Changes in Lake Wise

Past readers of Lake Wise will recognize some changes in the newsletter beginning with this issue. Until now the Oregon Lakes Association (OLA) has published Lake Wise and supported the Lakes and Reservoirs program at Portland State University (PSU) by producing and distributing Citizen Lake Watch News. The Citizen Lake Watch program is coordinated by PSU with funding from the Department of Environmental Quality.

Now, thanks to an effort by PSU to consolidate faculty expertise and interest in research relevant to lakes and reservoirs, PSU will support OLA’s educational mission by publishing Lake Wise with the assistance of OLA. The PSU Lakes and Reservoirs program is part of PSU’s Environmental Sciences and Resources program.

Other than changes in the masthead, you are not likely to notice many substantive changes in Lake Wise. Our focus will continue to be on education and on providing connections for those who want to be actively involved in sustainably managing lakes and reservoirs.

Citizen Lake Watch program notes

The Citizen Lake Watch program is alive and kicking. E.P.A.’s 1996 budget was passed, providing funding for the program, and Lake Watch received full funding. What will happen next year is anybody’s guess.

Oregon’s Department of Environmental Quality (DEQ) supports the Lake Watch program (DEQ Director Langdon Marsh received a personal tour of Woahink Lake from Lake Watch volunteer Bob Anderson last year and saw the value of the program first hand).

All volunteers should by now have been contacted by Stephanie Weise, the Lake Watch Volunteer Coordinator. Stephanie will handle the blue data cards (now that she has been properly swamped with them she is actively searching for a better way for volunteers to communicate their monitoring results to us), and she will be visiting volunteers this summer. Stephanie is earning her Bachelor’s Degree in Business Administration at Portland State University (PSU). She is interested in natural resource management, and has an eclectic mix of experience – from wholesale nursery management to real estate sales.

Mark Sytsma will continue to coordinate the PSU Lakes and Reservoirs program, which in addition to Citizen Lake Watch includes providing technical assistance on lake management issues, and lake and aquatic plant management program development. (See Page 3 for related news.)

Deren Ash wins award for research

Deren Ash, a student at Lake Oswego High School, was awarded $200 and a plaque by the North American Lake Management Society for his research on water quality measurement, which he presented at the Society’s 15th International Symposium last year.

In this issue:

National news ......................... 7
On the calendar ....................... 9
New publications ..................... 9
URLs .................................. 8
Editor’s message ...................... 8
Joint WAPMS, NALMS, and OLA meeting attracts over 170

Over 170 people attended a joint meeting of the Western Aquatic Plant Management Society (WAPMS) and the North American Lake Management Society (NALMS) held at Portland State University in late March. NALMS chapter representatives from Oregon (OLA), Washington and California met and participants came from as far away as Georgia and Alaska. Proceedings will be available in July or soon after.

The presidents of NALMS and the Aquatic Plant Management Society (APMS), Lisa Conley and Terry McNabb, respectively, attended the meeting and each gave a presentation on the activities of their organization. (APMS is the parent organization of WAPMS).

The conference began with a Symposium on Non-indigenous Species in Western Aquatic Ecosystems. Invited speakers presented information on a number of invasive species currently in or threatening to invade the Northwest. Spartina alterniflora (smooth cordgrass); Hydrilla verticillata, and Lythrum salicaria (purple loosestrife) were the featured plant species. Zebra mussels, spiny waterflea, and various fish species were also discussed.

Twenty-seven papers were presented in six sessions, on a variety of lake and aquatic vegetation management subjects. These included paleolimnology; lake management and public education programs; and control of aquatic weeds using herbicides, biological agents, and mechanical techniques. The papers were consistently high quality and well presented.

Continued on Page 6, Column 3

PSU team evaluates threats to Blue and Fairview Lakes

The Friends of Blue and Fairview Lakes have asked researchers at Portland State University (PSU) to evaluate the potential for degradation of the two lakes by contaminated groundwater in East Multnomah County. Chris Noble and Jane Graybill, project sponsors for the Friends group, secured a grant from the Environmental Protection Agency for the study. Of principal concern are two solvents, trichloroethylene (TCE) and perchloroethylene (PCE), known to be in groundwater south of the two Troutdale lakes after a decade of groundwater studies of local industrial sites owned by Boeing of Portland and Cascade Corporation.

