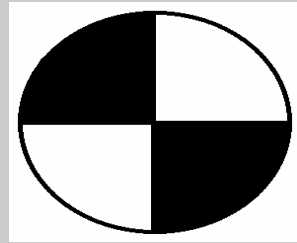


June 2003

# LAKE WISE

A Voice for Quiet Waters



## The Oregon Lakes Association Newsletter

### President's Perspective

**Lori Campbell, Lincoln City:** OLA is currently planning its annual fall meeting. Scheduled for October in Lakeside, OR, this year's meeting will focus on watershed councils and the role they play with lake and reservoir related issues.

Watershed councils have become an integral part in restoration and management activities for rivers and streams. They offer a grass roots approach to addressing watershed issues. These councils are becoming increasingly important in helping to educate and bring awareness to our sensitive waterbodies since they provide a venue for all stakeholders to have input and find a "common ground" from which to work.

There are a number of councils in Oregon that have lakes as part of their respective watersheds. As part of our annual meeting OLA will highlight some examples of how watershed councils can address problems in lakes. Other topics will cover the development of nutrient criteria in lakes and individual lake projects. More information on the meeting will be coming out this summer.

Mark your calendars that July is Lakes Awareness Month. To draw attention to the value and importance of lakes and reservoirs, OLA and the North American Lake Management Society are promoting Lakes Awareness Month. The event will be celebrated throughout the United States

and Canada and coincides with the Great American Secchi Dip-In. The Dip-in, sponsored by NALMS and the U.S. Environmental Protection Agency, organizes citizen volunteers in lake monitoring programs to measure water transparency with a simple device called a Secchi disk. Lakes across America are sampled. There will be several local Lakes Appreciation Month celebrations, including Devils Lake, and Oswego Lake. Contact OLA for more details.

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## Who's Responsible for Managing Oregon's Lakes?

### **Stan Geiger, Portland, Multnomah**

**County:** The politically naive answer to "Who's responsible for managing Oregon's lakes" would be: all of us citizens are. The complicated, but more accurate and helpful, answer would be that a variety of public and private entities are presently responsible. Changes to any lake will take place through these entities or change is unlikely. Take Diamond Lake, for example (see DL article in this issue), the Umpqua National Forest is primarily responsible for its management, with past sharing of responsibility with Oregon Department of Fish and Wildlife for fish management. Oregon Department of Environmental Quality's water quality standards, of course, apply to lakes on federal property.

Ownerships associated with lakes are obvious leads to responsibility for lake management. However, there has emerged, for many good reasons, entities all over the state called Watershed Councils. These groups, under the overall supervision of the Oregon Watershed Enhancement Board, have extended their responsibility for improved water quality over virtually all of western Oregon and a large portion of eastern Oregon. For an overview of the areas of the Watershed Councils go to: <http://www.oweb.state.or.us/groups/index.shtml>.

When OLA was founded in 1988 it was obvious to anyone who had attempted to characterize and remedy lake problems in Oregon that without changes in the watershed management problems such as algae nutrient enrichment, excessive sediment loads, or bacterial contamination would continue. The Governor's Watershed Enhancement Board (GWEB) emerging in the late 90's

transitioned to the Oregon Watershed Enhancement Board (OWEB) and extensive lottery funding of this program led to Salem staff growth and funding of Watershed Coordinators. The latter facilitated the development of stakeholder groups called Watershed Councils.

This administrative focus on watersheds of the state is said to have paid more attention to stream restoration than to restoration of lakes within watershed council boundaries. OLA hopes to entertain a dialogue on this subject at its annual meeting at Ten Mile Lake in the fall. Obviously restoring streams may lead to restored lakes. But it may provide interesting insights into watershed management if occasionally "bottoms up" analyses are performed (characterize the lake and see what it suggests about the watershed) as an alternative to the "top down" stream restoration approach.

There are 33 lakes on ODEQ's 303(d) list (water quality limited water bodies in Oregon) that are within the boundaries of one of Oregon's Watershed Council boundaries. This is why OLA feels that this annual meeting could focus helpfully on Watershed Councils and their responsibility for, and approaches to, lake restoration.

Articles in this issue on DEQ's role in assuring that Oregon has "clean" lakes (Schaedel), Diamond Lake (Collins), the management of grass carp introductions (English), are each illustrative of the complex manner in which lake "management" occurs in our state. It would seem that OLA would have a more compelling "**voice for quiet waters**" if we had a better grasp of the details of management responsibility. To this end, we appreciate the contribution of

## Clean Lakes in Oregon? DEQ's Changing Role as Expediter

**Andy Schaedel, Portland, ODEQ:** A program called the Clean Lakes Program was established in 1972 as part of a major piece of environmental legislation entitled the Clean Water Act. The Oregon Department of Environmental Quality (DEQ) administered this program in Oregon, under direction of the Environmental Protection Agency (EPA). Clean Lakes Program funding occurred from 1976 – 1994 but the program has not been funded over the last decade.

This article is intended to give a brief review on what happened in Oregon under this program and what is currently happening since the loss of funding to address lake water quality. This article only focuses on programs that are managed by the Department of Environmental Quality and does not discuss the status of work done independently through federal agencies, other state agencies, universities, etc.

