onset of summer, our lakes undergo changes, both physically and biologically. The physical and biological conditions of a lake, as well as their interactions affect the summer appearance of a lake. The physical state of the lake includes the depth, bottom and shore material, elevation, wind exposure, and shore erosion or development. A lake's biological conditions include nutrient concentrations, algal population, plant assemblage, zooplankton, and fish population.

Walk down to the shore of your lake and take a look. The lake will immediately appear to be some combination of color and clarity. Limnologists can quantify the clarity of a lake simply by measuring the depth at which an eight-inch white disk can be seen in the water. The Secchi disk clarity measurement is simple and yet one of the most telling measurements concerning the condition of a lake. The greater the Secchi depth, the more clear the lake. Secchi is named after an Italian scientist who first used it in the Mediterranean Sea.

Lake clarity depends on materials that may be dissolved or suspended in the water column. Suspended particles include living and non-living varieties. The living particles in a lake are made up of plankton, both plant and animal. Algae, or phytoplankton, in a lake are similar to the grasses and other plants of a meadow, they make the lake green. With the summer sun, the water of the lake itself, and sufficient nutrients, these simple green plants can reach great numbers and lead to opaque green water, inch-thick surface mats, and perhaps offensive odors. Phytoplankton may be collected and

preserved for later viewing under a microscope.

Zooplankton or animal plankton are more difficult to see in a lake. Zooplankton graze on the phytoplankton just as rabbits and cattle graze on the plants of a meadow. They can be seen easily if one uses a Secchi disk dropping it into a lake a short distance. The zooplankton will make their appearance against this white background. Zooplankton may be collected using zooplankton nets and towing it through the lake water. The strained zooplankton are preserved and viewed through a microscope.

The other suspended particles in a lake involves mud and sand and clay. These particles would settle when the water in a lake becomes calm. However, there are smaller particles that never settle. These particles remain suspended unless a fine filter is used to pass the water through. Interestingly, if water with these suspended particles makes its way to the ocean, salt water and its dissolved salts help the suspended particles coagulate and fall from the water. This process is one of many that help produce river deltas.

Finally, dissolved organic materials are plant and animal materials that are found in the lake and are similar to the color produced in a cup of tea. One can strain the water and filter it, but the dissolved materials remain in the water.

If one were to tour lakes in Oregon the combination of physical and biological conditions would noticeably effect the appearance of each lake. A comparison of lakes would include the most pure lakes found high in our Cascade Mountain

Range and include many others of lower elevation.

Waldo, Crescent, Crater Lakes are in the High Cascade Range and at the top of their watersheds. They each have extremely low nutrient concentrations and low numbers of phytoplankton. The suspended materials are also exceedingly small. Each of these lakes appears blue, as pure water would in the bright sunlight. Lakes of this type have Secchi clarity depths in the twenty-five to forty-four meter zone. The later depth was a World record for lakes and occurred at Crater Lake in 1998.

Lake of the Woods, Applegate, and Miller Lake are a bit lower in elevation, have larger watersheds, and contain limited nutrients. As a lake's watershed increases, the concentration of nutrients increases and the lake becomes more productive. Each of these lakes are examples of lakes that are fairly clear and appear a clear green color. The Secchi clarity depth for lakes of this type is in the eight to fifteen-meter zone.

Diamond Lake is characteristic of many well fertilized lakes. It remains turbid green most of the year. The combination of sun, heat, water, and nutrients allows this type of lake to bloom throughout the summer. Secchi clarity depth measurements of three to six meters is the range, however, one late day in September in 1994 the Secchi disk dipped to twelve meters in this very productive lake. The reason may involve zooplankton. A bloom of the zooplankton reduced the numbers of the smaller green phytoplankton. The larger zooplankton particles allowed light to penetrate deeper into the lake and the Secchi disk to be seen at this deeper depth.