Continued on Page 8, Column 3

Landslides impact lake water quality

Record rainfall in Oregon this year resulted in a substantial increase in sediment loading to Oregon lakes. Many tons of sediment deposited in Oswego Lake during flooding of the Tualatin River in February are currently being dredged from the lake. In Devils Lake a plume of turbid water from Rock Creek was clearly visible this spring, and Hagg Lake still has extremely high turbidity as a result of a landslide into one of its tributary streams. These are just a few examples.

A survey recently conducted for the Pacific Rivers Council suggested that landslides in Cascade and Coast Range watersheds are correlated with logging activity. The survey identified 651 landslides in 82 Oregon and Washington watersheds; 71 percent of the slides occurred in clear-cut areas within the past 15 years, and 23 percent in older clear-cuts. Only 6 percent were found in uncut areas.

U.S. Forest Service officials criticized the report, citing difficulties in spotting slides in uncut areas, and the importance of ground-truthing results of aerial surveys. Ground-truthing was not conducted in the study funded by Pacific Rivers Council.

Wagner resigns as DLWID Manager

Dave Wagner, manager of the Devils Lake Water Improvement District (DLWID) since November 1991, has resigned his position effective June 30, 1996. Wagner is also the Treasurer of Oregon Lakes Association (OLA) and has been active in efforts to reduce nonpoint source pollution to protect lakes throughout the state.

Wagner cited personal reasons for his resignation, especially the desire to spend more time with his children. He is not certain of his future plans, and indicated that he would like to remain active in OLA and continue working on watershed and erosion-control issues.

As DLWID Manager, Wagner has raised awareness of problems in the Devils Lake watershed, including sediment and nutrient inputs. Over the past year he developed an erosion control ordinance for protection of the lake, and prepared a slide show on erosion problems in the watershed to document the need for an ordinance.

The proposed ordinance was criticized by contractors and former city attorney Joan Chambers during a public hearing before the Lincoln City Council, and will not be adopted by the Council. Wagner made his decision to resign prior to defeat of the ordinance, postponing his announcement until after the vote.
Sediment accumulation rates in Tenmile Lakes show effects of human activities

A study of sediments in Tenmile and North Tenmile lakes indicates that heavy erosion occurred during periods of logging in the surrounding area, and that coho salmon population in the lakes has been adversely affected by the introduction of non-native fish species.

E&S Environmental Chemistry, a Corvallis firm, recently completed the paleolimnological analysis of the two lakes for the City of Lakeside, Oregon. Bathymetric mapping was also done. The City wanted to reconstruct the modern history of the lakes as part of their process of developing a scientific basis for managing them.

Four sediment cores were collected from each lake in May 1995. The ages of sediment layers were determined using isotopes of lead. These results showed significant increases in the rates of sediment accumulation in this century, compared to the rate prior to 1900, considered background level.

The maximum rate of increase was about 10-fold in Tenmile Lake and South Tenmile Lake, peaking in the 1940s through 1950s. After 1950, sediment accumulation in Tenmile Lake dropped to three times the background level by 1978, and then began rising again. A second peak, of 8 times the background rate, occurred in 1993. The rate of sediment accumulation in North Tenmile Lake has dropped to about 3 or 4 times the background level since the 1950s.

The times when sediment accumulation rates have been highest appear to correspond most closely with logging activities, particularly the most recent logging in Tenmile Lake watershed. The study notes that contributions to accelerated watershed erosion also may have resulted from agriculture and lakeshore development, although these activities do not correlate as well with the years when the rate of sediment accumulation was highest.

Although the study of sediments did not reveal a biological marker for changing salmon populations, the two major recorded declines in coho salmon runs correspond closely to the introduction of non-native fish.

The source for this article is the 1996 report, "Recent Paleolimnological Analysis of Tenmile Lake and North Tenmile Lake, Coos County, Oregon," by J.M. Eilers, C.P. Gabala, and E.A. CoBabe

---

Ash wins award

Continued from Page 1, Column 3

November in Toronto, Ontario. (A summary was published in the February 1996 issue of LakeWise.) The award was one of only two given for best student paper.

Already Ash is working on a new research project related to this year’s flooding. His interest is in the impact of the Tualatin River on Lake Oswego. Ash hopes to present his research at the next North American Lake Management Society symposium in Denver, Colorado.

Ash will be working for the Lake Oswego Corporation this summer.

