

LAKE WISE

Newsletter of the Oregon Lakes Association

November 1995

Borax Lake Threatened

Borax Lake is a natural, thermal, spring-fed lake located in the Alvord Basin in southeastern Oregon. The majority of the 10-acre lake is only two to three feet deep, but the thermal vent that feeds the lake is nearly 100 feet deep. The temperature of the water entering the lake has been measured at over 240°F. The large surface area of the lake has a cooling effect, surface temperatures range from 60 - 100°F. A series of 12 hot spring pools are located on the north side of the lake. The pools vary in size and temperature; some of them discharge steam and bubbles.

The high temperatures and alkaline conditions of Borax Lake and the springs support a unique ecosystem with a diverse biological community. Borax Lake is the only home for the Borax Lake Chub (*Gila boraxobius*). This fish was emer-

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The President's Report

by Bill Wall

A Successful Conference

I'd like to thank all those who participated at the annual meeting last month. The topics presented were of great interest. Jim Morgan discussed the management of Smith and Bybee Lakes in regards to their varied ecosystem. A good description of Fairview Lakes hydrology, beauty, and problems was presented by Jane Graybill. Darin Ash's discussion of diurnal variation of pH and D.O. and their relation to secchi depth was well presented. We know he'll do well in Toronto at the NALMS meeting. His father, Paul described the urban growth of Lake Oswego (the lake, not the city). Mark Sytsma gave a quick overview of the invasive hydrilla threat to our lakes. During lunch, Langdon Marsh was informative and encouraging in regards to DEQ's role regarding lakes in Oregon. As a reminder, Langdon is the new Director of DEQ. After lunch the natural history of Bull Run Lake, along with a historical perspective of its development for use as storage for potable water was discussed by Doug Bloem. Dick Robbins provided us with an insight into the management of watersheds which are used primarily for potable (drinking) water.

A special thanks to the speakers for a job well done. I'd also like to thank the approximately 35 people who attended, as they provided excellent discussions during the breaks and made the conference (and future conferences) possible. Aquarius Systems, E&S Environmental Chemistry, Electronic Data Solutions, KCM, and SRI/Shapiro were the corporate sponsors which made the conference affordable for the participants (and kept our budget from going in the hole). Many thanks.

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Continued from page 1**President's Report**

House cleaning is always a good thing as long as everyone in the house participates. I am greatly concerned, however, that the "house cleaning" currently going on in Washington may take away the tools needed to preserve the quality of our quiet waters. It is imperative that we respond as individuals and as an organization to inform the legislature of our concerns and the needs of our lakes. This is not an advocacy to oppose the "house cleaning" in Washington D.C. It is however, a request to you, the present and future members of OLA, to participate.

OLA needs to be informed by its members of their concerns. This can be done by a phone call, a letter to the board, myself, or to the editor. I'd love to see and visit with you at a board meeting.

How important are the lakes of Oregon to you? Should state and federal government spend our tax dollars on lake protection, restoration, and regulation? Should we spend more? Should we spend less? Are the present regulations sufficient and are they being properly enforced? What do you think about the state of our lakes?

There is no other public voice for our quiet waters besides OLA. It is imperative that we as an organization inform our representatives about the state of our lakes, the needs for their management and protection, and our passion for these quiet waters. If there is no voice, then the ability to preserve the quality of Oregon lakes may be swept under the rug.

We have begun this information sharing with our legislators and government agencies. Thanks to Mark Sytsma, our Past-President, A State of the Lakes on Aquatic Vegetation Management has been completed and well received. Other State of the Lake Reports are in the process of being completed. They include: Nonpoint Pollution Control and Watershed Management, Protection of High-Quality Lakes, and A State Funded Program for Lake Management. One of my priorities is to aid in completing these documents and to assure they are well distributed to our state legislators.

This upcoming year will be a productive and exciting year for OLA . . . IF we all take a little time to participate and show we care for these quiet waters of Oregon.

New Board Members Elected

Several new Board members were installed at the annual meeting. Andy Schaedel was elected President-elect, and Stan Geiger and Jack Jenkins were elected to two-year terms as directors with the ballots that were distributed in the last newsletter. Andy will serve one year as president-elect and then serve as President for one year. Stan and Jack will serve two year terms as Directors.

In addition, because of other commitments, Margaret Kilanski resigned as Director just prior to the Annual Meeting. Avis Newell resigned as Secretary in August in order to focus her efforts on editing the special issue of Northwest Science on Oregon lakes. In Board action at the Annual Meeting, Allan Vogel was installed as a Director to finish the final year of Margaret's term, and Cynthia Price was appointed as Secretary to finish the final year of Avis' term.

Cynthia recently moved to Portland upon completing

her Bachelor of Science degree in General Science at the University of Oregon in September. Her areas of emphasis in study were chemistry and ecology, and she also earned a minor in environmental studies. Cynthia is pursuing a career in water quality management. She is very excited to be the secretary of OLA and believes it will be a great resource and network for her to attain her career goals. She is an active member in the environmental community and recently wrote a grant for the City of Portland's Bureau of Environmental Services, the David Douglas School District, the Northern Lights Neighborhood Stewardship Team, and Streamwalk to form a partnership so that students may conduct water quality testing and monitoring, and the community and the city work together on a watershed restoration project.

Allan Vogel teaches biology at Chemeketa Community College, Salem, and does zooplankton and ecological consulting for governmental agencies and private organizations, including lake owners associations.

Meet in Portland in March

OLA will join the Western Aquatic Plant Management Society (WAPMS) and other western chapters of the North American Lake Management Society (NALMS) in cosponsoring a symposium on nonnative aquatic pest species next spring in Portland. The symposium, set for 27 March at Portland State University, will feature invited speakers who will provide updates on the biology, impacts, and management of aquatic pest species currently present in, or threatening to invade, the Northwest.

Confirmed speakers include:

Lars Anderson, USDA/ARS Aquatic Weed Laboratory, University of California, Davis. – Hydrilla

Al Smith, Oregon Department of Fish and Wildlife – Bass stocking in Oregon lakes

Curtis Daehler, University of California, Davis – *Spartina* (cordgrass)

John Lehman, University of Michigan – *Blythotreches cederstroemi* (spiny water flea)

Doug Jensen, Minnesota Sea Grant, *Dreissena polymorpha* (zebra mussel)

Jay Troxel, US Fish and Wildlife Service, Federal rules and regulations for control on aquatic nonindigenous species

Robert Behnke, Colorado State University. Fish culture and nonindigenous organisms

Following the one-day symposium, WAPMS will hold its annual meeting, which will focus on aquatic weed biology and management. Concurrently with the WAPMS meeting, OLA will host a regional meeting of western state chapters of the NALMS. Chapter representatives from Washington and California will join Oregonians to learn about how individuals can organize and be more effective lake managers. The agenda for the NALMS meeting is currently being planned, and conference organizers are interested in hearing from lake associations and individuals about what subjects they would like to see covered. One session that is planned is a workshop on aquatic plant identification and development of integrated aquatic vegetation management plans. Other potential workshops could include newsletter writing, liability issues for association officers, or ????? – you name it and we'll do it. If you have any suggestions contact Jean Jacoby, Regional NALMS Director, at 206-296-5526.