**SOME BACKGROUND** The Clean Lakes Program was established in 1972, under section 314 of the Federal Water Pollution Control Act, to provide financial and technical assistance to States in restoring publicly-owned lakes. The program was set up as a multiple-part program:

• **Classifications surveys and Lake Water Quality Assessments:** where states were to identify and rate their lakes according to trophic conditions in order to be eligible for further funding. The *Atlas of Oregon Lakes* (OSU Press, 1985) was funded using this grant and further statewide assessments (including the Citizen Lake Watch) were done in the early 1990s under this funding;

• **Phase I - Diagnostic/Feasibility Studies:** Funds were awarded for studies which would analyze a lake's condition, determine the causes of eutrophication and procedures necessary to protect and restore its quality;

• **Phase II – Restoration and Protection Implementation:** Funds were awarded to

implement procedures recommended in the Phase I study for restoring and protecting the lake. Most of the federal funding went to this category;

• **Phase III – Post Restoration Monitoring:** Limited funding was available to monitoring and document the implementation

The Clean Lakes Program, under the direction of EPA, funded approximately \$145 million in grant activities since 1976 to address lake problems. There have been no general appropriations for the program since 1994. The program provided a widely varying amount of funding to States, ranging from \$2.7 - \$20 million per year but was typically in the \$4 - \$9 million range. Oregon received approximately \$2 million of funding. The Oregon Department of Environmental Quality (DEQ) administered the program and most of the work was done under contract to private sector limnologists. A list of the Phase 1 and 2 projects that were funded under this program is in Table 1 (see Table in article posted on OLA web site).

The Clean Lakes Program was successful at getting a better understanding of lake water quality problems and lake restoration techniques, both nationally and within the state. As an early program, it understood that both the lake and its watershed needed to be understood in order to address problems that occurred in the lake. It was, however, somewhat limited in scope due to funding and

*(Continued on page 4)*

**THE SECCHI DIP-IN  
JUNE 28—JULY 13, 2003  
GET YOUR SECCHI DISK, MAKE  
A READING DURING DIP-IN DAYS  
AND SEND IT IN TO OLA (SEE  
ADDRESS ON BACK). SEE WEB  
SITE FOR INFO: [http://  
dipin.kent.edu/](http://dipin.kent.edu/)**

## Clean Lakes in Oregon? (cont.)

*(Continued from page 3)*

programmatic limitations. For example, Oregon was trying to shift the focus of the program to address regional lake problems (rather than one lake at a time) and to address protection of high quality lakes (rather than waiting for a water quality limiting condition) with limited success when funding of the program was discontinued. Work on Lake Notasha was an attempt to better understand and develop measures to protect pristine lakes and work on a regional lake study in the North Coast area had been proposed at the time of the budget cut.

DEQ had a staff person who, as part of their job duties, oversaw administration of the Clean Lakes program and was available to provide technical assistance to lake associations. This position was phased out in 1997 as a result of state budget shortfalls and lack of Clean Lake funding to administer.

**So What is Happening Now?** While it would be easy to say that all is lost without a dedicated Clean Lake program, I believe that it is fair to say that more is now going on to address lake water quality. Lake work has been better integrated with other on-going or recently developed programs. While there is more that is needed to have a strong lake program within Oregon, which will be discussed shortly, the following will describe some major areas where lake water quality is being addressed since the mid-1990's.

If one goes to EPA's Clean Lakes website (<http://www.epa.gov/owow/lakes/index.html>), you will find a number of guidance and other articles that discuss using other programs authorized under

the Clean Water Act and other funding to support lake studies and lake restoration. Some of the key programs that are being used to address lake water quality include:

- Total Maximum Daily Load (TMDL) Program;
- 319 Nonpoint Source Grant Program;
- 401 Hydroelectric Recertification Program;
- Safe Drinking Water Program;

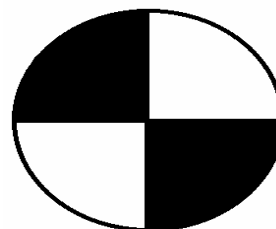
### **Total Maximum Daily Load (TMDL) Program:**

Section 303(d) of the Clean Water Act has received increased attention since the late 1980's and throughout the 1990's, partially as a result of shifting program emphasis, guidance and lawsuits. Basically, this program requires that:

- States identify waters (lakes, rivers, and estuaries) that do not meet water quality standards – this is often called the 303(d) list;
- States rank these waters and develop total maximum daily loads for pollutants that cause the water quality standard violation. A Water Quality Management Plan is to be submitted to give assurance that pollutant loads will be addressed;
- EPA must approve or disapprove the TMDL, if they disapprove, EPA must establish the TMDL.

What does all of this mean for lakes in Oregon? It is a way to identify lakes that experience water quality problems and sets a timeframe to address them. A summary of lakes that have been addressed or that are on the current 303(d) list is given in Tables 2 and 3 (see OLA web site posting for Tables).

*(Continued on page 5)*



**Secchi  
Dip-In,  
June 28-  
July 13;  
JUST DO  
IT!!**

## Clean Lakes in Oregon? (cont.)

(Continued from page 4)

**303(d) Listing Process:** One of the keys to addressing lake water quality problems is to get it on to the 303(d) list. This list is developed every two years (due to EPA by April of even numbered years). DEQ puts out a call for new information, typically in the Spring prior to when the list is due, but will accept data anytime (although it might not be used in the next listing if there is not sufficient time to review it). There are many more lakes in Oregon which have suspected problems (than those listed on Table 3) but the agency does not have sufficient or suitable data for listing them. Getting data remains an on-going challenge for lakes, especially in the face of declining budgets; there are limited on-going surveys of lakes. For more information on the 303(d) list, please contact Marilyn Fonseca by email at [fonseca.marilyn@deq.state.or.us](mailto:fonseca.marilyn@deq.state.or.us) or by phone at (503) 229-6804 or visit the DEQ website: (<http://www.deq.state.or.us/wq/303dlist/303dpage.htm>).

