



Lake Steward



The newsletter of the WLR Lake Stewardship program Vol. 7, No. 4 Fall 2000

Prepare now with these simple steps

Here comes Old Man Winter

Winter is on the way and like it or not, we all know what that means in western Washington—cold rain. Besides the obvious seasonal changes in plant, wildlife, and human activity, your lake will change physically and chemically, as well.

Turnover Time

Fall is a time of lake destratification or “turnover,” when cool surface waters sink through warmer, lower layers eventually mixing the lake from top to bottom. If your lake experiences turnover, now is the time. This natural mixing process creates nearly uniform water temperatures from the surface to the bottom. Keep a watchful eye this winter and you will notice

colder, more uniform water temperatures. Lake waters are typically coldest between December and February, reaching near freezing temperatures.

Winter rains generate more surface water runoff resulting in higher lake levels. If you are a lake steward monitoring your lake, you may observe greater Secchi depths as algal growth significantly decreases in the winter, helping with water clarity. That is, until the first severe storm increases turbidity, temporarily decreasing water clarity.

Critter Changes

Just as water changes with the seasons, so does the wildlife



Winter typically means rain, but every once in a while, snow blankets the landscape. Pictured is Shady Lake.

near your lake. Many waterfowl spend winters in western Washington so expect to see increased numbers touching down. In addition to Canada geese and mallard ducks, you may see buffleheads, *(continued on page 3)*

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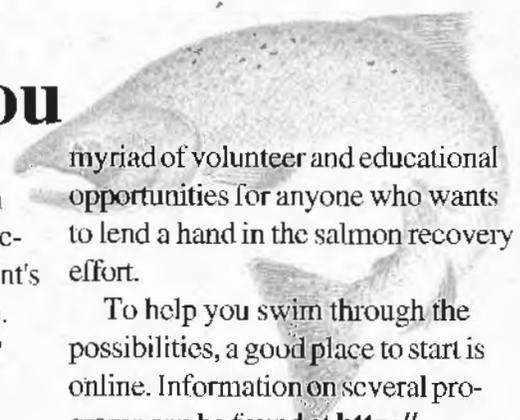
Get involved!

ESA and you

By now nearly everyone is aware that wild chinook salmon and bull trout are listed for protection under the federal government's Endangered Species Act (ESA). But what does that really mean? As local government leaders started working on the problem, one thing became clear: preserving and restoring critical fish habitat will depend on citizens from around the region working together. This idea has spawned a

myriad of volunteer and educational opportunities for anyone who wants to lend a hand in the salmon recovery effort.

To help you swim through the possibilities, a good place to start is online. Information on several programs can be found at <http://dnr.metrokc.gov/topics/salmon/SALtopic.htm>. This website has links to both County-sponsored programs and other organizations such as *(continued on page 4)*



The science of Secchi

Sometimes the old ways are still the best ways, despite modern technological advances in science. Case in point: the Secchi disk. This small disk has changed little since its development by Italian astronomer Pietro Angel Secchi, almost 150 years ago.

The Secchi disk is a simple, cost-effective way to measure water clarity. Water clarity is the depth to which light penetrates beneath the surface of the water. When a Secchi disk is used, the resulting measurement is called Secchi depth.

Measuring Clarity

King County Level II volunteer lake monitors measure Secchi depth on lakes every two weeks throughout the summer. Angle, Retreat, Sawyer, Walker and Wilderness lakes had average summer Secchi depths of five meters or greater (Figure 1). In contrast, Allen, Beaver 1, Cottage, Dolloff, Fivemile, Francis, Jones, Joy, Kathleen, Killarney, Lecta, Lucerne, Margaret, McDonald, Meridian, Morton, Neilson, Pantner, Paradise, Pine, Pipe, Retreat, Sawyer, Shadow, Shady, Spring, Star, Steel, Trout, Twelve, Walker, Welcome* and Wilderness* lakes had average summer Secchi depths of less than two meters.

Kathleen, Panther, and Trout lakes had average summer Secchi depths of less than two meters.



Secchi disk

Clarity Factors

So why the difference in Secchi depths? A variety of factors influence water clarity including weather conditions, biological productivity, suspended sediments, and water color. Productive lakes have higher nutrient levels and have greater algal density which contributes to lower water clarity.

In addition, productive lakes are usually shallower in depth and function as wetlands or are directly influenced by adjacent wetlands. As plant matter breaks down, humic acids are produced that can stain water a dark orange or brown color. This dark coloring can also lessen Secchi depth readings. Several King County lakes are influenced by adjacent upstream wetlands (Figure 1). Volunteers on these lakes often

report water color measurements in the yellow to orange and brown range and corresponding shallower Secchi depths.