The meetings and symposium will provide an opportunity to meet and discuss lake management issues with a number of people with a variety of experience. Please try to attend. Better yet, volunteer to help in the organization of the meeting—there is much to do. You are guaranteed to meet a number of interesting people with a common interest—better management of our lakes. Contact Mark Sytsma (725-3833) for information and/or to see what you can do to help out.

— PSU — Lake Management Seminars

Response of algal migration and trophic state to alum in Green Lake – February 29, 1996. Dr. Jean Jacoby, Seattle University.

Lake restoration – March 14, 1996. Dr. Harry Gibbons, KCM, Inc.

All seminars at 4 pm, Room 246, Science Bldg II. Contact J.R. (Dick) Pratt (503-725-8038) for more information.

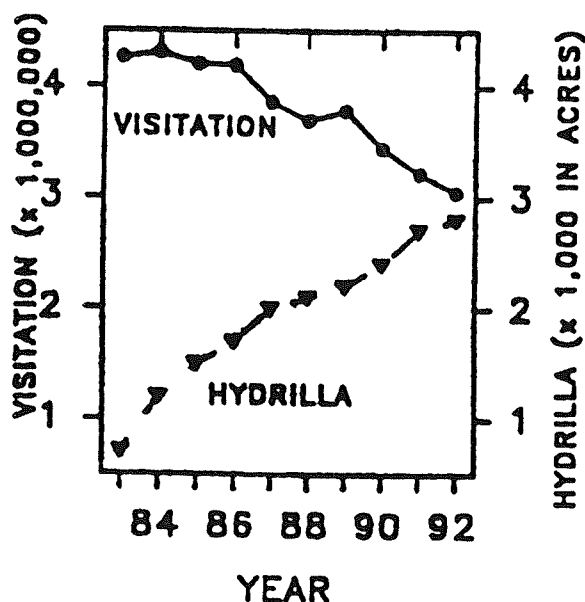
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Two Arguments for a Proactive Hydrilla Eradication Effort in Oregon


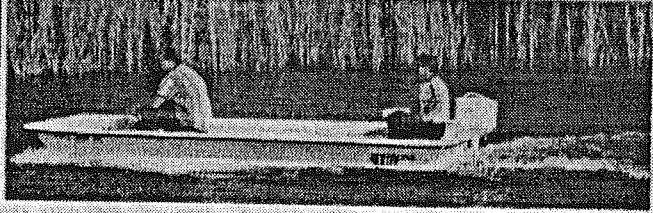
Hydrilla is an aggressive, nonindigenous aquatic weed that has been found in Washington and California. Hydrilla management costs millions of dollars per year in the southern states and California. Washington spent \$100,000 to treat hydrilla in a pair of infested lakes in 1995. Untreated hydrilla leads to escalating problems and management costs. In Lake Seminole, Georgia, hydrilla coverage increased from 7,000 acres in 1983 to 28,000 acres in 1992. Coincident with this increase in hydrilla, visitation to the reservoir declined from 4.3 million to about 3 million visits per year (see figure below). Although causation cannot be inferred from correlation, Joe Knight, with the Corps of Engineers in Chattahoochee, Florida, estimated that if each visitor spent an average of \$10 per visit, the loss to the local economy was about \$13 million per year. This amounts to an economic loss to the local economy of about \$620/acre of hydrilla. These costs do not include the environmental degradation caused by the infestation, which is more difficult to value.



Adopted from the MidSouth Aquatic Plant Management Society Newsletter 11(2). 1993.


These data suggest that a proactive program to eradicate hydrilla when it is first found in Oregon would be highly cost-effective, and would prevent serious ecological damage to our lakes.

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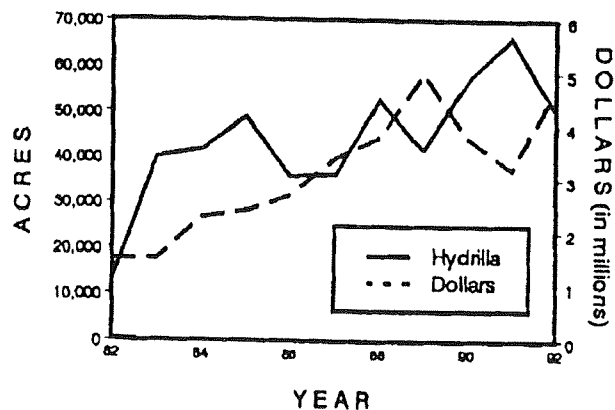
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Funding for hydrilla management in Florida has been deficient since the middle 1980s. The figure below illustrates the inverse correlation between hydrilla cover and available funding. When funding is sufficient, the state's hydrilla population can be reduced. Insufficient funding leads to hydrilla expansion and a greater level of funding necessary to control hydrilla in public waters.

Adopted from the 1993 Florida Aquatic Plant Management Survey Report, FL Department of Environmental Protection.



Common Carp Find Zebra Mussels a Taste Treat

The surprise came one day this summer when John Tucker, a biologist with the Upper Mississippi River Long Term Resource Monitoring Program Alton, Ill., Field Station, was fishing with his daughter at Brussels Ferry, Ill. According to Tucker, he and 11-year old Moynell M. Tucker caught a 12-inch carp, and to satisfy her scientific curiosity, "Moynell insisted on taking it home to dissect." At home, Tucker and his daughter examined the gut contents of the common carp. To Tucker's surprise, "The fish's gut was completely packed with fragments of zebra mussels." Zebra mussels are the "exotic" species of mussel transported from Europe via shipping boats to the Great Lakes in 1988, and are of concern because of their potential economic and ecological impacts on the Upper Mississippi and other rivers.

Because the common carp, itself an exotic species, has not been reported to feed extensively on this newly introduced mussel species in the United States, Tucker approached Alton Field Station colleague Fred Cronin with news of his discovery. Subsequently, field station biologists collected a series of common carp specimens from the Mississippi River, just below the confluence with the Illinois near Grafton, Ill. This collection site has been monitored for zebra mussels since 1992 and is known to be heavily colonized by them. Thirty-one common carp were collected at River Mile 217; twenty-six contained from 1 to 204 zebra mussels. With few exceptions, the shells were crushed and well fragmented, but the beaks (the pointed end of the mussel that attaches to rocks) were intact. Tucker reports that the field station has saved the beaks for future measurement. "Because there is a straight-line relationship between the length of the beak and the length of the zebra mussel itself, we will be able to determine the size of the zebra mussels each carp had eaten."

Tucker believes that because the common carp is both widespread and numerous, its potential impact on zebra mussel populations is worth investigating. Dr. Steve Gutreuter, who directs monitoring and research at NBS's Environmental Management Technical Center in Onalaska, Wisc., agrees that further investigation appears warranted, cautioning that "it is far too soon to tell whether carp might help control zebra mussel populations."

Some scientists propose importing potential zebra mussel predators in an attempt to control the exotic mussels, which concerns Tucker. "Two common Upper Mississippi River System species have already been found to eat zebra mussels, freshwater drum and now the common carp. The ability of these species as control agents should be investigated before other exotics are imported."