**TMDL Development** Oregon developed an aggressive 10-year schedule for completing a first round of TMDLs for waters listed on the 1998 303(d) list. TMDLs had been done prior to this time for Clear Lake, Lake Oswego, and Garrison Lake. Upper Klamath Lake and Agency Lake TMDLs were recently completed with field and/or TMDL development work underway on Tenmile Lake (including North Tenmile Lake); Diamond Lake; Cullaby, Smith and Sunset Lakes on the North Coast; and lakes listed in the Willamette (Dorena, Cottage Grove, Fern Ridge, Blue, Smith/Bybee).

The focus of the Department's efforts over the next several years will be to complete the TMDLs along with management plans (or develop just a management plan for lakes where a TMDL may not be

appropriate) for listed lakes in the North Coast, South Coast, Willamette, Umpqua, Rogue, Klamath and Deschutes Basins. Work on lakes in the Mid Coast and Owyhee Basins will be done following this work but may extend out after 2007 pending staff resources. Recent budget cuts have affected the rate at which this work is being done and the original scheduled target dates have slipped somewhat.

A good way to be involved, either in getting a lake considered for listing or involved in a TMDL is to contact the appropriate DEQ Water Quality Basin Coordinator. A list can be found on the DEQ website at <http://www.deq.state.or.us/wq/TMDLs/WQBasinCoord.pdf>

**319 Grant Program** EPA has identified this grant program – which was established in 1987, among others, as a potential source of funding for studies or for implementation of practices to address nonpoint sources of pollution. Nonpoint sources of pollution have been identified as the major contributor of pollution to most lakes. The Department has supported the Citizen Lake Watch, portions of studies on Klamath, Diamond, Tenmile and Blue Lakes and implementation in the Tenmile Lake Watershed with 319 Grant Funds.

Calls for 319 Grant Proposals occur on an annual basis. If you have interest in applying for a grant, more detail of grants available through DEQ can be found on its website: <http://www.deq.state.or.us/wq/wqgrant/wqgrant.htm>. It is highly recommended that you work with the appropriate Water Quality Basin Coordinator earlier in the process.

**401 Hydroelectric Certification** Section 401 of the federal Clean Water Act authorizes state water quality programs to certify that federal actions involving the award of licenses or permits will not violate applicable state water quality requirements. In the case of hydroelectric projects, the Federal Energy Regulatory Commission (FERC) administers

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## Clean Lakes in Oregon? (cont.)

*(Continued from page 5)*

the licensing program, and the DEQ certifies the project's application for licensing or relicensing. Quite a few projects in Oregon have recently been relicensed or are coming up for relicensing including projects on the Deschutes, North Umpqua, Klamath, Snake, Sandy and Clackamas Rivers. This is a major opportunity to get data on these reservoir systems and to address water quality problems that are attributable to the hydroelectric project.

**Source Water Assessments** The 1996 Amendments to the federal Safe Drinking Water Act (SDWA) provided new resources to DEQ and Oregon Health Division to provide drinking water protection assistance to public water systems and communities. While developing a management plan to protect a public water system will remain voluntary in Oregon, the 1996 SDWA Amendments mandated that state agencies conduct "source water assessments" for every public water system. This means that DEQ and OHD must delineate the groundwater and surface water sources which supply public water systems, inventory each of those areas to determine potential sources of contamination, and determine the most susceptible areas at risk for contamination. Drinking Water Protection plans are encouraged and can be a great way to address lake water quality concerns which, in turn, can affect water supplies that are drawn from lakes. For more information, see the DEQ website: <http://www.deq.state.or.us/wq/dwp/dwphome.htm> or contact Sheree Stewart, Drinking Water Protection Program Coordinator, Oregon DEQ, 503-229-5413.

**MORE TO DO** Hopefully, this short summary gives you the impression that work to address water quality concerns in

lakes has not stopped with the loss of the Clean Lake Program funding. However, I don't want to leave you with the impression that everything needed for good statewide management program is getting done. There are a number of areas that need further work. Two areas that readily come to mind as needing further work include the development of a program to monitor long-term status and trends in lake water quality and protection of high quality waters.

There has not been a good monitoring program to determine trends in lakes in Oregon. The Department had worked with the Center for Lakes and Reservoirs at Portland State University to develop a Citizen Lake Watch Program. This program was designed to have volunteers do periodic observations on a lake (e.g. secchi depth, weed distribution, invasive species watch, note watershed activity and limited chemical measurements) and was periodically supplemented with more detailed study by scientists to help identify trends and problems. This program has not continued in recent years due to lack of on-going funding. It was set up with Clean Lakes Funds, continued on 319 Grant Funds and shifted to State funding but it was inadequate to keep the trend monitoring going and to do all that was required out of the PSU CLR.

The Clean Water Act and Oregon water quality standards (340-41-026) recognize the need to give higher protection to waters that constitute an outstanding state or national resource. These waters, such as waters designated as extraordinary resource waters or critical habitat areas, are to be classified as "Outstanding Resource Waters." If so designated by the Environmental Quality Commission, a plan is to be put together to protect the water quality parameters that affect the ecological integrity of critical habitat or special water quality values that are vital to the unique character of those water bodies. Crater Lake and Waldo Lake have been suggested as two such waters.

## Is It Carping to Challenge ODFW's Grass Carp Program?

### **J. Collin English, Senior, PSU, Portland:**

At the request of a group of Bandon area landowners, the Oregon Fish and Wildlife Commission (OFWC) will review a proposal seeking exceptions to the current grass carp stocking regulations and allowing the landowners to stock Laurel Lake with the exotic fish.

The OFWC will meet July 11<sup>th</sup> and consider input from the land owners, other people interested in lakes, and the general public.

The proposal to introduce grass carp into Laurel Lake has sparked a controversy over the use of the fish, with many referring to what has been learned from Oregon's first and on-going experiment with grass carp in a natural lake— Devils Lake in Lincoln City.

