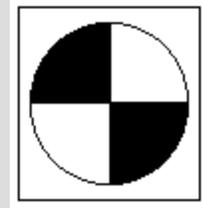


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2008

Editor:
Roger Edwards

LAKE WISE

A Voice for Quiet Waters



The Oregon Lakes Association Newsletter

On a Pleasant Day in Last September

By Karen Williams, Northwest Region Water Quality, ODEQ

On September 13th, the Oregon Lakes Association held its annual meeting on the southern shore of Wallowa Lake. The late summer day was cool and brilliant and attendees welcomed the roaring fire that warmed the meeting hall at the United Methodist Camp. At the opening of the conference, Joe McCormack, vice president of the Wallowa Band Nez Perce Trail Interpretive Center, welcomed conference attendees to the Wallowa basin, a spiritual space for many Tribes in the region.

Bill Knox, Assistant District Fisheries Biologist at the Oregon Department of Fish and Wildlife in Enterprise, gave a thorough overview of the area's physical, biological, and cultural aspects. Some particular projects of interest included collaboration of ODFW and the Nez Perce Tribe to study kokanee reintroduction to the lake and a \$6 million upgrade of the 1918 dam at the north end of the lake to meet safety standards.

Following Bill's talk, OLA Board member and Stoel Rives attorney, Jennie Bricker, moderated a panel discussion about Native American perspectives on environmental stewardship. Arlen Washines, Wildlife and Natural Resources Manager for the Yakama Nation, and Joe McCormack, as a member of the Wallowa Band of the Nez Perce Tribe and a community leader, shared with the audience a broader and more holistic view of natural resource management than typically carried out by state and federal government programs. Mr. McCormack, emphasized the importance of protecting the whole lake basin, not just the moraine that has received so much attention. He related how land use and natural resource conflicts sometimes highlight the difficulty of translating values from one culture to another – how to convey the Nez Perce concept that “everything has its count.” Relationships between the Nez Perce tribe and other federal and state governments haven't always been so smooth. In the late 1970s, for example, the Tribe sued the state for bad management of fisheries resources. But now, the Tribe and ODFW share the goal to have harvestable numbers of endemic and anadromous fish in the lake.

Mr. Washines introduced himself as a member of the Small Hawk band of the Palouse people, an educator, an administrator, and a descendant of a good friend of the famous Nez Perce Chief Joseph. He highlighted not only differences between Native American and non-Native American perspectives, but also conflicts within Tribal culture regarding land and water management. While traditional beliefs shun ownership of nature, the Yakama Nation runs one of the nation's more successful logging operations. A traditional belief that native plants and animals are superior to humans, conflicts somewhat with cattle ranching that deemphasizes the active management practices of the past and harms water quality in the process. Still, Yakama Nation timber operations emphasize sustainability, having passed a resolution protecting the spotted owl ten years before the U. S. government did. The Yakama Fish and Wildlife program is the largest Native American natural resources program in the U. S and its policies are influenced by a cultural resources program as well as by science. While not all staff are Native Americans, religion is the driving force behind the program's operations.

The questions to the panel generated more thoughtful conversation about the missions of the Tribal natural resources programs, the role of oral and written laws, understanding the carrying capacity of the land, and conflicts between passive or managed restoration.

After lunch in the sun on the veranda and re-election of President Roger Edwards and Treasurer Toni Pennington, Christina Moffit of the USGS Fish and Wildlife Research Unit at the University of Idaho presented some highlights of control mechanisms for New Zealand mudsnails. She began by describing a Nature Conservancy preserve in Idaho with a theory that the snail arrived there on the felt soles of waders. The snails survive desiccation and reproduce both sexually and asexually, but do not survive frozen winter temperatures well – 72 hours of freezing temperatures kill them. Her studies at a fish hatchery showed the snails survive in the guts of fish and infected fish can transport them to new locations. Hydrocyclonic filtration can produce snail free water that can be used to flush snails from fish scheduled for stocking before they are moved.