Zebra mussels, recent invaders in North America, probably came from the Black and Caspian Seas by way of ship ballast water discharge. Since they were first seen in the Great Lakes in 1988, they have spread to 19 states. Before recent sightings in California, the U.S. range was from Lake Champlain in the northeast, across the Great Lakes, west through the Mississippi River system, and south to the Gulf of Mexico. Zebra mussels can attach themselves to boat hulls and move as stowaways up and down major rivers. The mussels can then spread because they may fall or be scraped off to start new populations. Under moist and reasonably cool conditions, zebra mussels can stay alive for several days out of the water.

Continued on page 6

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Zebras Invade California

Since the initial finding of zebra mussels on a boat at a California agricultural inspection station in 1993, five additional boats with zebra mussels attached to their hulls have been detected at three different inspection stations. The second finding of zebra mussels occurred in California last November. Forty specimens were removed from a boat on a flatbed trailer being shipped from Toledo, Ohio to San Diego. Their condition was listed as "live" at the time of collection according to the California Department of Water Resources. The third occurrence took place in March of this year when "live" adults were found in the starboard intake of a 40-ft yacht. The origin of this boat was Michigan, and like the last boat, its destination was San Diego. These first three finds were all reported from the Needles Inspection Station. The next occurrence was reported from the Yermo Inspection Station in May 1995. This boat also came from Michigan but had been out of the water for over a year. The most recent two boats were detected at the Truckee Inspection Station in June 1995. The origin of both boats was Michigan and both had been drydocked for long periods so there were no live mussels. Given these instances, it would appear that overland transport of zebra mussels on or in boats from thousands of miles away poses a real threat to uninfested waters.

NEW PUBLICATIONS

Managing Habitats for Conservation, edited by William Sutherland and David Hill, provides a pragmatic, habitat by habitat guide to conservation management. Contact Cambridge University Press, 40 W 20th St., New York, NY 1001-4211.

Our Living Resources: A Report to the Nation on the Distribution, Abundance, and Health of U.S. Plants, Animals, and Ecosystems, published by the National Biological Service, is a collection of nearly 200 articles on biological resources across the country. Contact Government Printing Office, Washington DC 20402; stock #024-010-00708-7.

Continued from page 5 Carp and Zebras

The spread of zebra mussels is feared by cities and industries. The mussels are notorious for colonizing and plugging water intakes at power plants and water treatment plants, and in other facilities using fresh water. Cleaning and treatment of these facilities is costly. For example, plant redesign and zebra mussel control for 72 nuclear and fossil fuel generating plants in the Great Lakes Basin is anticipated to cost in excess of \$860 million over the next 10 years. Municipalities and industries in the region are also projected to spend another billion dollars controlling mollusk growth over the same period.

Scientists, navigators, boaters and farmers are concerned over the effects zebra mussels could have on natural ecosystems, river navigation, recreational boating and agricultural irrigation. The zebra mussel's specialized talents make it a hardy and tenacious traveler. This fact, coupled with its recent appearance in California, strongly suggests that the zebra mussel poses a real threat to habitable waters in virtually every region of the United States. Large populations of unionid mussels have already been lost in the Great Lakes from zebra mussel colonization on native mussels.

The Long Term Resource Monitoring Program is administered by the Environmental Management Technical Center, a National Biological Service Science Center. The Monitoring Program is a cooperative effort by the National Biological Service, the U.S. Army Corps of Engineers, and resource management and research agencies of the five Upper Mississippi River Basin states of Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The Monitoring Program maintains field stations in each of the partner states. The Environmental Management Technical Center, located in Onalaska, Wisc., manages the largest river-related inventory and monitoring, research, spatial analysis, and information management and sharing program in the United States.

Provided by the National Biological Service of the U.S. Department of the Interior. Contact John Tucker (618/466 9690) for further information.

Open Page.....

Introduction by a New Director

I have a masters in Biological Oceanography from Oregon State, received my Ph.D. in Environmental Sciences - Biology from Portland State, and have 29 years of experience identifying plankton. Before returning for my doctorate with Richard Petersen as my advisor, I worked on Lake Michigan at the Michigan Sea Grant and Great Lakes Research Programs and on two fjords in southeast Alaska as an oceanographer and limnologist for a private consulting firm, VTN Oregon. I studied 21 Oregon lakes in detail for my doctorate. My research has focused on two distinct areas - how trace metals influence the distribution of plankton (both phyto and zoo) and zooplankton ecology, particularly as water quality and fish stocking impact them.

I currently teach biology at Chemeketa Community College, Salem, and do zooplankton taxonomic and ecological consulting for governmental agencies and private organizations, including lake owners associations. As a past and present environmental consultant, I have spent most of my professional career applying my skills in aquatic biology and chemistry to solving environmental problems in lakes and other inland water bodies.

I have lived most of my life in Oregon, continuously since 1977; my mother's family homesteaded in Lane County; I am married to a native Oregonian; and one of our sons was born in Corvallis; so while I can't call myself a native Or-

egonian, having been born in Seattle and spent my childhood out in the islands of Puget Sound; I think I come fairly close to being one. Consequently, I feel quite strongly, based on extensive firsthand experience, that our state's lakes deserve better protection from pollution and other environmental abuses than they received in the past.

During my period of service on the Board of Directors, I hope to help OLA be a positive force in increasing that protection. I believe that OLA represents a unique combination of advocates for Oregon's "quiet waters" and I think that we can become a more forceful group in promoting lakes as an important part of Oregon's "Special Quality of Life." If you have any ideas as to how to help, please e-mail me at llvogel@teleport.com or call me at (503) 390-4684 (there's an answering machine attached if I'm not in).

And if you're curious about what I've learned about trace metals and Oregon lakes, a partial summary of my dissertation results (with lots of figures) can be found online at <http://clas.www.pdx.edu/~vogel/tracemetals.html> (sorry, but I don't have a nice, neat, summary of my zooplankton work available yet).

- Allan Hayes Vogel, Ph.D.
llvogel@teleport.com

What Do They Know That We Don't?

Washington D.C.-based Scenic America recently designated the Cascades Lakes Highway one of the nation's 10 most important scenic byways. Sally Oldham, the organization's President said that the heart of Oregon's tourist industry is the state's incredible beauty and natural resources. By making the designation Scenic America hopes to call attention to America's scenic heritage, the threats that face it, and the choices we can make to preserve it.

It is often the case that we fail to recognize the value of something familiar and close to us until it is gone. It is clear that people from outside Oregon can see the value of our lakes. Why can't Oregonians recognize that our lakes are an economic and ecological asset that are irreplaceable? Our public lakes are not receiving the management attention they deserve. Oregon does very little to ensure that our lakes remain a valuable resource - nonnative, aquatic weeds run rampant in many of our lakes and nonpoint pollution has degraded water quality. We need a coordinated program for

managing, protecting, and restoring the lakes of Oregon. The resources needed will not come from the Federal government. Last year, the President and Congress eliminated the Clean Lakes Program - the only Federal program aimed specifically at lakes, and the source of most of the funding for lake management in Oregon. The State must develop an Oregon Lake Management Program, and provide the resources required to maintain a resource that has been neglected for much too long. All Oregonians that recognize the value of our lakes must make their concerns known. Call your state representatives and tell them that we need a Lakes Program.

- Mark Sytsma

Anyone can submit an opinion on OLA and/or lake management issues in Oregon for printing on Open Page. Send your contribution to the address on the back cover.