The two lakes have much in common. Like Laurel Lake, and other coastal lakes in Oregon, Devils Lake is a fertile host for many native aquatic plants as well as invasive "weeds" like Eurasian water-millfoil and Brazilian elodea. Local development and the pressures of urbanization put new demands on the lakes in the forms of increased nutrient loading and demand for recreational uses. To combat the lakes' abundant vegetation from competing with recreational uses of the lake like boating and swimming, local residents asked the ODFW to allow them to import grass carp.

In 1986, 1987 and 1993, 32,000 triploid grass carp were imported from Arkansas and placed in Devils Lake. Genetically manipulated to induce a "low probability of reproduction" the triploid variety was planted with the understanding that they would graze down the vegetation and die off after ten years or so – their suggested life span. But there were some problems on the way to the die-off.

In keeping with their global reputation as aggressive "generalist herbivores" the fish devoured the lake's vegetation, starting with the native varieties. But as the vegetation disappeared, new problems arose. In 1994 – 95 a major algae bloom appeared – an indication of poor water quality. Since then, algae blooms have become common in the lake and seven toxic varieties of cyanobacteria have been found in lake water samples. This isn't the only change to the lake's ecology.

Devils lake vertebrate habitats have also changed. The warm water fishery's once abundant populations of bass, perch, catfish and crappie have dropped in numbers. And compared with historical records, a reduction in the numbers of water fowl that use the lake has also been noted. On top of it all, the carp are living almost twice as long as expected, grazing away quietly in the opaque green waters. The widespread die off expected to come in the mid and late nineties has yet to arrive 17 years later.

To combat the eutrophication, the Devils Lake Water improvement district is currently working on finding ways of improving the lake's conditions.

Devils Lake demonstrates what grass carp can do best—eradicate all vegetation in a lake. The resultant algae blooms plaguing Devils Lake, and the degradation of habitat, also demonstrate the drawbacks to grass carp use for aquatic plant management.

Much has been learned about how to manage vegetation in lakes over the past 17 years, and additional "experiments" with grass carp for weed control in Oregon lakes are probably not

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***Much has been learned about how to manage vegetation in lakes over the past 17 years, and additional "experiments" with grass carp for weed control in Oregon lakes are probably not needed.***

*(Continued on page 8)*

## Is It Carping to Challenge ? (Cont.)

(Continued from page 7)

needed. Efforts to develop integrated management plans may result in outcomes that are less surprising than were found with Devils Lake. Integrated management plans have been developed, or are in development, for Lake Lytle, Smith Lake, Cullaby Lake, Sunset Lake, and Blue Lake. Laurel Lake offers another opportunity to explore an integrated vegetation management approach that balances the interests of the landowners with the long term health of the complex systems that make up a lake's ecology.

None of this is to say that the carp don't have a place in Oregon. Grass carp are the best method for achieving total eradication of vegetation; however, they should only be used if they can be contained and if the potential water quality impacts can be tolerated.

As it stands the ODFW has handed out 30 grass carp permits guided by the existing rules of the 1998 Oregon Wildlife Integrity Act. Under these guidelines, grass carp have been planted to control vegetation, typically, in man-made water ways such as irrigation ditches and man-made lakes where they have done their job with alacrity.

The July 11 meeting date to consider grass carp introduction to Laurel Lake is not a firm date. To keep in touch with this process contact Tom Stahl at ODFW (Fish Passage Coordinator, Acting Thomas.Stahl@state.or.us). For additional information link to <http://www.dnr.cornell.edu/ext/fish/Pond/>



## JULY 2003 LAKE AWARENESS MONTH: OLA'S LETTER TO GOVERNOR KULONGOSKI

### Dear Governor Kulongoski:

With this letter, the Oregon Lakes Association (OLA) and the North American Lake Management Society (NALMS) would like to ask for your assistance in proclaiming, "**July 2003, and every July as Lakes Awareness Month**". This event is intended to be celebrated throughout the United States and Canada.

The celebration coincides with the **Great American Secchi Dip-In**. The Dip-In, sponsored by NALMS and the U.S. Environmental Protection Agency, is now in its 10<sup>th</sup> year. This event organizes citizen volunteers in existing volunteer lake monitoring programs to measure water transparency with a simple device called a Secchi disk. Last year, nearly 2,800 lakes across America were sampled, including many volunteers throughout Oregon.

There will be several local lake celebrations during Lakes Awareness Month: Devils Lake near Lincoln City, Lake Oswego and at several other lakes. OLA would like to personally invite the governor or a representative of his to one of our local events celebrating Lakes Awareness Month.

### Ways in which an Oregonian can celebrate Lakes Awareness Month include:

- ✓ Organize a shoreline clean up to collect trash and other wastes;
- ✓ Learn more about how to control exotic species like Eurasian Water-milfoil and zebra mussels (contact the Center for Lakes and Reservoirs at Portland State University (503-725-3833); become a volunteer in their program;
- ✓ Become a Lake Steward. Learn about lakes and their watersheds and how to care for and protect them by becoming involved in lake and watershed associations;
- ✓ Relax, go out and enjoy a lake and its watershed.

Come to the Oregon Lakes Association annual Lake Conference in Lakeside in October 2003 in conjunction with the Center for Lakes and Reservoirs.