---

CITIZEN LAKE WATCH

Corps of Engineers begins volunteer monitoring of Fern Ridge Lake

The United States Army Corps of Engineers (COE) recently initiated a volunteer monitoring program for Fern Ridge Lake. Over 20 people attended an informational meeting in January, evidence of intense interest in the Fern Ridge watershed.

Those who have volunteered to participate in the program include Clarebeth Loprinzi Kassel, Joseph Kassel, Natasha Okonoji, Richard Locke, Cindy Thieman, James Bruvold, Marnee Comer, and Lee Eggers.

The program at Fern Ridge is an ambitious one. The volunteers collect samples for total dissolved solids, chlorophyll a, pH, dissolved oxygen, and total phosphorus analyses. They also measure Secchi transparency and monitor temperature. In addition to lake monitoring, volunteers are collecting information on inflowing streams. COE staff James Beal and Melanie Ryan assist the volunteers.

The Fern Ridge watershed is a large one and additional volunteers are needed for stream sampling. Anyone who would like to volunteer may contact James Beal (541-688-8147).

---

Citizen Lake Watch volunteers monitor lakes

Thirty-five volunteers are measuring key water quality characteristics in about 20 Oregon lakes and reservoirs as part of the Citizen Lake Watch program. As of June 1996, they are:

<table>
<thead>
<tr>
<th>Big Creek Reservoirs (upper and lower)</th>
<th>Clear Lake Elmer Waite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Susan Gage</td>
<td>Cullaby Lake Janette Goolsby</td>
</tr>
<tr>
<td>Blue Lake (Willamette)</td>
<td></td>
</tr>
<tr>
<td>Koren Marthaller</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Devils Lake

Barbara Hagerman, Al Rice, and Bill Vaughn

Continued on Page 4, Column 1
Volunteers monitoring
Continued from Page 3, Column 3

Fern Ridge Lake
James Bruvold, Marnee Comer,
Lee Eggers, Clarebeth Loprinzi
Kassel, Joseph Kassel, Richard
Locke, Natasha Okonoji, and
Cindy Thieman

Fishhawk Lake
Jack Jenkins

Garrison Lake
Don Martin

Hagg Lake
Wally Otto

Hosmer Lake
Max Peel

Lake of the Woods
Catherine Hayes

Loon Lake
Richard Kaufmann and Steve
Kaufmann

Mercer Lake
Ron Boehi

Munsel Lake
Al Burhans and Roy Fisher

Sunset (Neacoxie) Lake
Lee Smith

Tennmile Lakes
Dean Anderson, Diane Barrett,
John Barrett, Robert Edwards,
Franklin Gray, Dan Jordan, John
Kelsey, and Edward Lopez

Woahink Lake
Bob Anderson

New volunteers are welcome, especially if they can monitor a lake not yet included in the program. Citizen Lake Watch provides training to measure water temperature, Secchi transparency, and dissolved oxygen. Volunteers are also expected to be on the lookout for Hydrilla (described in an article on Page 7). Prospective volunteers may contact Stephanie Weise, the Volunteer Coordinator, by leaving a message at (503)725-3833.

OREGON LAKES ASSOCIATION
a chapter of the North American Lake Management Society

President and Secretary resign

At the June 19 Oregon Lakes Association board meeting, the resignations of Bill Wall, President, and Cynthia Price, Secretary, were accepted. Wall is moving to Sweden and Price has moved to Alaska.

President-elect Andy Schaedel will fulfill the duties of President for the remainder of Wall’s term. Secretarial duties will rotate among other board members until the October election of officers.

Current officers and directors of the Association are listed below.

Oregon Lakes Association
Officers and Directors

President-elect (and acting President)
Andy Schaedel (503)229-6121

Past-president
Mark Sytsma (503)725-3833

Secretary (vacant)

Treasurer
Dave Wagner (503)994-5330

Director 1
Anjala Ehelebe (503)945-7474

Director 2
Allan Vogel (503)645-1676

Director 3
Jack Jenkins (503)646-7807

Director 4
Stan Geiger (503)274-9000

Nominations open

Nominations for 1997 officers of the Oregon Lakes Association are now being accepted. The positions that are open include:

- President-elect
- Treasurer
- Secretary
- Directors 1 and 2

Association members with nominations to offer, and those who would like information about duties and responsibilities of officers, should contact President-elect Andy Schaedel ((503)229-6121). Self-nominations are welcome.

Annual Meeting planned for October

The Oregon Lakes Association (OLA) will hold its annual meeting in Lincoln City on October 19, 1996. President-elect Andy Schaedel, Program Chair for the meeting, is currently developing the agenda and would like to hear suggestions from OLA members for speakers and issues they would like to have included on the agenda.