Lower Columbia River Sturgeon: No More Keepers

Sport sturgeon anglers will not be allowed to keep any sturgeon they catch in the Columbia River below Bonneville Dam beginning September 1 under emergency rules adopted by Oregon and Washington fishery managers. The decision was made August 23 in a joint meeting between Oregon and Washington departments of fish and wildlife.

"Sport anglers were very successful this year in the lower river. Anglers will harvest about 48,000 sturgeon by the end of August. If we allowed the harvest to continue, it could stretch to 60,000 which would limit opportunity in future years," said Steve King, of the Oregon Department of Fish and Wildlife.

The emergency regulation for sturgeon is as follows: * Area: Columbia River, from mouth up to Bonneville Dam, including Youngs Bay. * Effective Dates: September 1 to December 31. * Bag Limit: Zero - Retention of sturgeon by sport anglers prohibited during these dates. Catch and release sturgeon angling by anglers with license and tag allowed during this period.

The sport-catch ceiling limit of 48,000 sturgeon is not a quota, but a maximum target biologists feel won't deplete the fishery over the long term. Sport sturgeon

harvest has skyrocketed in the last two decades as salmon angling has become more restrictive and anglers have learned how to fish more effectively for sturgeon. When combined with good fishing conditions, the result is a high catch rate - a result biologists have seen before. "For example, before we adopted this management strategy, sport anglers caught 62,000 sturgeon in 1987. This resulted directly in catches below 20,000 in 1990 - a low that we have now recovered from," said King.

While sport harvest has risen sharply, commercial sturgeon harvests have remained static or declined. As many as 10- 20,000 sturgeon were caught commercially each year in the 1970s to mid-1980s before management controlled the combined commercial-sport sturgeon harvest to a sustainable level. According to King, an agreement to allow commercial fishermen to harvest up to 6,800 sturgeon this fall remains intact. Commercial fishermen will be allowed to harvest the sturgeon only during commercial coho seasons in October. Those season dates have not yet been set.

- Randy Henry

Oregon Department of Fish and Wildlife
PO Box 59, Portland, OR 97207
henryr@dfw.or.us

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Borax Lake

agency-listed as endangered by the US Fish and Wildlife Service in 1980 because of the proposed geothermal power development in the area. A final ruling of endangered was granted in 1982 when USFWS designated a 640-acre area surrounding the lake as critical habitat for the fish. Borax Lake is also home to a rare snail (*Planorbella oregonensis*) known only from two other locations.

Borax Lake is also important habitat for many migratory birds and a critical source of water for wildlife throughout the Alvord Basin because the lake remains unfrozen through the winter. The Borax Lake ecosystem also supports a variety of rare or uncommon bird species including snowy plovers (a state-listed threatened species and a candidate for federal listing), black-necked stilts, Forster's terns, black-crowned night herons, American avocets, and long-billed curlews. California bighorn sheep (a candidate for federal listing) migrate through the area during late fall and late spring-early summer.

The Cascade Research Group

John Salinas
Environmental Scientist

We document lake conditions and recommend
water quality improvement activities.

P.O. Box 404
Murphy, OR 97533

salinas@aip.org
(503) 862-2348

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Citizen Lake Watch *News*

Fall 1995

Program notes

The monitoring season is winding down for many Lake Watch volunteers. Thanks to everyone for a season of good work! I believe that funding for next year will come through and I hope that all of you will want to participate in the Lake Watch Program again. The information that you collect is valuable. Your efforts are an integral part of Oregon's lake program – in fact, your efforts constitute almost all of Oregon's lake program. Your data will be collated and a report will be on your doorstep early in 1996.

Please consider attending the Oregon Lakes Association/Western Aquatic Plant Management Society meeting in March at Portland State. We are planning a program that will include information that you can use to better protect your lake. It would be a good time for all Lake Watch volunteers to get together to compare and share experiences. You can find more details on the meeting in Lake Wise.

I know that during the long, cold, winter nights that are fast approaching you will be planning your Lake Watch activities for next year. Think about what you can do to keep your watershed healthy – join or form a watershed council, for example. If you haven't received (or can't find) your *Help Halt Hydrilla* brochure let me know and I will send you one. Keep your eyes open for any suspicious-looking plant fragments this winter. Don't hesitate to stop in if you are in Portland (I'll give you a personal tour of Oregon Lake Watch World Headquarters), drop me a line, or call (725-3833) if you have any questions.

Your Lake Watch Coordinator,

Mark Sytner

Watershed Program Changes

In 1993, House Bill 2215 set up the local watershed council program for Oregon. Two areas of the state, the South Coast/Rogue basin in southwest Oregon and the Grande Ronde basin in northeast Oregon, served as pilot project areas. During 1993-1995, these areas received funds through the Watershed Health Program to help develop watershed councils and assist with implementation of action plans for watershed restoration. Councils outside these areas had no special funding.

In 1995, the legislature passed house Bill 3441, which continues many of the principles of the 1993-1995 program. HB 3441, however, delegates responsibility for coordinating project funding and working with local watershed councils to the Governor's Watershed Enhancement Board, and merges the Watershed Health Program with the long-standing GWEB program in order to maximize coordination in state-funded watershed improvement projects.

Watershed councils are voluntary, non-regulatory groups established locally to improve the condition of the state's watersheds. HB 3441 provides guidance in establishing watershed councils but makes clear that formation of a council is a local government decision, with no state approval required. Watershed councils offer local residents a greater voice in determining how their watersheds should be managed. Partnerships between residents, local, state, and federal agency staff and other groups can be developed through councils. The partnerships can result in integrated local efforts and the enhancement and restoration of the state's watersheds.



Lake Watch Volunteer Roster

Jack Jenkins	Fishhawk	Richard Hiersche	Lytle
Bob Anderson	Woahink	Richard Kaufmann	Loon
Janette Goolsby	Cullaby	Steve Kaufmann	Loon
Koren Marthaller	Blue (Willamette)	John Richter	Vernonia
Elmer Waite	Clear	Stephanie Harte	Lawrence, Lost
Gary Lovegren	Blue (Cascade)	Kristi Hickox	Rock Creek Reservoir
Barbara Hagerman	Devils	Ryan Nieman	Trillium, Cast, Mirror
Warren Phillips	Devils	Paula Curry	Trillium, Cast, Mirror
Bill Vaughan	Devils	Sally Thomas	Tenmile Lakes
Al Rice	Devils	Edward Lopez	Tenmile Lakes
Robert Johnson	Fairview	John Kelsey	Tenmile Lakes
Don Martin	Garrison	Hazel Freeland	Tenmile Lakes
Max Peel	Hosmer	Ken Freeland	Tenmile Lakes
Catherine Hayes	Lake of the Woods	Dan Jordan	Tenmile Lakes
John and Janet Milandin	Odell	Dean Anderson	Tenmile Lakes
Ron Boehi	Mercer	Franklin Gray	Tenmile Lakes
Al Burhans	Munsel	Lake Oswego Corp.	Lake Oswego
Roy Fisher	Munsel	Wally Otto	Hagg Lake
Fred Barstad	Wallowa	Kathy Arndt	Neacoxie Lake
		Susan Gage	Big Creek Reservoir

Lawn and Garden Practices Can Impact Your Lake

Lawn and garden information and information on septic tanks produced by KCM, Inc. and used with permission. Contact Dr. Harry Gibbons (206-443-3526) for further information.