Continued on page 7

# OREGON LAKES ASSOCIATION NEWS

## 2000 Oregon Lakes Association Annual Conference Charting a Course for a Sustainable Future

### Agenda

**Friday, October 6, 2000 - Klamath Yacht Club/2700 Front St**

6 - 9 PM: Registration, no-host mixer & Board Meeting at KYC

**Saturday, October 7, 2000 - OIT, Student Union**

8 - 9 AM: Refreshments, Registration & Networking

9 - 9:15 Welcome - Andy Schaedel and Jim Carpenter

9:15 - 12:00: State of the Lakes

Larry Powers, Moderator: Upper Klamath Lake Panel

Ralph Vaga EPA region 10:lake nutrient criteria

Steve Kirk, OR DEQ:TMDL

Tim Stevenson, ODA: Senate Bill 1010

Stephanie Carpenter: Klamath Watershed Council

12:00 – 1:00 Lunch with Keynote Speaker, Ken Bierly of OWEB (invited)

1:00 - 1:30 National Wildlife Refuges Management:

USF&W/BOR

Agriculture, water & wildlife issues

1:30 – 2:00 Hydro Relicensing: PacifiCorp

Statewide, Klamath & North Umpqua

2:00 - 2:30 Lake Association Updates: Oregon Lakes Association members

2:30 - 2:45 Break

2:45 - 3:15 Center for Lakes & Reservoirs: update, Mark Sytsma

3:15 - 3:45 Lake Report Card

3:45 - 5:00 Wetlands & Restoration Activities in the Klamath

Compact Commissioner Alice Kilham

**Sunday, October 8, 2000**

Restoration Tours & birding, fishing, sailing, canoe, golf

Contact: Jim Carpenter at 541.885.5450 or jim@carpenterdesign.c



Living Lakes Continued

Woahink and Garrison are not clear lakes for a different reason. The coastal lakes end the watershed before its water reaches the ocean. These lakes contain many dissolved organic materials and give the lake a brown tea-water appearance. Lost Creek Lake is a reservoir on the Rogue River and is also colored. It is green most of the year because of algae and as the lake empties in summer, the wind suspends newly exposed beach soils in the water. These appear brown to red in the surface water. This material settles as it gets into the deeper, calmer,

water. Even Crater Lake was once seen to have an area of muddy water on its surface after a terrific rainstorm. A line separated the clear blue surface water from the muddy brown water newly deposited into the lake. Several caldera rim streams ran fast and brown with the great amount of rain falling on its walls. The water and its pumice load colored the lake's shore areas for several days before settling out. Lakes of this color may have Secchi clarity depths of one-half to four meters. Often shallow lakes add to the difficulty of recording a Secchi

depth by producing vast beds of aquatic plants. The disk disappears in these beds of plants or bottom muds and cannot be considered a true Secchi depth measurement.

Summer lake conditions change as the plants and animals that surround us. With few sophisticated instruments, this change can be observed and appreciated. Walk out right now and take a closer look at your lake. What condition is the lake in? Think about what might be done to improve its clarity or color.

---

## Oregon Lakes Association Board of Directors

Andy Schaedel, Past President (1999)  
(503) 229-6121  
schaedel.andrew@deq.state.or.us

Jim Carpenter, President-elect  
(1999), and Stephanie Carpenter  
(541) 885-5450  
Jim@CarpenterDesign.com

Lori Campbell, Treasurer (2000)  
(541) 994-5330  
dlwid@wcn.net

Roger Edwards, Secretary (2001)  
(503) 823-4902  
redwards@water.ci.portland.or.us

Bob Anderson, Director (2001)  
(541) 997-3404  
bojo@winfinity.com

Jim Graybill, Director (2001)  
(541) 997-3404  
jgmudlk@teleport.com

Jake Kann, Director  
(2000)  
(541) 482-1575  
jacobkann@aol.com

John Kelsey, Director  
(2001)  
(541) 759-4692  
efwjohn@presys.com

Michael Parker, Director  
(2000)  
(541) 552-6796  
parker@sou.edu

John Salinas, Director  
(2001)  
(541) 956-7069  
jsalinas@rogue.ci.or.us

Bob Storer, Director  
(2000)  
(503) 618-2634  
storer@ci.gresham.or.us

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 the website at <http://www.ola.pdx.edu/>**

---

## Waldo Featured in Lake and Reservoir Management

One of Oregon's crown jewels was the subject of a series of articles published in the June 2000 issues of *Lake and Reservoir Management*, the journal of the North American Lake Management Society. The series of 15 papers document the unique characteristics and history of Waldo Lake. Assembled by OLA Board member John Salinas, long-time lake advocate Douglas Larson, and Jim Sweet the series of articles will bring national attention to Waldo, truly one of the most unique lakes in the world..

**See You in K Falls on October 6 and 7  
for the OLA Annual Meeting!  
See Details Inside**

Center for Lakes and Reservoirs  
Environmental Sciences and Resources  
Portland State University  
PO Box 751  
Portland, OR 97207-0751

Non-profit Org.  
US Postage  
**PAID**  
Portland, OR  
Permit No. 770