Volunteers are needed at Fort Stevens

Macy Yates, the Visiting Staff Program Coordinator for Fort Stevens State Park, is recruiting volunteers to conduct presentations, slide shows, demonstrations, children’s activities, field observation, and other educational activities at the park this summer. Volunteers join the park staff for one to three days.

Fort Stevens State Park is located 10 miles west of Astoria, Oregon, off of US 101. It has 595 campsites, more than any other park in the United States. Volunteers can camp free of charge for one to three days. The 3,700-acre park has wetlands, estuaries, fresh water lakes, beaches and dunes, and several types of forests.

Prospective volunteers should call Yates as soon as possible, at (503)861-3170.
All about algae

This article, presented in two parts, is based on "Identifying Algae" by Carole A. Lembi, Ph.D., Professor of Botany and Plant Pathology, Purdue University. Dr. Lembi's article appeared in the May 1996 issue of The Michigan Riparian; it includes more information on marine algae. Part 2 of this article will appear in the summer issue of Lake Wisc.

The term algae describes a diverse group of plants that range from microscopic unicellular forms to 300 foot seaweeds. Algae are thallophytes, which means they lack roots, stems, and leaves. They also lack a sterile covering of cells around their reproductive structures, so that fertilized spores are usually released directly into the water. The third defining characteristic of algae is that chlorophyll a is their primary photosynthetic pigment.

Since algae do not have tissues that conduct water and food, all cells of each organism must be exposed to water and nutrients in order to live. (This also means that for an alga to be effective it must come in contact with all the cells of an alga organism.)

Biologists divide algal species into 9 major groups, named primarily for the dominant color of algae in each group. This does not mean they can always be identified by color; for example, some "blue-green" algae are red, and some "red" algae are green. The most common algae groups found in freshwater are blue-greens (Cyanobacteria), greens (Chlorophyta), euglenoids (Euglenophyta), golden-browns and diatoms (Chrysophyta), and dinoflagellates (Pyrrophyta).

Dinoflagellates (Pyrrophyta)

Freshwater dinoflagellates are usually unicellular, and golden-brown in color. They are seldom a problem, although the marine species, known as "red tide," is toxic to humans and other warm-blooded animals. Dinoflagellates are found in plankton, and sometimes bloom in sufficient quantities to produce the appearance of a brown stain in the water. *Ceratium* is a common one. It is easy to identify with a microscope because of its large, unusual shape and characteristic golden-brown color. It swims in plankton.

Blue-green Algae (Cyanobacteria)

Blue-green algae are closely related to bacteria. They are generally considered to be the most noxious of all the algal growths because some microscopic blue-green algae species produce dense blooms in nutrient-enriched water. Their major harmful effect is the depletion of oxygen that occurs when the blooms die and decompose. Cycles of bloom production and crashing can result in loss of all oxygen in lake-bottom water. Other types of blue-greens form mats on the bottom sediments that float to the surface as black, slimy blobs. Some blue-green strains are toxic to fish and warm-blooded animals.

All of the blue-greens have extremely small cells that are usually aggregated into colonies or filaments, often encased in a thick slime sheath. The relatively large size of these colonies plus the slime helps them avoid becoming the prey of zooplankton. Single cells of blue-green algae are seldom found floating freely in the water.

Another characteristic feature of blue-greens is the presence of pigments other than chlorophyll a. All have blue and red pigments, and the sheaths may have metallic compounds or debris that affect the color. The intensity and combination of these pigments results in a range of color from black to purple to light green found in blue-green algae.

Microscopic blue-greens.

Bloom of the most common species (Anabaena, Aphanizomenon, and Microcystis) usually give the water a pea-green to yellow-green color. Scums form at the water surface under calm conditions, due to internal gas vacuoles that make the cells extremely buoyant. Under a microscope, light bouncing off the gas vacuoles gives them a dark brown or black appearance. While only blue-green algae have gas vacuoles,

Continued on Page 6, Column 1
About algae

Continued from Page 5

many blue-greens species do not; the majority of mat-formers, and some planktonics, do not have them.