Randy Henry of the Oregon State Marine Board continued the invasive species theme with an update on his Agency's efforts to battle the invaders. First was the harsh revelation that a boat washing station, even a fancy in-ground one, is not much help in preventing infestation unless the station includes a knowledgeable staff. OSMB staff receive Level II training and their Enforcement staff patrol with the State Police. Four hot water pressure washers on trailers are ready to be deployed for drills and real-life emergencies. Last year, these systems were tested when OSMB got word of a boat bound for Oregon that had been in Lake Mead and was contaminated with zebra mussels. OSMB is advocating for funding for each county to have an invasive species program and a position in the Governor's office on invasive species.

Steve Holt of EnviroScience Inc. moved the discussion from invasive fauna to flora; Eurasian water milfoil, specifically. Milfoil reproduces by fragmentation, can survive desiccation, and, among other bad habits, outshade native vegetation. The species is spread primarily by boats and trailers and control options are limited. Harvesting is a last resort treatment and pesticides also affect native plants. The weevil *Euhryhiopsis lecontei* seems to be a great solution. They are native and entirely aquatic, with the larval state being the most destructive for the plant. Milfoil is all the weevils will eat and they prefer the Eurasian variety. As the milfoil crashes, so does the insect. The weevil will not eradicate the milfoil, but allows it to be integrated with the native community. Several attendees took the cute little brown fuzzy milfoil toys that Steve had brought "for the kids."

Jaime Davis traveled to Wallowa Lake from the Idaho Association of Soil Conservation Districts to tell us about successful TMDL implementation at Lake Pend Oreile. Her Association has created voluntary educational programs that can be adapted to specific localities, and which had a role in this effort. The programs focus on homes, farms, and lakeshore living. They include fact sheets, self assessments of household and land use practices, and an action list based on risk of those practices to water quality. The programs have been well received, possibly because they are made pertinent to specific neighborhoods. The Association also maintains Best Management Practice sites, homeowner workshops, and other outreach techniques.

PSU Emeritus Professor Richard Lycan spoke on update efforts for the *Atlas of Oregon Lakes*. He estimated \$250,000 to update the Atlas and make it electronic; coffers currently contain \$15,000 and some volunteers. Currently the team is georeferencing the lake surface area and bathymetry. The printed bathymetry can be low tech scanning of existing paper maps or new high tech, sonar surveys of particular lakes. The update team is also contemplating adding a stream layer from the National Hydrography Dataset Plus. They are beginning

with a prototype of SW Oregon. OSU Press is still interested in publishing the Atlas, and a web presentation is also likely. UPDATE – Receipt of a modest ODEQ grant will spur progress on this project.

Environmental Sciences Professor John Reuter of PSU, provided a thought-provoking overview of how paradigms are changing in environmental science and adaptive management, with examples from Upper Klamath and Agency Lakes. While science helps to formulate a problem, science alone does not help resolve “wicked” problems – those large-scale problems where values on different outcomes can change over time. Adaptive management is necessary to deal successfully with these problems because it involves both science and values. Adaptive management should involve experimentation and consideration of scale and place. Science and management are evolving to address wicked problems that include value judgments and thresholds.

The final talk of the day was Kyle Haggard, OSU graduate student, who presented his research project on Klamath Lake and *Aphanizomenon flos-aquae* (AFA). AFA was not always present in Klamath Lake, but the first recorded blooms correlate with the time period when the wetlands were being “reclaimed”. Reclaimed lands contribute little marsh effluent flowing to the lake. Kyle’s lab and field experimentation involved the effects of barley straw, wetland plants, and the extracts of each on AFA growth. He found that barley straw and marsh plants, when applied above threshold levels, suppressed AFA growth, barley straw to a greater extent.

Carmen–Smith Hydropower Project Seeks Re-Licensing

As discussed further below and in recent issues of *Lake Wise*, the licensing requirements of the Federal Energy Regulatory Commission provide a periodic opportunity to consider the continued relevance of electrical generation projects. There is a wealth of dam sites in the mountainous topography and wet climate of the Pacific Northwest, and not surprisingly, hydropower is the principal means of electricity production here. On October 21st, an agreement was signed to assure the continued relevance for another of these hydropower projects. The Eugene Water and Electric Board’s Carmen-Smith Hydroelectric Project will undergo an estimated \$135 million of refinements to retain its FERC license for the next 50 years.