Wetland Helpers

Wetlands can filter and store (sink) nutrients rather than export (source) them to a lake depending upon the type of wetland or its location relative to the lake. Alice, Spring, Wilderness, and Sawyer are likely examples of lakes where adjacent wetlands serve more as a nutrient sink given their relatively low productivity and deeper Secchi depths. In contrast, Pine Lake's wetland inflow was a major source of nutrients and was thus diverted from the lake to lessen water quality problems.

Wetlands play an important role in nutrient flow to and from a lake. They also provide critical wildlife habitat and flood storage making them worth protecting.

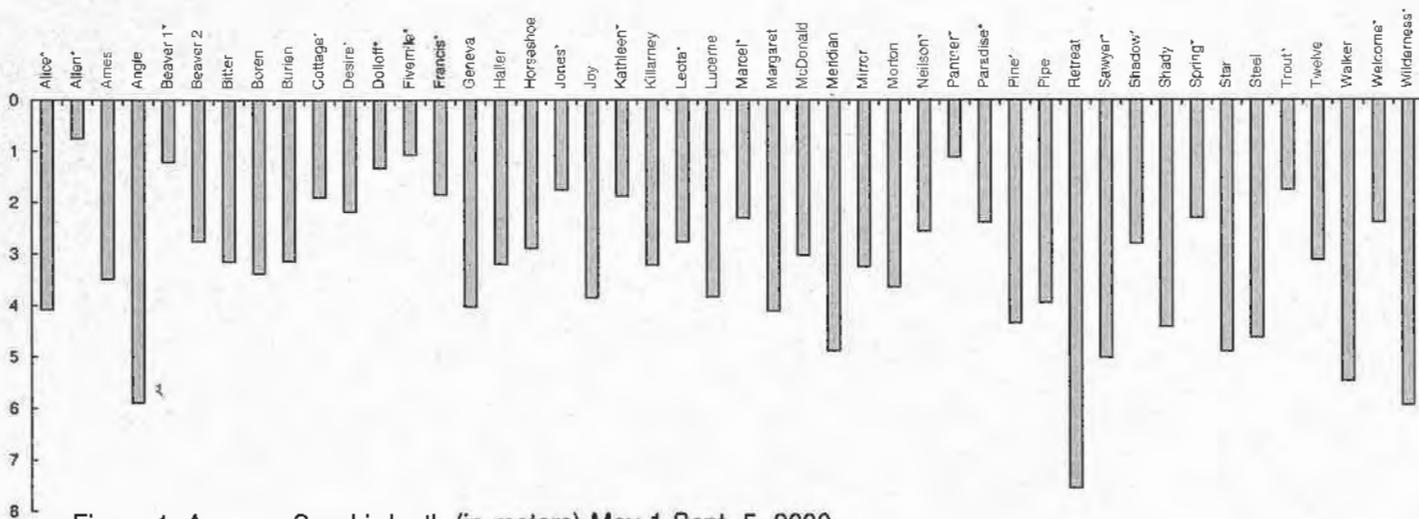


Figure 1: Average Secchi depth (in meters) May 1-Sept. 5, 2000

*Wetland influence

Old Man Winter...



(continued from page 1)

ring-necked ducks, western grebes, and hooded mergansers.

Tie-down Tips

In addition to preparing mentally for the dark, wet days ahead, here are a few tips to help you and your lake through the winter:

- Get your garden ready for the rain. Apply a cover crop (like red clover) in vegetable beds to reduce erosion and prepare soil for spring planting. Mulching around trees and shrubs protects against erosion and insulates roots from extreme cold.
- Fertilize sparingly, or not at all. Winter rains create surface runoff that can wash nutrients and chemicals into the lake quickly.
- If you must fertilize, use slow release fertilizer and try to choose a "window" of dry weather.
- Let nature take its course. Leave dead aquatic plants in place; they still provide structure and habitat for insects and fish.
- Batten down the hatches. Winter storms can bring high winds and large waves. Be sure



Winter is a good time to view wildlife such as the hooded merganser.

that anything that might be blown or washed away in high winds and "rough seas" is tied down securely or pulled well above the normal high water mark. 🌙



Volunteer spotlight

Paradise family ties

Since 1996 sisters Kay Doolittle and Shirley Egerdahl have shared monitoring duties on Paradise Lake, the 17-acre body of water near Woodinville. But the family's relationship with the lake goes all way back to the 1890s when their relatives first settled the area and acquired 100 acres surrounding the lake. Over the years, Paradise has witnessed many changes. Coal-fired trains once crossed an outlet of the lake to reach nearby sawmills and later, the family raised trout for Seattle restaurants. Today, Paradise is mostly undeveloped, reverting back to its more natural state and becoming an increasingly important habitat for many species, from

freshwater clams and salmon to cormorants, otters, and even the occasional bear.