Many of the chemicals you use on your lawn and garden – pesticides, herbicides, fertilizers – create serious problems if they are washed off your property and enter your lake. Some toxins remain active for a long time and can build up in the water. Toxins concentrated in the bodies of aquatic animals and plants can kill them or make them unsafe for humans to eat. Fertilizers can cause algae blooms.

What Can you Do?

1. Landscape with native shrubs and drought tolerant plants. As more of a lake's watershed is paved or covered by buildings, less water enters the soil. Anything you can do to encourage surface water and rain to infiltrate the ground helps replenish groundwater and reduces flooding. Reduce the size of your lawn and plant shrubs and trees. If you do plant a lawn, use grasses that use little water such as fescues and ryes; avoid bluegrass.

Landscape with native vegetation. Native plants require less maintenance and is more resistant to

disease and pests than are introduced plants. If your property borders on the water, leave a buffer of native vegetation along the bank to protect it and to slow surface runoff. Native plants can be collected on public land, but a permit must be obtained from the appropriate agency, e.g., US Forest Service. A comprehensive nursery guide, the Pacific Northwest native Plant Directory, can be ordered from Hortis Northwest, POB 955, Canby, OR 97013, or by calling 503-266-7968.

2. Avoid landscaping plastic and use bark carefully. **Landscaping plastic reduces infiltration.** Bark should be used wisely – not on steep slopes, near the water, or in drainage areas. Bark can clog storm drains, increase the acidity of water, and release fibers that damage fish gills.

3. Mulch your garden. Mulch is a protective covering of compost, straw, grass clippings, or leaves placed around plants. Mulching can add nutrients and tilth, increases infiltration, controls weeds, and improves

Continued on page 3



Continued from page 2

moisture retention.

4. Make sure that you use pesticides correctly. When using pesticides always follow the label. The label is the law! Make sure that the chemical is appropriate for pest and conditions.

5. Use the right fertilizer at the proper time and in appropriate quantities. Look for fertilizers with a 3-1-2 ratio of nitrogen-phosphorus-potash, or use phosphorus-free fertilizer. Avoid combination fertilizers/weed killers. Apply chemicals on windless, dry days when it is not too hot. Never apply at levels greater than those called for on the package. In many cases you can apply less, get the same growth, and save money. Don't apply fertilizers near the water.

6. Clean up pet feces. Bury pet feces or flush them down the toilet. Feces can be washed into streams,

storm sewers, or the lake and can be a source of disease-causing organisms.

7. Mow your lawn correctly. Mowing height determines the amount of runoff. Healthy turf holds rain-water, filters sediment and chemicals from runoff, and requires less frequent watering. Mowing height for perennial ryegrass and fescue should be 1.5 to 3 inches. Cut the grass frequently enough that no more than the upper third of the grass blade is removed.

8. Water your lawn and garden carefully. Excessive watering decreases the effectiveness of fertilizers and pesticides and generates polluted runoff. Irrigation is most effective when it is done infrequently, but deeply and slowly, so the entire root zone is wetted. Watering in the early morning or evening minimizes water lost through evaporation.

How Much Should You Water?

Use This Chart as a Guide

Average depth your sprinkler(s) fills a tuna or cat-food can in 15 minutes.	1/8"	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/8"
Minutes you should water every third day*...								
...in Spring	30	15	10	7-1/2	5	5	4	3-1/3
...in Summer	60	30	20	15	12	10	8	6-2/3
...in Fall	24	12	8	6	4-3/4	4	3-1/3	2-1/2

*Decrease watering times and frequencies during cool or humid weather, skip at least one scheduled watering after any substantial rain.



Septic System Trivia

An average human excretes about 2.4 grams of phosphorus each day. This means that a household of three people generates 2.63 kilograms of phosphorus each year. In a properly functioning septic system, about 6 percent of the phosphorus entering the tank is released outside the drainfield (about 0.158 kilograms per year for the average household of three). Since one kilogram of phosphorus can support about 10,000 kilograms of algae, a family of three provides enough phosphorus to support production of 1,580 kilograms, or 3,472 pounds of algae per year.

Without proper maintenance, septic drainfield phosphorus retention can drop to as low as 5 percent. At that rate, the typical household of three would contribute enough phosphorus to support production of 25,000 kilograms, or 55,000 pounds of algae per year. It doesn't take very many failing septic systems result in excessive algae growth in a lake.

Stephanie Reduces Hours

Stephanie Weise was forced to reduce her activities in the Lake Watch Program because of an illness in her family. The Program misses her enthusiasm and anticipates her return as soon as Bob is better.

What You Can Do

- 1. Don't flush hazardous chemicals or garbage down your toilet.** Hazardous substances (paint, solvents, strong cleaning agents like bleach and drain cleaners) are not removed in septic treatment. In fact, they can kill the bacteria that live in the septic tank and are responsible for waste treatment. Garbage can clog pipes and accumulate in septic tanks.
- 2. Reduce the load on your sewage disposal system.** Disconnect your roof gutter and/or foundation drainage systems from your sanitary sewage lines.
- 3. Reduce the volume of wastewater that you generate.** Conserve water. Check for leaks in faucets and toilets. Install water-saving fixtures. Place two half-gallon plastic bottles in your toilet tank to reduce water use with each flush. Avoid running water in the sink when it is not in use.
- 4. Know the size and location of the tank and drainfield.** Check your tank annually and have it pumped when necessary – every two to five years. Distribute activities that use a lot of water through the week to avoid overloading the tank and drainfield. Plant grass over the drainfield, not trees; tree roots clog drain lines. Don't construct buildings or drive on the drainfield.
- 5. Avoid use of garbage disposals.** Garbage disposals add substantially to the solids loading to your tank and decrease treatment efficiency.
- 6. Don't use products that claim to clean your septic tank without pumping.** They can clog your drainfield and may contain chemicals that can contaminate groundwater.

The Citizen Lake Watch Program is coordinated by Portland State University under a grant from the Oregon Department of Environmental Quality and the U.S. Environmental Protection Agency. The goal of the program is to involve citizens in the collection of reliable water quality data in an effort to identify long-term trends in the water quality of Oregon's lakes, and to involve citizens in identifying and reducing nonpoint pollution. For more information about the Citizen Lake Watch Program or Lake Watch News, contact Citizen Lake Watch, ODEQ, Water Quality Division, 811 SW 6th Avenue, Portland, OR 97204 (1-800-452-4011), or the Citizens Lake Watch Coordinator at Portland State University at 725-3833.

Lake Watch News is available in alternate format (e.g., braille or large type) by contacting DEQ Public Affairs at 229-5766 or toll-free in Oregon 1-800-452-4011. People with hearing impairments can also contact DEQ's TDD at 503-229-6993.

Oregon Amphibians and UV-B Radiation

Salamanders and other amphibians are important parts of Oregon lake ecosystems. A recently published study by Blaustein *et al.* (*Ecological Applications* 5(3), 1995, pp. 740-743) reported that hatching success of the Northwestern salamander (*Ambystoma gracile*) was related to UV-B radiation in a low-elevation, Coast Range reservoir. Previous studies have found that UV-B radiation reduces hatching success at high elevations in the Coast Range.