This complex facility came on line in 1963 with a capacity to produce 118 MW of power. The uppermost part of the project is Carmen Dam, which impounds a 30 acre pool on the McKenzie River, about 2 miles downstream of Clear Lake. Water from this reservoir is diverted through a 9.5’ diameter, 11,381’ long tunnel to Smith Reservoir, a 15,050 acre foot pool on the Smith River. A second tunnel 7,325’ long diverts water from Smith Reservoir to the Carmen Powerhouse penstocks feeding the Trail Bridge Reservoir, a 2,100 acre foot re-regulating reservoir at the junction of the Smith and McKenzie Rivers. The Trail Bridge Dam also has power generators. The cost of this project was \$31 million and it includes three campgrounds, three boat ramps, a protected spawning channel immediately downstream of the Trail Bridge Dam, and a 19 mile power transmission line to BPA facilities at Cougar Dam. The bonds that financed the project were paid off in 1997 from fees assessed to electricity consumers.

The spawning channel is an interesting feature of this project. It is a 30’ by 1000’, man-made meander adjacent to the McKenzie River that has been optimized as spawning habitat with ample stream flow over deep gravel beds. It has restricted public access and has been well utilized by spring Chinook, whose continued upstream migration is blocked by the dam. A fish ladder to restore this lost habitat is included in the re-licensing agreement, but provisions to improve the spawning channel and enhance spawning and rearing opportunities in additional side channels are also part of the agreement.

The agreement to relicense this Project was between EWEB and 16 public agencies or private organizations, and requires changes in both the structures of the Project and in the way it is operated. The agreement sets minimum stream flow levels in the river reaches below all three dams, and requires enhancements to the spawning and rearing habitats in these reaches. The addition of brush bundles and large logs to Smith and Trail Bridge Reservoirs will also provide enhancements to fish habitat. Periodic flushes of up to 500 cfs must occur downstream of Smith Dam to mimic natural flooding events, but a high flow by-pass valve must also be added to the Carmen Powerhouse to protect the Smith River improvements from flood events. The pools where juvenile fish can become stranded during drawdowns in Trail Bridge Reservoir must be reconfigured, and levels in the reservoir must maintain bull trout access to Sweetwater Creek. Provisions for upstream and downstream fish migration must be established at Trail Bridge and Smith Dams, and at Carmen Diversion Dam too if cutthroat trout reintroduction and brook trout control efforts there are successful.

Terrestrial elements of the Project are also subject to re-licensing requirements. The Ice Cap Creek, Lakes End, and Trail Bridge Campgrounds will all be rebuilt to new standards, day use areas will be added to the three reservoirs and at Beaver Marsh below Carmen Diversion Dam, and a kiosk with interpretive displays will be added at Trail Bridge Campground. Fishing access areas and the three boat ramps will be improved, and the dispersed campsites that have appeared along Smith River will be restored to their natural conditions. Data from the stream gages monitoring the minimum flow requirements will be available to the public. The transmission line will be rerouted away from the riparian zone of Deer Creek and the vegetation below the transmission line will be kept in an early stage of succession and watched for invasion by non-native species. Special status plants and animals within the Project area will be protected. Bald eagle surveys will be done annually, snag trees will be counted, and activities producing disturbances during nesting season will be prohibited. A fund receiving \$20,000 per year will be established for habitat protection and improvements.

Dams Disappearing in Rogue River Drainage

FERC licensing is not applicable to dams that are not part of hydropower projects, but there are other avenues to review the continued relevance of these structures. Private legal challenges ultimately led to the notching of the Elk Creek Dam this past September, allowing this Rogue River tributary to run free again. Elk Creek joins the Rogue River from the north, at about half the distance between Lost Creek Lake and Trail OR. The dam site is 1.5 miles upstream of Elk Creek's mouth. Construction began in 1971 as part of the Congressional authorization that also built Applegate and Lost Creek Dams. It was only about one-third completed when the injunction to stop work was issued in 1985. The dam has been operated in its uncompleted state since then, but it was ultimately decided that the most efficient way to assure long term fish passage in Elk Creek was to restore a channel through a notch in the dam. Notching better preserves the option to complete the dam later, should that decision ever gain support.