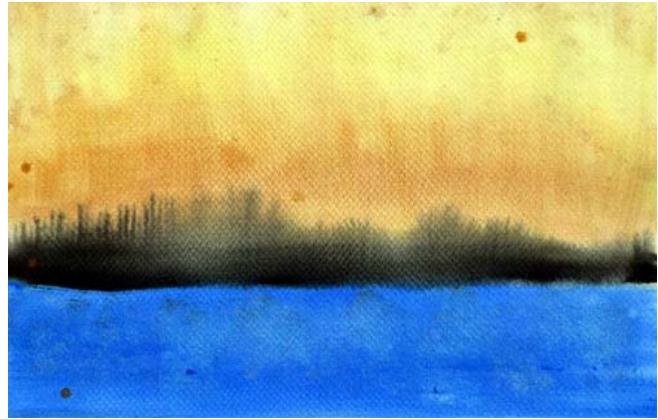


## Neuston News Bits

May 22, 2003 **Oregonian**: On the western edge of Alkali Lake at a 10.3 acre site, there are remnants of 25,000 55-gallon barrels once filled with nearly 1.5 millions gallons of hazardous waste, mostly herbicide residue. In 1976 the barrels were crushed and buried in shallow trenches under mounds of soil and gravel. Researchers have found that water contaminated by those wastes has spread 2,000 feet west. Alkali Lake is 60 miles north of Lakeview and 35 miles from Christmas Valley off Oregon 395.

June 8, 2003, **Oregonian** (C9): Fern Ridge Lake west of Eugene may be kept dry, after annual Labor Day draw down, until 2006. The U. S. Army Corps of Engineers, need to repair the 62-year-old dam's failing drainage system. Refilling the lake must await repairs, and repairs depend on the Corps securing \$6.8 million from Congress.

**PSU CLR, Portland:** PSU Center for Lakes and Reservoirs, in collaboration with the University of California, Davis and the Multnomah County Drainage District will offer a two-day short course on aquatic plant management on September 11 and 12, 2003. Instructors will include nationally recognized experts on the biology and management of aquatic plants. Continuing education credit for pesticide applicators will be available. Further information can be obtained by contacting Mark



NALMS 2003 Lake Appreciation Month Poster Contest Winner, Adam Cobb (Middle School, Eagle River, AK) (it's better in color, naturally; see NALMS web site for others)

## NALMS News

The Spring 2003 issue of **LakeLine** focuses on shallow lakes. The featured articles are:

- Cinderella goes to the ball: A story of shallow lakes;
- Internal phosphorus loading & the resilience of Danish lakes;
- Big Muskego Story: Rehabilitating a large shallow lake;

The Summer issue theme of **LakeLine** is the economic value of lakes.

The March 2003 issue (Vol. 19, No. 1) of **Lake and Reservoir Management** focuses attention

Clip art in this issue of *Lake Wise* was obtained from the Microsoft Clip Art Web Gallery.

|         |  |
|---------|--|
| HOTLINE | OREGON<br>INVASIVE SPECIES   |
|         | 1-866-INVADER  |
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## Diamond Lake EIS On the Way / Chubs Not An Attractive Predator Menu Item

**Meghan Collins, ODFW, Diamond Lake, Douglas County:** The Umpqua National Forest, along with state, federal, and local agency partners, is moving ahead with plans to restore Diamond Lake. On April 25, 2003 the agency formally announced its plans to prepare an Environmental Impact Statement (EIS) in a Notice of Intent published in the Federal Register.

Diamond Lake, once a popular trout fishery destination, is now a water quality nightmare and a trout fishing disappointment. Tui chub, a prolific minnow species, were illegally introduced in the lake in the early 1990s, and have since affected both water quality and the recreational fishery.

The Notice of Intent document details the Forest Service's proposed actions to improve the water quality and recreational fishery at Diamond Lake. Eradication or control of the existing tui chub population, numbering in the millions, is considered essential to restoring the lake.

Proposed actions include: canal reconstruction, lake draw down, mechanical fish removal and utilization, a rotenone treatment, fish carcass removal and utilization, water management during lake refilling, monitoring, fish restocking, educational activities, and contingency measures for controlling tui chub if they are reintroduced to Diamond Lake in the future. Post-treatment, Diamond Lake would be restocked with fish using an ecologically appropriate stocking strategy. The Notice of Intent document is available at <http://a257.g.akamaitech.net/7/257/2422/14mar20010800/edocket.access.gpo.gov/2003/pdf/03-10241.pdf>

According to Sherri Chambers, the Forest Service's Interdisciplinary Team (ID Team) Leader and wildlife biologist, rotenone is

proposed for several reasons. "We proposed this option because we believe it's viable for meeting the dual project objectives of improved water quality and an improved recreational fishery," said Chambers. "We also knew it would be controversial, and we wanted to bring it forward to allow the public to comment on it at the earliest possible time. This way, we can develop alternatives that might not include the use of rotenone."

Although the same issues exist now as they did when the Oregon Department of Fish and Wildlife was working on a Draft EIS several years ago, the water quality has continued to deteriorate, sparking a recommitment to fix the lake. "We believe it would be irresponsible for us to do nothing," says Jim Caplan, Umpqua National Forest supervisor.

Diamond Lake is now included in the Oregon Department of Environmental Quality's 303(d) list of water quality limited water bodies for pH and algae. The lake was closed for a period of time each of the last two summers because severe blooms of the blue-green "algae" *Anabaena flos-aquae* were toxic to humans and pets.

Changes in lake ecology associated with the overpopulation of tui chub are believed

*(Continued on page 11)*



Ben Hart (ODFW) checks for fish in the juvenile fish trap at Lake Creek (rotary screw fish trap at the Lake Creek outlet from Diamond Lake).

## Diamond Lake EIS On the Way (cont.)

*(Continued from page 10)*

to be the primary factors influencing the development of these toxic algae blooms. According to a report by Joe Eilers of JC Headwaters, Inc., *Anabaena* was present in high densities before the lake was treated with rotenone in 1954 to extirpate tui chub. After treatment, densities were low and have greatly increased again since the reintroduction of chub in the early 1990s.

While the ID Team is researching alternatives to using rotenone, studies of the lake's ecology, water quality, and fisheries continue.