Kay's home is next to the lake so she takes the daily lake level and precipitation readings; Shirley resides in Edmonds and submits the weekly sampling data, sometimes with the help of her sister-in-law, Nancy Doolittle. "Volunteering this way, is a labor of love," explains Shirley. "We view it as one component in taking care, not only of a natural heritage, but of a family treasure as well." Kay is also interested in tracking water levels in order to measure beaver activity on the lake. Besides their volunteer monitoring duties, Kay has been active in the County's noxious weed removal program and



Sisters Kay Doolittle (left) and Shirley Egerdahl (right) know the value of volunteering.

Shirley is a native plant steward and helps run the family native plant nursery. Thanks for all of your tremendous efforts! 🌙

Report from the shoreline

All about Allen

Being small and limited to non-combustion engines, Allen Lake offers residents quiet reflection. Its tea-colored water (caused by a natural peat bed) is home to a few bass and lots of seasonal waterfowl. The lake is approximately eleven acres and privately owned by the eight surrounding neighbors. There is no public access to the lake.

While mallards reside year round, cool weather brings dozens of widgeons, buffleheads, coots, green winged teals, and ring-neck ducks. The wood duck population has increased with at least two pairs nesting on the lake last winter. And

being near the foothills, winter frequently brings a thin layer of patchy ice. Occasionally, the lake freezes solid, fooling the wildlife and enticing the adventurous soul.

This past summer, a new grass-like underwater plant, hog weed, was spotted for the first time. Growth of waterlilies and yellow iris is abundant in undeveloped shoreline areas along with a few stands of cattails.

Water is drawn from southerly wetland areas and overflow escapes to the north along an old seasonal creek that was dredged for many years to increase volume and reduce weeds. Heavy rains quickly impact Allen's water level.

High density development in surrounding areas has also increased the amount of inflow resulting in additional silting and more frequent flooding. Meanwhile, increased regulation on wetlands has discouraged homeowners from cleaning out nonnative plants. The downside is that these factors have contributed to the increasing average lake depth of Allen, killing hundreds of trees.

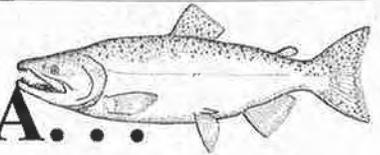
While the concern of continued flooding needs to be addressed, Allen Lake still provides a happy woodland home for both people and wildlife.

Thanks to David and Betty Burton for information used in this article. 🐟



Allen Lake offers splendid serenity.

ESA...



People for Salmon, (425) 831-2426, a statewide program that brings volunteers together for restoration projects.

Another way to become involved with salmon recovery is through King County's **Native Plant Salvage and Habitat Partners, (206) 296-1923**. These programs enlist the help of volunteers to salvage native plants from commercial development sites, and create and maintain salmon-friendly streambanks. Both of these programs are suitable for youth participation as well. Children also benefit from **Wheels to Water (206) 263-6555**, a new County program providing free transportation to students for field trips that focus on the theme of water quality.

Catch Salmon at Home

If time is tight, but you still want your fish fix, check out King County's new **Salmon Cam**. By logging onto the website <http://dnr.metrokc.gov/salmoncam/> you can view real-time video of sockeye, chinook, and coho salmon migrating in a small King County stream. Tens of thousands of salmon will be returning in November and December to spawn in local waterways like the one featured on the salmon cam. Also premiering this fall is **Fish Tales**, a new TV program recounting people's stories about salmon. Look for it airing at various times on local government cable stations. To share your own stories, log onto <http://dnr.metrokc.gov/fishtales/>. Still want to know more about salmon-recovery efforts? Call the toll-free salmon help hotline at **(877) SALMON9**. 🐟