The authors of the study do not suggest that increased UV-B radiation linked to stratospheric ozone depletion could account for the worldwide decline in amphibian populations, but do hypothesize that UV-B may act synergistically with other factors, *e.g.*, pollution, disease, habitat destruction, to contribute to embryonic mortality of amphibians. They also suggest that the anticipated progressive expansion of UV-impacted areas to lower latitudes could potentially lead to increased mortality of amphibian embryos as they develop in nature, which may lead to populations shifts because species differ in susceptibility to UV-B.

Large Voles in Oregon Lakes!

Muskrats are the world's largest voles – a group of rodents that includes field mice. They get their name from their sweet musty odor. Muskrats are found throughout Oregon in marshy areas where, like beavers, they either build houses or dig borrows in banks. Muskrats are famous for their rapid reproduction. Females often kick just-weaned young out of the nest to make room for the next litter.

Muskrat's prolific reproduction sometimes results in a population explosion and an "eat-out", in which the area surrounding the muskrat community is stripped of vegetation. High muskrat populations can result in the complete removal of aquatic plant root systems, which reduces soil support and allows the sediment to disintegrate into loose muck. Some researchers believe that such eat-outs are inevitable in areas of high muskrat populations if predator populations are low or if trapping is not encouraged.

Load Limits for Lakes

Loading of lakes with nutrients, especially phosphorus, has been the central concern of limnologists. However, lakes are also loaded with users, which directly impacts the recreational experiences. In an article that uses Wisconsin lakes as a context, Lowell Klessig has developed a proposal for regulating recreational load limits in a manner analogous to the regulation of trucks on highways.

In Wisconsin, past public access policies have primarily focused on fishing. These well-intentioned efforts ignored the large number of passive users who are interested in the aesthetic qualities of lakes; high quality public visual access is rarely provided at the boat ramp and often nowhere else on the lake. These policies are out of step with the realities of big boats and big motors. For example, the old standard of 10 acres per boat was reasonable for fishing, but not at all reasonable for water skiing or speed boating.

Lake management policies could be more inclusive and more integrated if they were based on integrating four primary goals: aesthetic opportunity, recreational opportunity, environmental security, and economic opportunity.

Aesthetic opportunity refers to the ability of people to have a pleasurable experience at a lake. Provision of well-sited parks, and segregation of passive users (*i.e.*, picnickers and campers) from active users (*i.e.*, jetskiers and waterskiers), for example, would reduce visual and noise interference between uses.

Recreational opportunity refers to the ability of a lake to provide recreational benefits to a variety of types of users. If certain types of watercraft tend to damage the experiences of others their use could be regulated or banned. Citizens, through their government, should decide what role, if any, competition and commercialization (through races and tournaments) should play in use of public lakes.

Environmental security considerations would ensure that use of lakes does not cause damage to sensitive

Continued on page 13

Newell Prepares Oregon Lakes Publication

Avis Newell, DEQ Lakes Coordinator and editor of a special issue of Northwest Science, obtained a \$2500 grant from the U.S. Environmental Protection Agency to publish a series of papers on the limnology of Oregon lakes. Newell is preparing a paper on the utility of the ecoregion concept in Oregon limnology. Other submitted papers include discussion of the limnology of Crater Lake, Lemolo Lake, Florence-area lakes, and paleolimnology of Devils Lake.

Aquathol K Aquatic Herbicide Label Changed

The label for Aquathol K, a contact herbicide effective on many aquatic weeds in Oregon, has been changed. Elf Atochem North America announced three amendments to the Aquathol K label were recently approved by the US Environmental Protection Agency. The changes are effectively immediately in Oregon. EPA approved the amendments to the label because of new data generated by Elf Atochem in support of reregistration of the product. The amendments include:

- Removal of the 24-hour swimming restriction. The amended label has no swimming restrictions.
- Removal of the skull and crossbones and poison signal word (see the current Material Safety Data Sheet for shipping information).
- Revision of the Precautionary Statements to include removal of the wording, "Fatal if absorbed through the skin."

Gerald Adrian, product manager, said, "Elf Atochem supports aquatic and terrestrial uses of endothall, including Aquathol, a highly efficacious aquatic herbicide that has no significant adverse effects to humans or the environment."

For a copy of the amended Aquathol K label contact your local distributor or Elf Atochem at 800-438-6071.

Ecosystem Management Bibliography Available

This bibliography provides a comprehensive list of references for natural resource managers with ecosystem management responsibilities, and others interested in ecosystem management. Approximately 4,000 citations are included. A complete copy of the bibliography, including a runtime license for ProCite and other software necessary to use it, is available for \$20 for Gerry Horak, Johnson control World Services, Midcontinent Ecological Science Center Operations, PO Box 270308, Fort Collins, CO 80527. (970) 226-9413; gerry_horak@nbs.gov. Those who already own ProCite may download the seven database files in binary format using anonymous file transfer protocol from: ftp.its.gov. The files are in: /pub/nbs-series/ecosystem.management.bibliography. A copy of the database in ASCII file format is also available at the same location in the file, ecosys.txt. These files are also available via the world wide web at: <http://teal.its.nbs.gov>.

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Sea Level Rise Report Released

EPA has released, "The Probability of Sea Level Rise", a report which further confirms the probability of sea level rise. The report provides estimates of the impact of greenhouse gas emissions on coastline sea level elevations. The report projects that along the U.S. Atlantic and Gulf of Mexico coasts, sea level is most likely to rise 26 centimeters by the year 2050 and 55 centimeters by the year 2100. Also, there is a one percent chance that the sea level will rise 30 centimeters in the next thirty years, 120 centimeters in the next century, and four meters over the next two centuries. By comparison, tidal gauge measurements show that sea level along the U.S.

ocean coastlines rose 30 centimeters in the last century. Median projected sea level rise in Oregon is 20 cm (8 inches) in 2050, with a one percent chance of a 59 cm (23 inches) increase by 2100. The new EPA estimates in the report reinforce the desirability of taking actions to mitigate climate change and to adapt to sea level rise.

In developing the new sea level rise assessment, EPA used the latest available science to reduce uncertainties and increase confidence in the results. New science models that predict lower concentrations of CO₂ were used. The new EPA study also includes the cooling effects of sulfate emissions, stratospheric ozone depletion, and possible declines in ocean circulation. Concurrently, independent satellite data has begun to confirm estimates of current rates of sea level rise. The revised downward projections also are the result of the phaseout of chlorofluorocarbons (CFC's) under the Montreal Protocol. In earlier studies, there was serious concern about the potential contribution of CFC's to

climate change. CFC's were perceived as potentially responsible for about one-quarter of the expected warming in previous assessments. Because of the phaseout, CFC's are no longer expected to contribute significantly to global warming.

EPA's projections are consistent with those of the Intergovernmental Panel on Climate Change (IPCC), a U.N. organization. The IPCC projects that global sea level will rise in a range from 20 to 86 centimeters by 2100, with 49 centimeters the best guess for the year 2100. The EPA median estimate for global sea level rise is 45 centime-

Median projected sea level rise in Oregon is 20 cm (8 inches) in 2050, with a one percent chance of a 59 cm (23 inches) increase by 2100.

ters. However, the EPA prognosis also includes a one percent chance of a global sea level rise to 112 centimeters by 2100 and a one percent chance of a global sea level rise of more than four meters by 2200.