Planning is underway for a groundwater study in which 18 monitoring wells will be drilled around the lake in mid-June to investigate where and at what rate groundwater enters and exits Diamond Lake. Water quality sampling is ongoing, and a benthic invertebrate study to understand the status of the lake's food chain, both in the past and present, is well underway. Later in the year, an aquatic macrophyte study of the lake's plants and how they function will be conducted.

Experimental fish stocking continues again for the second year. ODFW is stocking Diamond Lake with 60,000 legal-sized hatchery spring chinook and 24,000 eight-inch Eagle Lake rainbow trout that prey on small-sized fish. In addition, ODFW will stock 15,000 two-pound trout, 40,000 fingerling spring chinook and 50,000 fingerling rainbow trout. ODFW is using this stocking method to determine whether the spring chinook and the larger rainbows prey on tui chub.

Preliminary results of the 2002 experimental stocking are in with disappointing results. ODFW fisheries biologist and Watershed District Manager

Dave Loomis said that of 157 spring chinook samples taken, only six had fish in their stomachs and two of those were confirmed to be chub. Of the 545 rainbow trout sampled, 64 were eating chub and two were eating either rainbow trout or chinook fingerlings. About 90 percent of these trout were greater than 17 inches, meaning they are holdovers from at least last year.

Literature shows about a 28 percent success rate for controlling "noxious" fish via predacious stocking. "We're not very optimistic that stocking with predators will solve our problem at Diamond Lake," Chambers said.

ODFW biologists have also installed a rotary screw trap at the Lake Creek outlet (see accompanying photo). "We're trying to get an estimate of what types of fish and how many are leaving Diamond Lake and heading downstream," Loomis said.

According to Loomis, this trap is important for data collection because it gives a good estimate of how many fish stay in the lake to potentially be caught by anglers or prey on chub. If large numbers of fish immediately migrate out, they are not contributing to the fishery and ODFW would rethink the experimental stocking program

The Diamond Lake Restoration ID Team is also trying a new approach to researching alternatives. On July 30, the Team is hosting a technical working meeting bringing in outside experts who help craft and refine management alternatives that may include the use of Antimycin A, mechanical harvest of unwanted fish, and lake drainage. The public is invited to attend this meeting held in Roseburg. Details will be posted to the Umpqua National Forest's Web site at [http://www.fs.fed.us/r6/umpqua/rec/w\\_quality/w\\_quality.html](http://www.fs.fed.us/r6/umpqua/rec/w_quality/w_quality.html).

Although the formal public comment period for the NOI closed May 30, Chambers said, "People can send comments any time, and more formal public involvement opportunities will happen when the Draft EIS is released next February."

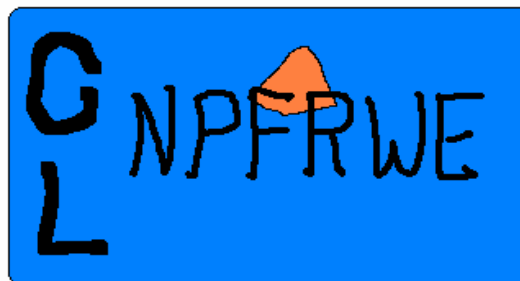
## Local Funds For US? A Popular Plate

**Roger Edwards, Multnomah County:** Since they were first made available late in August last year, the Crater Lake license plate has become a routine sight on Oregon's roads. Sales figures listed in the Oregonian report 35,000 sets have been sold in their first eight months. At \$58 per set, the plates are a success story for the National Park Foundation, which benefits from their sale.

The idea of a Crater Lake license came from Klamath County Commissioner Steve West and Crater Lake National Park Superintendent Chuck Lund. The plan was introduced in the State legislature as SB 821 by Senator Atkinson and was voted into law in the 2001 session. The legislation provided up to \$150,000 of general fund money to design and produce the plates. For each plate sold, \$10 was placed in a fund to repay this loan until early in 2003, when the debt was retired. The sum of \$10 per plate until the plate is discontinued is now directed to the NPF for use on Crater Lake projects. The legislation will automatically be repealed on June 30, 2004. A spokesman for the Department of Motor Vehicles said the plates would continue to be sold beyond that date. The law also states the plates may be transferred from vehicle to vehicle as long as they remain in good repair.

The NPF is an organization chartered by Congress "to strengthen the enduring connection between the American people and their national parks". They have set up the Crater Lake National Park Trust to redefine Crater Lake National Park as a community supported resource and to provide on-going private philanthropy to enhance the value of Crater Lake for present and future generations. The goals proposed by the Trust include the establishment of a new science and learning center, the construction of a new visitors center, on-site graduate research programs, historic preservation projects, and environmental innovations such as renewable

energy power generation. The Trust is chaired by Peter Stott (Crown Pacific), with members Mary Arnstad (Arnstad & Associates), Brian Booth (Tonkon Torp, LLP), Timothy Boyle (Columbia Sportswear), Martha Anne Dow (OIT), Cynthia Jackson Ford (IRC Aluminum), Kermit Houser (Klamath First Federal), Roderick Wendt (Jeld Wen Holding Inc), and Elizabeth Zinser



## BECOME AN OLA MEMBER NOW

Members of the Oregon Lakes Association have just one thing in common; they have a great interest in lakes. The focus of this interest is immaterial. More important is the opportunity to share knowledge, ideas, and experiences in a group of people with diverse backgrounds. Our members are lakeshore homeowners, university students and professors, product salesmen, government regulators, entrepreneurs, fishers and boaters, and consulting scientists. They write articles for our newsletter, testify at public hearings, and look forward to getting their hands wet. These are people you can meet at our conferences or contact through our website. Please join us by sending in your 2003 membership dues today. We look forward to meeting you.