Wonderous wetlands

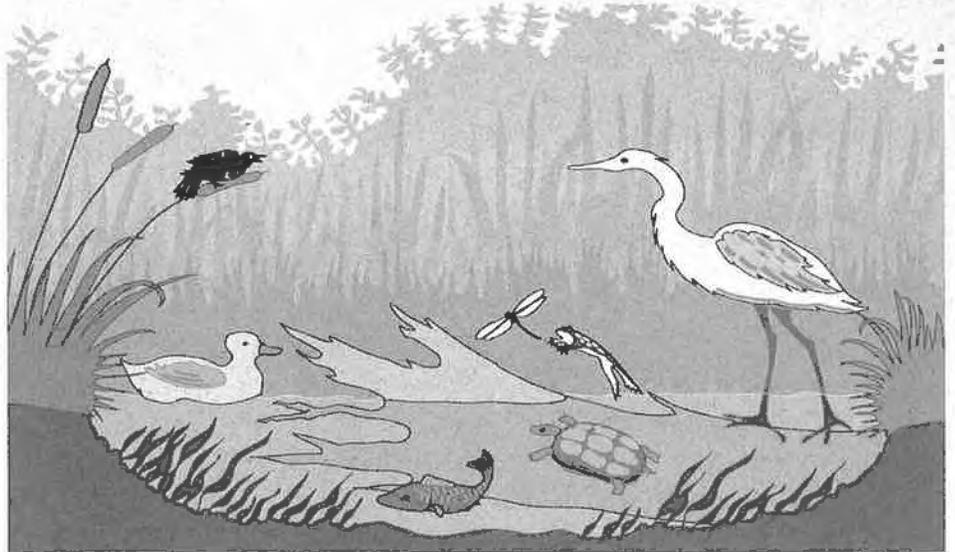
Wetlands are areas that hold water long enough to allow soils and plants to adapt to living in wet conditions. This definition does not always mean that wetlands have open water and ducks swimming in them. In fact, most Pacific Northwest wetlands only have standing water for a portion of the year (usually the rainy season from mid-October through March). Technically, areas are classified as wetlands when water is within 12 inches of the soil surface during the growing season, making it possible for wetlands to never have water visible at the surface!

Wetland areas are dominated by vegetation that thrives in wet conditions. Wetland soils are usually saturated for all, or a portion of the year, which affects the soil chemistry. Peat and muck soils are wetland soils composed of decayed organic matter. The Shadow Lake bog near Renton is an example of a wetland that accumulates peat and is dominated by acid-loving mosses, particularly sphagnum.

Wetland Classification

Wetland scientists classify soil types and identify hydric (water-loving) soil based on soil color, texture, and even smell. You know the rotten egg smell that is typical of swamps? The smell is an indicator of sulfur dioxide which forms in organic soil under anaerobic conditions.

Scientists have classified different types of wetlands according to where they occur in the landscape.



Wetlands support a variety of plant and animal life.

Some wetland classifications include: palustrine (fresh water, including bogs), lacustrine (fresh water associated with a lake), riverine (associated with rivers), and estuarine (salt water estuaries).

Scientists have further classified these wetland types by the vegetation that dominates the system; for example, scientists talk about palustrine forested wetlands (dominated by deciduous or coniferous trees), palustrine scrub shrub wetlands (dominated by shrubs less than 20' in height), and palustrine emergent wetlands (dominated by plants like cattails or buhushes). The Pacific Northwest was historically dominated by palustrine forested wetlands.

What Do Wetlands Do?

Wetlands are very biologically rich and productive environments. Many plants, animals, birds, and

amphibians rely on wetlands for all, or a portion of their life cycles. When wetland scientists talk about what wetlands do, they define specific wetland functions. One of the best known functions is habitat, but some wetlands also act to filter sediments, nutrients, and toxicants. Wetlands can provide erosion control and water quality purification as well.

Because wetlands tend to be in low lying areas and are often associated with streams, rivers, or lakes, they can provide important flood control. Wetlands also store water during the dry season, slowly releasing it when rivers are at their lowest, and providing a critical function called "base flow support." The functions that a wetland provides depend upon its location in the landscape, its connection to other wetlands, the soil and vegetation type of the wetland, and to some extent, surrounding

(continued on page 6)

Wetlands...

(Continued from page 5)

land uses. Even though most wetlands are regulated, not all wetlands are created equally; they do provide different functions.

Wetland Regulations

Wetlands are regulated in King County if they are larger than 5,000 square feet. King County has a wetland classification system that ranks wetlands as class I, II, or III depending on the characteristics of the wetland. Wetlands classes are protected by buffers of 100, 50 and 25 feet, respectively. Wetlands are also protected by state and federal laws.

How Can I Learn More?

An extensive amount of information is available about wetlands. The King County website at <http://>

dnr.metrokc.gov/topics/wetland/WTLDTopic.htm provides current, local information. Also, check out the State Department of Ecology at www.ecy.wa.gov/programs/sea/wetlan.html#edu.

Some general texts that are worth reviewing include:

- *Landscaping for Wildlife in the Pacific Northwest*, Russell Link, 1999.
- *Wetlands*, Mitsch and Gosselink, 1993.
- *Plants of the Pacific Northwest Coast, Washington, Oregon, British Columbia and Alaska*, Pojar and Mackinnon, 1994. 🐾

Upcoming Events

Learn Naturescaping

Saturday, November 18.
Spend the morning learning how to landscape for wildlife, and then dig up plants from a site scheduled for clearing and transplant into your own yard. Contact **Greg Rabourn** at (206) 296-1923 to register for this very popular workshop.

Help Native Plants

Water, transplant, weed, and otherwise care for salvaged plants at the native plant holding facility in Redmond. Weekdays preferred. Please call **Cindy Young** at (206) 296-8065.



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