Mat-forming blue-greens. Oscillatoria and Lyngbya are the two genera of blue-green algae that form mats. The mats are usually very slimy and appear as a dark blue-green to black or brown. They nearly always grow on the bottom of lakes and float to the surface only temporarily, when dislodged by wind, wave, or animal activity. Viewed under a microscope, these two mat-formers look similar, except that Lyngbya has long cell wall structures that extend beyond the filament, and the filaments of Oscillatoria often oscillate, visibly swaying back and forth.

Blue-green algae that form mats

Green algae, euglenoids, and golden-browns and diatoms will be described in the second part of this article, which will appear in the summer issue of Lake Wise.

Salmon decline in Tenmile Lake

The two major recorded declines in coho salmon runs entering Tenmile Lake appear to be closely related to the times when non-native fish species were introduced there.

Joint OLA meeting

Continued from Page 2, Column 2

The U.S. Fish and Wildlife Service, the U.S. Bureau of Reclamation, WAPMS, and NALMS co-sponsored the Symposium. Corporate sponsors were SePRO, KCM, Aquatics Unlimited, SRI/Shapiro, and Resource Management.

The conference also included a meeting of the Northwest Zebra Mussel Working Group; workshops on fish stocking in wilderness lakes and on algae control; and a nontechnical session for lake residents on lake ecology, weed management, and toxic cyanobacteria.

Jean Jacoby coordinated the NALMS section of the meeting. Debra Bouchard and Harry Gibbons assisted with exhibitor registration. Program Chair for the conference was Mark Sytsma.

Waters

A rock drops in a bucket; quick fierce waves exhaust themselves against the tin circle.

A rock in a pool; a fast splash, and ripples move out interrupted by weeds.

The lake enormous and calm; a stone falls; for an hour the surface moves, holding to itself the frail shudders of its skin. Stones on the dark bottom make the lake calm, the life worth living.

Donald Hall
Old and New Poems

Key: YP = yellow perch, BG = bluegill, LMB = largemouth bass (dates of introduction)

Estimated Coho Salmon Population Entering Tenmile Lake, 1949-1994
(Source: E&S Environmental Chemistry, Inc. 1996. Recent Paleolimnological Analysis of Tenmile Lake and North Tenmile Lake, Coos County, Oregon.)
Washington State fights *Hydrilla* infestations

Recent surveys of Pipe and Lucerne Lakes in King County, Washington, found sprouting *Hydrilla* tubers. The lakes were treated with fluridine, a system aquatic herbicide last year after the *Hydrilla* infestation was discovered. Although the treatment was effective, tubers produced prior to the treatment survived in the lake and are reestablishing the population.

Tubers are dormant, peanut-sized, potato-like structures that are produced in abundance by *Hydrilla*. The "tuber bank" is resistant to herbicide and nearly every other treatment available for control of aquatic weeds. The only effective way to remove the tubers from lake sediment is by dredging the tuber-containing sediments from the lake. This approach is very expensive, and for best results requires drawdown of the lake.

Pipe and Lucerne Lakes are natural lakes so drawdown would require pumping the water from the lakes -- not a practical alternative.

In 1995 King County spent approximately $100,000 on managing the hydrilla infestation, and expects to spend $161,000 in 1996 and 1997 to continue the battle against *Hydrilla*.

Oregon has a draft plan for responding to a *Hydrilla* infestation. However, no source of funding is available for aquatic weed management that would support the level of effort required to control an established *Hydrilla* population.

*Hydrilla* has not been found in Oregon. Prevention, early detection, and rapid response are essential for effective control of this pest in Oregon.

---

**NATIONAL NEWS**

Zebras on the Oregon Trail

The zebra mussel is not indigenous to North America. The species was introduced here from Europe in 1986, via ballast water discharged into Lake St. Clair, near Detroit. Since then, zebra mussels have spread rapidly east to the Hudson River, south as far as New Orleans and west into Minnesota in the Mississippi River system, and into the Arkansas River in Oklahoma. They have also been detected on boats entering California at border checks.

The zebra mussel gets its name from the striped, zebra pattern on its shell. It is the only freshwater mussel that grows attached to surfaces. They form dense colonies (30,000 - 70,000 square yard in Lake Erie) on any submerged object. Their ability to colonize and cover almost any type of surface has led to serious problems. The mussels have blocked fish screens, trash racks, small-diameter intake pipes, powerplant cooling systems, wet wells, water treatment facilities, and water delivery systems. They also attach to boat hulls, motors, docks, mooring lines, etcetera. Utilities in the Eastern U.S. spend an average of $200,000 annually to control zebra mussels.