Internet access at <http://www.gcric.org/EPA/sealevel/seattle.html>. For assistance on access, phone 517-797-2730. For further information, contact Alexander Winslow at 260-4033. To obtain a free copy of the report, fax a request to 513-489-8695 or write to National Center for Environmental Publications and Information, P.O. Box 42419, Cincinnati, Ohio, 45242.

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Borax Lake

After 10 years of leasing Borax Lake, in 1993 The Nature Conservancy purchased two 160-acre tracts of land to permanently protect the ecosystem. One tract includes the lake and the other includes most of the hot springs north of the lake.

Anadarko Petroleum Corporation, with headquarters in Houston, is one of the largest independent oil and gas exploration and production companies in the U.S. Anadarko has been exploring for geothermal energy in the Alvord Basin since 1971, and holds 8120 net lease acres near Borax Lake and an additional 39,485 acres approximately 15 miles north of Borax Lake. Anadarko has drill and flow-tested three exploratory wells near Borax Lake and is proposing to build a 22 megawatt,

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Contact Joseph Eilers

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The Forest Practices Monitoring Program

The Forest Practices Act establishes Oregon's policy to encourage the sound management of forest resources. Forest operations—harvesting, road building and others—are regulated by forest practice rules administered by the Department of Forestry. The forest practice rules are designed to protect fish and wildlife, air quality, soil productivity and water quality, while encouraging economically efficient forest harvest. The intent of the Act is to have a set of rules that are adjusted as new information becomes available or management objectives change.

Recently the forest practices program finalized a strategic plan for monitoring and evaluating the effectiveness of the Forest Practices Act and rules. The plan provides a strategy for monitoring that will guide the program over the next six years. The monitoring plan will allow separating the influences of forest practices from the long-term variability inherent in the forest environment.

The monitoring program focuses on four key resources. Each resource requires protection by the Forest Practices Act. The key resources include: Forest and Soil Productivity; Fish and Wildlife; Water Quality; and Air Quality.

Monitoring is designed to address three questions about forest practices:

Effectiveness - The objective of this type of monitoring is to assess whether forest practice rules had the anticipated effect. An example of an effectiveness question is: Does placing large wood in streams improve fish habitat?

Implementation - The objective is to assess whether the activities or rules were carried out as intended. An example of an implementation monitoring question is: Was large wood placed in streams in the manner specified by the rules and guidance?

Validation - The objective is to assess whether the assumptions underlying the design of the Forest Practices Act or specific rules were valid. An example of a validation monitoring question is: Is placing large wood in streams resulting in processes that improve fish populations through time? Because validation monitoring requires addressing complex cause-and-effect questions, these issues will usually be pursued through research and other studies.

Monitoring, at the intensity required to address critical questions, is a complex and expensive undertaking. To ensure success the Department of Forestry is working on collaborative approaches with state and federal agencies, forest landowners and other parties interested in collecting information. Where possible the program is facilitating local monitoring efforts by providing technical assistance for obtaining grant funds, developing monitoring designs, and data analysis. The program staff collaborates with the Department of Environmental Quality on monitoring projects dealing with water quality issues, and is developing a monitoring strategy with the Department of Fish and Wildlife to address the fish and wildlife monitoring questions outlined in the plan.

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Tony Mishoe - Sonar Specialist
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Continued from page 12**Forest Practices Monitoring**

The program facilitates local efforts by developing monitoring approaches for watershed groups.

Scientific research is an important part of the process for understanding whether we are meeting the objectives of the Act and rules. Most of our knowledge about forest ecosystems is derived from the less intensively managed federal lands. Research is needed on the structure and function of the more intensively managed (largely nonfederal) forest ecosystems.

The monitoring program helps define research questions with relevance to forest policy issues. Conversely, the research community assists in defining monitoring questions, developing strategies, refining data collection protocols and management, and in analyzing moni-

toring information. The monitoring program is facilitating a number of research studies designed to analyze and report information for evaluating forest practice rules.

Monitoring, when done properly, is time-consuming and expensive. Nevertheless, we cannot afford to design forest practice rules without a sound evaluation process. The monitoring program is committed to carefully designed, cooperative monitoring to provide the information necessary to refine forest practices over time and improve the protection of forest resources. Contact Liz Dent, Resource Monitoring Coordinator, for more information (503-945-7493).

Continued from page 11**Borax Lake**

binary geothermal power plant near Borax Lake. In a binary plant, the geothermal water is used to heat a second fluid. The cooled geothermal water is then injected back into the geothermal aquifer.

While geothermal power production does not produce air pollution and toxic by-products associated with fossil-fuel and nuclear power, there are concerns about the impact of the plant on the geothermal reservoir that feeds Borax Lake and maintains the unique Borax Lake ecosystem. Cooling of the reservoir, stimulation of seismic activity with injection, alteration of the hydrology of the geothermal system, and plant construction and operation (chemical spills, fires, etc.) have been identified as potential impacts of the power plant that could damage the fragile Borax Lake system.

The Nature Conservancy opposes the construction of the powerplant because of probable damage to Borax Lake and has submitted detailed comments to the Bureau of Land Management in the scoping phase of the Environmental Impact Statement process. For additional information on Borax Lake and to help in protecting this unique piece of Oregon's natural history contact Dan Salzer, Stewardship Ecologist with The Nature Conservancy, at 503-230-1221.

Continued from page 9**Load Limits**

ecosystems. Excessive residential development and heavy public use may, for example, increase nutrient loading and disrupt waterfowl nesting and fish spawning areas. Prop wash may resuspend bottom sediments and wakes may increase shoreline erosion, leading to changes in the food web.

Lakes are an important economic asset and provide economic opportunity. Residential development near lakes provides a tax base for many local governments. Lakes attract tourists and provide an economic base for many communities. Many small communities are dependent upon the spending of lake users and second home/retirement home owners.

Public waterways and public roadways could be integrated into a single unified system of licensing operators, enforcing similar roadway and waterway rules, and promoting user responsibility for the privilege of using public corridors.

In an alternative scenario, lakes will become amusement parks where the biggest motors perform and all other citizens either place their bets, just watch, or leave in disgust.

- L.L. Klessig

Adopted from: Load Limits for Lakes. *Lake and Reservoir Management* 10: 69-73 (1994).

Many Thanks

by Mark Sytsma, Past-president

OLA has accomplished a lot over the past year and I would like to take a few inches of column to acknowledge the hard work of a few dedicated individuals.

We held a regional meeting in Florence this year to provide input into the Coastal Zone Management Plan. Thanks to Bob Anderson, Avis Newell, and Andy Schaedel for organizing that meeting.

We just had our annual meeting. For those of you who haven't organized such a meeting – it is no small accomplishment. Thanks to Bill Wall for pulling everything together.

Thanks to KCM for producing the three-panel, OLA poster; and thanks to Dave Wagner, Bill Wall, Anjala Ehelebe, and others for taking the poster to various meetings.

We have produced four issues of Lake Wise. I would like to thank everyone who contributed articles and the advertisers, without the financial support of the advertisers we could not produce and mail the newsletter. If you need work done on your lake you should consider hiring one of the fine companies that support OLA.