Five miles upstream from Grants Pass, the pool behind the Savage Rapids Dam was drained for the last time in October. The 34' high dam has backed up 1500 acre feet of water on the Rogue River since 1921. It is owned and operated by the Grants Pass Irrigation District, which supplies water to 7000 acres of cropland. The dam is scheduled for removal next year, once the installation is complete for the pumping facility that will satisfy future demand for irrigation water. The agreement to remove this dam hinged on the requirements to upgrade the fish passage facilities to meet the standards needed for an endangered run of coho salmon.

Work began this past summer to dismantle the diversion dam at Gold Hill OR. This 60 year old Rogue River barrier was originally built to supply water to a cement company, but has since been used to divert domestic water for Gold Hill. Completion of a pumping station here too has eliminated the need for the dam.

When the removal is finished at Gold Hill and at Savage Rapids, only the Gold Ray Dam will remain to block the Rogue River between the Pacific Ocean and Lost Creek Lake, a reach of 157 miles. The Gold Ray Dam, located about 4 miles west of White City, was built of logs in 1904 as a private hydropower facility. A concrete structure replaced the original dam in 1941 and it continued producing power until 1972, when Pacific Power decided to the dam and 29 adjacent acres to Jackson County. Studies are underway to determine the feasibility of removing the dam. At question are the sediments behind the dam, the value of the wetland habitat the dam produces in its slack waters, and continuing the long established fish counts from the facilities there.

Islands Appearing in Oregon Lakes

Here is a story that brings together many of the topics commonly discussed in *Lake Wise*. The saga goes back at least to 1995 when the National Marine Fisheries Service asked the US Army Corps of Engineers to study Caspian Tern predation on young salmon at Rice Island, in the Columbia River estuary. Caspian terns are the largest of the North American terns. They are a cosmopolitan, piscivorous bird of the gull family that began nesting on islands in the estuary in 1984, as the placement of spoils from dredging the Columbia River channel made these sites attractive for nesting. The tern nesting season corresponds to the period when juvenile salmon are migrating to the ocean. The combination of an ample food supply and bare ground for an island rookery inaccessible to predators allowed the terns to thrive. Prior to 1984, terns were only noted in the Columbia River estuary as non-breeding, summer residents.

The initial studies of the situation showed that millions of juvenile salmonid fish were being devoured by the terns. Young steelhead were especially prone to predation. Many of these fish were from endangered runs, making it cost effective to boost the recovery effort by reducing the predation. The terns had formerly nested on East Sand Island at the mouth of the Columbia, but now preferred Rice Island, about 15 miles upstream. The difference seemed to be that vegetation on the downstream island had eliminated the bare sand stratum with a clear view to the water that the terns seek out. The greater variety of fish for the terns at East Sand Island would decrease their reliance on salmon, so the decision was made to optimize conditions at East Sand Island and discourage nesting at Rice Island. This plan was successfully carried out after a two year delay to resolve concerns about disruption of the tern colonies.

By 2002, an estimated 9,900 breeding pairs of terns were nesting on East Sand Island. This number was approximately 70% of their entire Pacific Coast population, and was still exerting a significant predation on salmon. The number of juvenile salmon and steelhead being consumed annually was estimated at 4 to 6 million. The concentration of terns at a single site puts their population at risk from a single catastrophic event, such as predators, storms, or disease. Dispersing the population over a wider area would address both concerns. The USACE and the US Fish and Wildlife Service issued a Record of Decision in November 2006 describing how nesting sites would be developed elsewhere in Oregon and in the San Francisco Bay.