## Forms in the Fog: Coming Attractions

Constraints on chemical control of lake problems

Oregon Lake Condition Index Matures

Lakes comprised by Oregon's Watershed

Councils: Are they being ignored for

streams or better understood?

Why Is It So Difficult to Protect the Highest

Quality Oregon Lakes?

Oregon's Lakes through the Eyes of

Fishermen

What are the effects on lake habitats of the

ODFW fish stocking program?

Summary Review of Research Underway on

Oregon's Lakes

Plans to revise the Atlas of Oregon Lakes

Prineville Reservoir and the Crook County

Watershed Council

Index of Lake Wise Feature Articles: 1997-

2002

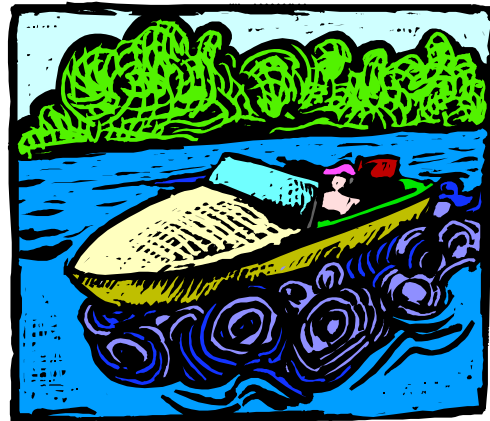
IDEAS FOR FUTURE FEATURES

WELCOMED

BE A CORRESPONDENT FOR *LAKE WISE*

HELP WITH RESEARCH ON WATERSHED

COUNCILS AND LAKES




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**"Baikal is one of a dozen present-day lakes that have persisted for at least 1 million years; most lakes clock out at about 18,000 years."**

E. Goldman [see Neuston Notes]

## Private Sector Lake Consultants, Analysts, Product Providers

### **Stan Geiger, Portland, Multnomah County:**

The history of limnology in Oregon has yet to be written, although *A Compilation of the Named Lakes in Oregon With Bibliography* (Larson and Donaldson, 1971) and the *Atlas of Oregon Lakes* (Johnson, Petersen, Lycan, Sweet, Neuhaus and Schaedel, 1985) go a long way towards providing an overview of those who have contributed to a scientific understanding of Oregon's lakes. Many of the scientists in the table on the following page have made unique and valuable contributions to lake research in Oregon.

This issue includes the first installment of information about scientists in Oregon who are available for consultation about the character and management of lakes. A few lake scientists work in our state's universities and colleges. Some of the scientists listed in the table on the following page also teach in these academic settings. More information about these academic scientists and their contributions will be presented in future *Lake Wise* articles. We hope this overview of the private sector assistance will be of use to you.

## Private Sector Lake Consultants, Analysts, Product Providers (Cont)

| <b>Principal</b> | <b>Company Name</b>                    | <b>Location</b>  | <b>Expertise</b>   | <b>Contact Information</b>                                     |
|------------------|--|--|--|--|
| Joseph M. Eilers | MaxDepth Aquatics, Inc.                | 1972 NE 3rd St., #10, Bend,<br>OR 97701                                | Lake diagnostic assessments,<br>water quality research; lake<br>and watershed assessment   | 541-385-6959;<br>j_eilers@maxdepthaq.com                       |
| Stan Geiger      | Aquatic Scientific Resources           | 12425 SW. 57th Avenue,<br>Portland, OR 97219-7117                      | Lake diagnostic assessments;<br>wetland location and function<br>analyses; algae sampling,<br>taxonomy, sample analysis and<br>data interpretation | (503) 244-9966; s-<br>dgeiger@attbi.com                        |
| Jacob Kann       | Aquatic Ecosystem Sciences LLC         | 232 Nutley St.<br>Ashland, OR 97520                                    | Water quality research; lake<br>and watershed assessment   | (541) 482-1575;<br>jacobkann@aol.com                           |
| Brad Kerr        | Spring Creek Aquatic Concepts          | P.O. Box 2431, Tualatin,<br>OR 97062                                   | Lake/stream planning, design,<br>construction supervision; fish<br>management  | (503)313-6355;<br>Brad@aquahabitat.com;www.aqu<br>ahabitat.com |
| Doug Larson      | D W L & Associates                     | 10325 N.W. Flotoma Drive<br>Portland, OR 97229                         | Integrated limnological<br>characterization; water quality<br>research and management;<br>lake assessment design                                   | (503) 292-3168;<br>franksooth@netzero.net                      |
| Richard Raymond  | E & S Environmental Chemistry,<br>Inc. | P. O. Box 690, 2161 N.W.<br>Fillmore Ave., Corvallis, OR<br>97339-0609 | Water quality research; lake<br>and watershed assessment;<br>GIS services  | (541) 758-<br>4413;www.esenvironmental.com                     |
| John Salinas     | The Cascade Research Group             | P. O. Box 5208, Grants<br>Pass, 97527                                  | Water quality research;<br>monitoring  | (541) 479-7351;<br>Jsalinas@rogue.cc.or.us                     |
| Bob Storer       | Adolfson Associates, Inc.              | 333 SW. 5th Avenue, Suite<br>600, Portland, OR 97201-<br>1743          | Water quality investigations;<br>lake assessments  | bstorer@adolfson.com   |
| Jim Sweet        | Aquatic Analysts                       | 29882 SW. Camelot Street<br>Wilsonville, OR 97070                      | Water chemistry, algae<br>taxonomy, sample analysis and<br>interpretation  | (503) 570-9007;<br>JWSWEET@aol.com                             |
| Allan H. Vogel   | ZP's Taxonomic Services                | P.O. Box 18646<br>Salem, OR 97305                                      | Zooplankton taxonomy, sample<br>analysis/interpretation  | (503) 390-4684;<br>lvogel@teleport.com                         |
| Dennis Williams  | Paradise Distributors NW               | 3761 Barrett Drive, Hood<br>River, OR 97031                            | Lake aeration design; aeration<br>equipment  | denwil@gorge.net   |

## Lake Wise Feature: E & S Environmental Chemistry, Corvallis, Oregon

### **Richard Raymond, Ph.D., E & S Environmental Chemistry, Corvallis, OR:**

E&S Environmental Chemistry, Inc., was founded in 1988. We are an applied research company located in Corvallis, Oregon. We specialize in chemical, biological, and hydrological investigations in limnology, water quality, forest health, air quality, and land use. Our goal is to provide our clients with the highest quality environmental research and assessment services for a reasonable cost. We also provide on-the-ground services for stream and watershed restoration, including wetland and riparian enhancement and restoration. As part of our restoration work we grow and sell native grass seed and straw.