Anjala Ehelebe for arranged the bulk mailing permit for the newsletter, which will save us a lot of money on postage. Thanks Anjala.

Thanks to Andy Schaedel for updating our strategic plan. It describes what we need and want to do, now we need to follow though.

Thanks to Ela Whelan, Dave Wagner, Joe Eilers, Andy

Schaedel for their work on State of the Lakes reports – keep up the good work.

Thanks to Avis Newell for her work as Secretary and on the Northwest Science special issue. Avis also wrote several grant proposal for OLA in the past year. Thanks to Cynthia Price for stepping in as Secretary after Avis resigned to focus on the Northwest Science project, and for her efforts at organizing our files.

Dave Wagner and I attempted to lobby our legislators in Salem for an aquatic weed program in Oregon; an experience that I refer to as "Dave and Mark's Civic Adventure". Dave and Jim Brown, from the Tenmile Lakes, have also been in contact with federal legislators to reinstate funding of the Army Corps of Engineers Aquatic Plant Control Program. I am happy to report that their efforts paid off, and the APCRP will be funded next year. Thanks to Dave and Jim.

Thanks to everyone who attended the Board Training Workshop in March.

Whenever you try to thank everyone who worked on something you always run the risk of leaving someone out. For anyone that I failed to thank for their efforts please be assured that my failure is entirely due to poor memory and tight deadlines, and does not represent a lack of appreciation for your efforts on behalf of OLA. Thanks for a great year.

Lakes-list Available

Individuals with e-mail accounts can keep informed about issues by subscribing to a list server. List servers are like electronic bulletin boards; any one can post a message, and it is automatically distributed to all subscribers to the list. A list server that deals with lakes is LAKES-L. Lakes-l is available by free subscription. To subscribe, send an email message to:

MAJORDOMO@BADGER.STATE.WI.US

No subject heading is needed. In the BODY of the message write in "lower case letters" the following: subscribe lakes-l (lakes-"el", not lakes-"one"). You will receive a message back that describes lakes-l in detail.

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Salmon Decline as a Crisis in Culture

The plight of our once abundant salmon runs is a case study of decades of institutional, political and moral failure. Salmon declines are a symptom of all that is wrong with our society's current way of thinking about the world and about our place in it as a species. It is also a symptom of our worldwide-cultural refusal as a civilization to live within the boundaries of responsible use of resources and habitat sustainability. Ultimately, the story of salmon is an allegory for the story of the human species – and a textbook example of the massive social and political failure now threatening future human survival on this planet. Salmon represent a profound crisis in culture that we have yet to come to grips with as a region, a country or a world society. Fishermen have a special responsibility to be true stewards of these resources, and to sound the alarm to prevent their loss for future generations.

As a species we are short-term thinkers. Neither our social institutions nor our political decision-making structure provides much room for long-term planning of projections. As a species, we are not very well equipped psychologically to respond to a "slow crisis", one that creeps up on us over decades or generations. Among our politicians especially, the decision making horizon extends only from election to election. Our political system is thus crisis-driven – and the slower the crisis the lower its priority on the political agenda.

The salmon habitat crisis, like most crises, came on us bit by bit, stream by stream, even fish by fish. By now, however, entire watersheds have been destroyed by the cumulative impacts of many seemingly small actions combined, until at last entire ecosystems have been pushed toward extinction. A healthy watershed can withstand a limited amount of disturbance, provided it is given a chance to recover naturally. What we see now is not a difference in kind but in scale. The cumulative impacts on coastal watersheds from all human activities combined (logging, grazing, roads, recreation, development, etc.) are sometimes more that such systems can naturally absorb.

What policy makers have not yet grasped is that nature

What policy makers have not yet grasped is that nature is the fundamental source of all economic wealth.

is the fundamental source of all economic wealth. Natural ecosystems and intact watersheds are society's "natural capital": salmon are simply part of the return on that investment. Society has impoverished itself beyond measure by wanton destruction of its natural capital – our ancient forests and pristine rivers – from which salmon and many other sustainable natural benefits have come. Many practices in the timber, cattle, agricultural and other industries have contributed heavily to watershed destruction. These industries may profit, but may do so at the expense of society as a whole. Destroying whole coastal communities so that these destructive practices can continue is simply no longer tolerable. Changes in these practices, many of which are unnecessary, must be made.

– Glen Spain
Pacific Coast Federation of Fishermen's Associations
Adopted from an article in *The Fishermen's News*,
March 1995

URLs = Information

Users of the Internet that have graphical browsers (Netscape, Mosaic, Chameleon, etc.) are able to directly access graphical "home pages", databases, and other information of thousands of government agencies, universities, corporations, and individuals. Graphical home pages make it much easier to navigate the Internet than text only "gophers". To access a home page users must have its address, called a URL (Universal Resource Locator). Below are some interesting URLs. You will find thousands more as you begin to look around. Get a computer, modem, and Internet account and explore!

U.S. Fish and Wildlife Service:

<http://www.fws.gov>

Library of Congress:

<http://www.loc.gov>

U.S. Environmental Protection Agency:

<http://www.epa.gov>

Oregon Lakes Association:

<http://clas.www.pdx.edu/~perkins/oregonlakes/map.html>

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Association News

Preservation Association of Devils Lake

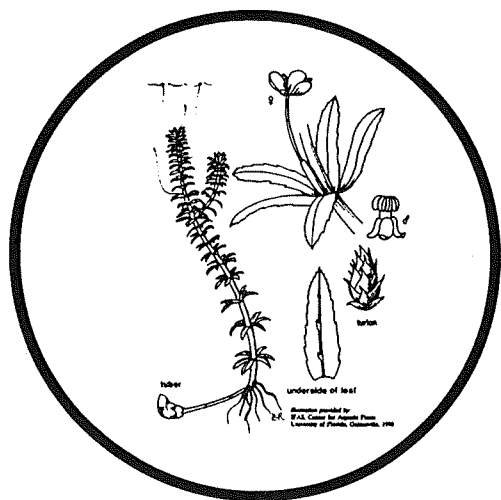
PADL members are concerned about the purchase of property with frontage on Devils Lake by the Siletz Tribe. If the Siletz Tribe acquires the land in Trust, the property would not be subject to state and local taxes. PADL is also concerned that the Tribe would not have to comply with regulations for the protection of Devils Lake, which PADL worked hard to put in place. In response to a letter from PADL Chair, Tim Sharon, the Bureau of Indian Affairs indicated that the Tribe would have to comply with federal environmental and land management laws, and would want to cooperate in maintaining the health of Devils Lake.

Sewering of the West side of Devils Lake is on hold. A new property owner was recently required to install a \$12,000 sand filtration system for on-site waste treatment, with a requirement for sewer hookup when one is available. The expense and space required for a sand filter system makes sewerage a viable option. The PADL Board would like to see a coordinated approach to sewerage all of the Devils Lake watershed with a realistic, affordable plan for the property owners involved.

Send news of your association to:

LakeWise Editor, PO Box 586, Portland, OR 97207.

The Oregon Lakes Association is a nonprofit organization dedicated to the protection and enhancement of Oregon's lake resources and is a chapter of the North American Lake Management Society. Lake Wise is published quarterly by the Oregon Lakes Association, PO Box 586, Portland, OR 97207.



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