The first of these sites appeared in Fern Ridge Lake in February 2008. It is a 1 acre island located southeast of Gibson Island and west of Royal Avenue on the east shore of the lake. Tern Island provides a 1 foot deep bed

of pea gravel for nesting, which is completely enclosed and protected by revetment. The initial tern response to these plush accommodations has been disappointing but may still improve.

The second island was constructed in Crump Lake and proved to be more successful. Crump Lake is the southernmost of the large playa lakes of the Warner Valley in Lake County. These lakes are a landmark for long established bird migrations, and Caspian terns once routinely nested on an island in Crump Lake. That island was destroyed by artifact hunters in the 1950's and subsequent restoration efforts have been insufficient, up to now. The newly restored island provides 1 acre of nesting habitat similar to that at Fern Ridge Lake. It is located north of the peninsula that nearly bisects the lake, and about a mile northeast of the shoreline above the peninsula. The crest of the island is 9 feet above the lakebed to minimize the chances it will be inundated by the fluctuating levels of the playa lake. Construction was completed in March and by June there were about 60 nesting pairs of terns. Their quick appearance here pleased officials, and the number of nests rose to about 400 by the end of the season. The dominant entry on the Crump Lake menu is Tui chub, which suits the terns just fine.

Summer Lake is the final site now planned for tern islands in Oregon. The lake is a large, shallow sump lake, northwest of Lake Abert in north central Lake County. It is more of a marshland than a lake, when it is not dry, but it is a rest area on the Pacific Flyway for migrating birds. Having no outlet, it is an alkali lake due to the mineral salts that accumulate as the water evaporates. There are three, one half acre islands planned for the area, and all three will go in the State Wildlife Refuge Area at the north end of the lake. This area is fed by the Ana River, with dikes in place to manage the water that is available. One or two islands will be built in 2009 off Gold Dike, which extends west from the south end of Windbreak Dike to create a catchment area to the north and west of these dikes. The East Link Island will be in a managed area immediately south of Schoolhouse Lake, and is scheduled to be the first of the three islands constructed. The alternative site for the third island is Dutchy Lake, a permanent pond north of Gold Dike and west of Schoolhouse Lake. Should this site be selected for the third island, it will be constructed of floating recycled plastic modules supporting coarse sand and fine gravel nesting substrate. It is expected that Caspian terns, Canada geese, gulls, cormorants, American avocets, killdeers, and black necked stilts will compete for the Dutchy Island nesting sites.

As these and the California sites are completed, the acreage available for nesting on East Sand Island will be reduced by allowing it to re-vegetate. The rate of reduction is set for one acre lost on East Sand Island for every two acres created elsewhere. The goal is to limit the nesting area on East Sand Island to 1.5 to 2 acres. This plan expands the nesting habitat for Caspian terns, spreads their population geographically beyond an island in the Columbia River estuary, and generally substitutes rare salmon for abundant Tui chub in their diet.

Warning Issued for Fish from Albany's Second Lake

Second Lake is one in a series of four connected, oxbow lakes on the east bank of the Willamette River, to the north of Albany. The lakes are named sequentially in the direction of the Willamette's flow. First and Second Lakes are within the boundaries of Albany's Simpson Park, Third Lake is a slightly wider reach of the stream connecting Second and Forth Lakes, and Forth Lake is the final dilation of the stream before it rejoins the Willamette. Because there is public access to Second Lake, and because it receives ground water and storm water input from the adjacent industrial complex of ATI Wah Chang at Millersburg, formerly known as Teledyne Wah Chang, the lake was subject to investigation by the Environmental Health Assessment Program of the Oregon Public Health Division as part of the follow-up required by the Comprehensive Environmental

Response, Compensation, and Liability Act (CERCLA) regulations for Superfund sites. The industrial site was listed with the EPA in 1983 due to the presence of volatile organic compounds, polynucleated aromatic hydrocarbons, polychlorinated biphenyls, heavy metals, and radium nuclides that had accumulated since the facility started operation in 1956. During that era, regular travelers on I-5 knew to take a deep breath and roll up the windows as they approached Millersburg.