Ecological impacts of zebra mussels in the U.S. are not fully understood. Zebra mussels alter the trophic structure of an ecosystem by filtering phytoplankton and zooplankton from the water, removing these food organisms' availability for fish and other aquatic life. Changes in the Great Lakes since zebra mussel invasion include increased water transparency, aquatic macrophyte and attached algal growth, and changed bottom fauna. How these changes will affect fisheries is unknown.

Zebra mussels are expected to spread into Western U.S. freshwater systems. The Western Zebra Mussel Task Force was established by western states and provinces and federal agencies to coordinate prevention and control measures in the West. Monitoring and prevention programs are being developed to slow the spread of zebra mussels, which will save millions of dollars in control measures. Al Smith is the Oregon contact for the program. He can be reached at (503)872-5252, extension 5426.
Churches enter debate on endangered species

The National Council of Churches (NCC) recently initiated a campaign in support of the Endangered Species Act (ESA), which may provide some protection for salmon.

According to the NCC, the Endangered Species Act has been an important way that we as nation "exercise our God-given responsibility to serve as guardians and protectors of God's creation." In Oregon, the effort is being led by the Interfaith Network for Earth Concerns (INEC).

The campaign was initiated because some members of Congress are seeking to undermine the ESA. Earlier this year several ESA reauthorization bills were introduced. The most prominent was the H.R. 2275, introduced by Representatives Don Young (R-AK), Chair of the Resources Committee, and Richard Pombo (R-CA). The bill was widely criticized by environmentalists, Democrats, and moderate Republicans.

In response to the involvement of a variety of organizations, including the INEC, Congress is reconsidering proposed changes to the ESA. In a two-part interview with Greenwire, an environmental news daily, House Speaker Newt Gingrich discussed many of the environmental issues facing Congress. The Speaker confirmed for the first time that he will not let the Endangered Species Reauthorization bill authored by Young and Pombo come to the floor for a vote. Instead, Gingrich says, he will work to have a "compromise" bill be the vehicle for ESA reauthorization, perhaps the bill currently being written by Representatives Jim Saxton (R-NJ) and Wayne Gilchrest (R-MD).

Gingrich concluded that "it's very possible that we'll be able to come up with a significant ESA before the year's up, and that's my hope." In the Senate, a proposal by Senator Dirk Kempthorne (R-ID) is so far the major vehicle for ESA Reauthorization. This bill is similar to the Young/Pombo proposal and has faced equal criticism. So far, there has been no definitive word that a compromise proposal, similar to the possible Saxton/Gilchrest bill, is in the works.

Solvents threaten lakes

Continued from Page 2, Column 2

The prior studies have shown that TCE and PCE are linked to elevated cancer risks in humans and that groundwater from the contaminated plume may enter Blue and Fairview Lakes and also the Columbia Slough. Groundwater in the area is used by communities at Blue Lake and Fairview Lake. Additionally, the City of Portland's emergency wells lie between the contaminated sites and the Columbia River.

Scott Wells, Civil Engineering, is leading PSU's team which is evaluating previous studies of the contaminated groundwater. Also on the team are Shuguang Li, Civil Engineering; geologists Marvin Beeson and Michael Cummings; Dick Pratt, Environmental Sciences and Resources; and Karran Brandt of David Brown and Associates. They expect to report their findings by mid-summer.

Their report will focus on the geology of the local strata in which the groundwater is moving, the rate of spread of the contaminated groundwater plume, and the risks of the contamination to humans and the environment in the Blue and Fairview Lakes area.
Symposium held at Diamond Lake

The Umpqua National Forest hosted a symposium on Diamond Lake on June 14, 1996, at Diamond Lake Lodge. The informal, one-day conference included presentations on a variety of subjects including hydrology, water quality, and biology of lakes. U.S. Forest Service and Oregon Department of Fish and Wildlife managers and scientists were the speakers.

For additional information contact Mikel Jones, Umpqua National Forest; PO Box 1008; Roseburg, OR 97470. (541)957-3356.

NEW PUBLICATIONS

Freshwater Algae, Their Microscopic World Explored
H. Canter-Lund and J.W.G. Lund
This science book might also sell as a "coffee table" art book; the subject is fascinating and the photographs are captivating. The large format book introduces all the major freshwater algal groups, parasitic fungi, protozoans, and other invertebrate predators. The text is very readable and more than half of the book's 640 high quality photographs are in color. They are delightful proof of the diversity of the microscopic, aquatic world. Published by Biopress Ltd., The Orchard, Clange Road, Bristol BS3 2JX, England.