*LW: Something about you and your experience and credentials:*

Over the past almost 30 years I have had the good fortune to work on a number of high profile and very interesting lake projects\*, as well as a large number of smaller, but also quite interesting, projects on rivers and streams. Two things have impressed me over the years; first how much fun it is to go out into the field and see the principles taught in limnology classes actually functioning in the environment, and second, how often I need to readjust my assumptions, based on those principles, to align with what I actually find in the field. One of

the real pleasures of this work is the opportunity to discover what makes a system like a lake or watershed behave the way it does, and then be able to translate that information to the people charged with managing or protecting that resource.

Vancouver Lake Restoration (big dredging project)  
 Devils Lake Restoration (grass carp)  
 Clear Lake (Florence) (nutrient study)  
 Lacamas Lake Restoration Evaluation (Effectiveness of a restoration project)  
 Lake Billy Chinook and Lake Simtustus (Hydropower dam relicensing)  
 Lemolo Lake (Hydropower dam relicensing)

*LW: A recent project involving lakes that is of interest to you and for what reasons:*

Right now I am heavily involved in conducting the water quality work for the relicensing of the Klamath River Hydroelectric Project. This project lies at the intersection of so many interest groups – agriculture, fisheries, environmental preservation, electric power, cultural preservation, Native American treaty rights – that the complexity is nearly overwhelming. It is a real challenge to understand the factors influencing water quality, and then present that knowledge to the various interest groups so that they can all work toward a cooperative solution.



**E&S**  
Environmental  
Chemistry, Inc.

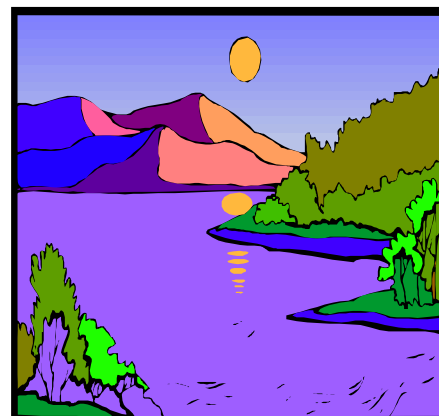
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- Watershed Assessments
- Water Quality Research
- Watershed Restoration
- GIS/Spatial Analysis
- Hydropower Relicensing

**Email:** [Richard.Raymond@ESEnvironmental.com](mailto:Richard.Raymond@ESEnvironmental.com)  
**Website:** [www.ESEnvironmental.com](http://www.ESEnvironmental.com)

**P.O. Box 609**  
Corvallis, OR 97339

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## The Oregon Lakes Association Newsletter

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Portland, OR 97207-0345

Email: [membership@oregonlakes.org](mailto:membership@oregonlakes.org)  
Email: [events@oregonlakes.org](mailto:events@oregonlakes.org)

**OLA Mission:** The Oregon Lakes Association, a nonprofit organization founded in 1988, promotes understanding, protection, and thoughtful management of lake and watershed ecosystems in Oregon. For additional information on OLA, to get involved, or to obtain a membership application write to: OLA, PO Box 345, Portland, OR 97207-0345



We are also on the web! [www.oregonlakes.org](http://www.oregonlakes.org)

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## Lake Wise Editorial Policy and Notes on Authors

Opinions of those who contributed to articles in this Newsletter are judged by the Oregon Lakes Association Board Editorial Committee (S. Geiger-Chair, Mark Sytsma, and R. Edwards) to be typical of the diversity of opinions of those who have a scientific, economic and political interest in the lakes of Oregon. Comments praising or disparaging articles in this Newsletter are welcome and representative comments will be considered for presentation in the next issue of *Lake Wise*.

**Lori Campbell** (*President's Perspective*). Lori is Manager of the Devils Lake Water Improvement District, Lincoln City, Oregon. She is beginning her stint as President of OLA.

**Andy Schaedel** (*Clean Lakes in Oregon: DEQ's Changing Role as Expediter*). Andy has been an OLA member, and occasional President, since OLA's formation in 1988. He is Manager of the Water Quality Technical Assistance Section, NW Region.

**Meghan Collins** (*Diamond Lake EIS*). Meghan is an Outreach Specialist for the Oregon Department of Fish and Wildlife, Southwest Region, stationed in Roseburg Oregon.

**Roger Edwards** (*Local Funds for US? A Popular Plate*). Roger, current Secretary of OLA, monitored the water quality of the City of Portland Bull Run Reservoir for the past 27 years.

**Stan Geiger** (*Who's Responsible for Managing Oregon's Lakes; Private Sector Lake Consultants*) Stan has worked as limnologist and phycologist for Beak Consultants, Inc., Scientific Resources, Inc. and as wetland ecologist for Shapiro and Associates, Inc.

**J. Collin English** (*Grass Carp*). Senior at PSU, Communications. His interests in this capacity lay in helping to bridge the gap between science and the public understanding.