The Superfund cleanup removed contaminated soils and sludge, and began the operation of a permanent ground water treatment system. A periodic review of the cleanup submitted to the EPA in 2005 reported that the soil at the site was no longer contaminated and that no new areas of soil contamination had been discovered. After three years of operation, the remedial treatment of ground water had achieved some reductions of solvent contamination, but had not yet eliminated the problem.

The purpose of the Oregon Public Health Division's inspection was to evaluate the public health risk from exposure to contaminants in and around the ATI Wah Chang plant. The visit to the site was conducted in May 2008 and their preliminary report was issued on October 3rd. Because there is no public access to the plant itself, the inspection focused on Second Lake, and the 50 acre, agricultural area north of the plant where soils had been amended with wastes containing radium. Measurement of radiation and radionuclide levels at the latter area were all below health based standards, so the report concludes there is no apparent public health hazard to neighboring residents and agricultural users of these lands.

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Second Lake is accessible by light weight boats launched in First Lake, and by a trail along its west shore. It is the largest and the deepest of the four lakes, and has populations of crappie and largemouth bass. Samples collected at both ends of Second Lake in September 2006 were analyzed for a long list of organic solvents and metals. The only positive measurement that exceeded a threshold level was for manganese, but there were several others with thresholds less than the detection limit of the analytical method used for testing. Epidemiological

reviews for all these chemicals concluded they pose no apparent health hazard to recreational or transient users of Second Lake. However, the report also recommended that users should refrain from drinking or swimming in the waters of Second Lake.

The warning against eating fish from the lake is precautionary and is based on the lack of testing results for contaminants in fish tissues. While contaminants of concern have not been detected in the lake, they do occur in ground water that flows to the lake, and they can accumulate in the tissues of fish that have prolonged exposure and feed on other creatures in the lake. The report concludes that the consumption of fish from Second Lake constitutes an indeterminate hazard to public health, and recommends that ATI Wah Chang develop and implement a sampling plan to fill this data gap.

LAKE WISE
The Oregon Lakes Association
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OLA Mission: The Oregon Lakes Association, a non-profit organization founded in 1990, promotes understanding, protection, and thoughtful management of lake and watershed ecosystems in Oregon. For additional information on OLA, write to the address above, or visit our website.

OLA welcomes submissions of material that furthers our goals of education and thoughtful lake management in Oregon, and is grateful for the corporate support that helps sustain the organization. Corporate members are offered a one-time opportunity to describe their product or service to Lake Wise readers. These descriptions are not endorsements, and opinions appearing in Lake Wise are not OLA policy statements.

Visit our website: www.oregonlakes.org

2008 Water Contact Advisories for Cyanobacteria

<u>LOCATION</u>	<u>DATE POSTED</u>	<u>DATE LIFTED</u>
Laurelhurst Park Pond	January 1, 2007	
Hills Creek Reservoir	May 15, 2008	July 16, 2008
Willow Creek Reservoir	July 2, 2008	August 20, 2008
Lemolo Lake	July 10, 2008	August 27, 2008
Odell Lake	August 7, 2008	August 22, 2008
Devils Lake	August 14, 2008	November 3, 2008
Dorena Reservoir	August 22, 2008	September 24, 2008
Willow Creek Reservoir	September 10, 2008	
Wickiup Reservoir	September 11, 2008	September 25, 2008
Lost Creek Lake	September 16, 2008	
Dexter Reservoir	September 18, 2008	October 22, 2008
Lemolo Lake	September 18, 2008	October 15, 2008
Wickiup Reservoir	October 2, 2008	October 27, 2008
Siltcoos Lake	October 28, 2008	

Portland's Laurelhurst Park Pond is a shallow, sump lake with a long history as a duck pond. Decades of remedial efforts have tried to overcome the pond's long residence time that makes water quality improvements difficult. It was first posted for cyanobacteria on May 5, 2006 and that original posting was never lifted. In April 2008 the Park Bureau contracted with BioLynceus, an exhibitor at our Wallowa Lake Conference, to try their enzymatic digestion process on the accumulated sediments in the pond, and the treatment has already produced some reduction in the level of the sludge there.