Restoration of Stream Ecosystems – An Integrated Catchment Approach
Edited by M. Eiseltova and J. Briggs
This is an anthology of case studies intended for use by those responsible for stream restoration projects, such as ecologists, engineers, and planners. These studies on river restoration in Central and Eastern Europe would also be useful for agricultural, forestry, and other related resource management. Contact Natural History Book Service, 2-3 Wills Rd., Totnes, TQ9 5XN, Devon, U.K.

Aquaculture in the United States, A Historical Survey
R.R. Stickney
Stickney goes into detail about early fish culturists and the development of the fish culture industry, as well as touching on current issues: "hatchery bashing", protecting species versus protecting stocks, etc. Published by John Wiley and Sons, 800-225-5945.

Principles and Practice of Plant Conservation
D.R. Given
This comprehensive handbook is for practicing conservationists. It explains the concepts and principles underlying successful plant conservation. It includes chapters on how plants become threatened or extinct, plant population management, managing protected natural areas, conservation in botanic gardens, ethics, education, legislation, and economics of plant conservation. Contact Timber Press, 503-227-2878.

"The Toxicity of Diquat, Endothall, and Fluoridone to Early Life Stages of Fish,"
This report on a technical study describes toxicity tests on walleye, largemouth bass, and smallmouth bass. The study concluded that maximum label concentrations of fluoridone and endothall were at least one order of magnitude greater than concentrations found to be toxic. Potential toxic concentrations of diquat, however, may occur if label application directions are followed. The authors suggest that diquat applications rates should be reduced in shallow water (less than 1 meter) and that diquat be applied as a dilute spray, instead of pouring undiluted diquat from its container into a lake. In addition, the authors concluded that application of diquat should be discouraged in lakes containing sensitive fish species at times when early life stages are present.

ON THE CALENDAR

July 14-17, 1996
Aquatic Plant Management Society Conference on the latest developments in aquatic plant science and management. Burlington, VT. (904)429-4119.

July 25-26, 1996

August 1-4, 1996
Northwest Environmental History Symposium. Designed for teachers. Washington State University; Pullman, WA. (800)942-4978; wsuconf@mail.wsu.edu.

September 26-28, 1996
Washington Lake Protection Association. Technical and nontechnical sessions for lake residents and managers. Spokane, WA. Contact Dave Lamb (509)536-9676.

October 7-8, 1996
2nd Annual Pacific Northwest Water Issues Conference. Portland, OR. Contact Oregon Water Resources Institute (541)737-4022; owwri@css.orst.edu.

October 19, 1996
Oregon Lakes Association. Lincoln City, OR. Contact Andy Schaedel (503)229-6121.

November 13-16, 1996
RANDOM THOUGHTS

On a clear, sunny day, the Potamogetaceae, flourishing at a great depth amid the transparent waters, animated by numerous members of the insect and finny races present a delightful spectacle, and long stems of the white and yellow water lilies may be traced from their floating flowers to the roots... One feels in such a place estranged for a time from the cares and vicissitudes of the world and the charms of nature penetrate, with their refining influences, the deepest recesses of the heart, denying to human language the power to give them full expression.

W. Gardiner
_The Flora of Forfarshire_ (1848)

Although the desire to control nature may be censured by the purist as an attitude of mind conceived in arrogance, it unquestionably reflects a contemporary economic and agricultural necessity. If resources of land and water are to be efficiently exploited in the provision of food, other natural products, power, and communications, an effort must clearly be made to resist and, if possible, eliminate biological factors which would otherwise quickly thwart this aim. To acknowledge this need is not to condone such clumsy and short-sighted attempts to control weeds and pests as have in recent years evoked proper public outrage at the use of certain herbicides and insecticides.

C. Duncan Sculthorpe
_The Biology of Aquatic Vascular Plants_

A Weed: A plant that interferes with management objectives for a given area of land at a given point in time.

J.M Torell
from _Weeds of the West_

Contributed by Mark Sytsma

If you are not on our mailing list and would like to be, please send your name and address to the attention of Beth Woodward, Lake Wise Editor, at the address below.

Lake Wise is printed on recycled paper.

LAKE WISE
Spring 1996

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

PORTLAND STATE UNIVERSITY

Andy Schaadel
ODEQ
811 SW 6th Ave.
Portland, OR 97204