Lake Steward

The newsletter of King County Lake Stewardship program Vol. 9, No. 4 Fall 2002

What's in your backyard?

Wild Lake Neighbors

Welcome to a world where birds soar overhead, otters frolic along the shoreline, raccoons play in trees, and frogs croak from the bushes—all in harmony with humans sharing the area. Sounds like a fairy tale, but this is the real life experience of Spring Lake resident Caren Adams, who turned her 2-acre childhood home into a natural retreat. The Washington Department of Fish and Wildlife designated her property, where she has lived since the early 1950s, as a "Backyard Wildlife Sanctuary."

Caren Adams' lakefront invites both people and animals to come and play.

Native Plants=Native Wildlife

"I plant with wildlife in mind," explains Caren. "Don't get me wrong, I love my garden, but I get a real thrill out of seeing all the critters on my property." Even those that sometime become a little reckless like the young raccoon that has taken a cotton to her plum tree and recently broke off the top branches. "That's part of it, the price you pay having wildlife in your backyard," she notes with a chuckle.

Oregon grape

Winged creatures of all shapes and sizes fly in for a meal. Aside from fruit trees, Caren has lots of native berry bushes and shrubs such as huckleberry, salmonberry, red-flowering currant, and Oregon grape that provide food. Robins and towhees especially love the huckleberry according to Caren. Hummingbirds and butterflies frequent her backyard during the summer to drink nectar from wild currant and fuchsias while pileated woodpeckers hang out in the native dogwood trees in search of food. In the evenings, bats swoop in to feast on insects.

Caren's lakefront is almost as well populated as her uplands. Over the water, she regularly sees kingfishers, swallows, red-tail hawks, and bald eagles. In large woody debris along part of her shoreline that she deliberately left for habitat, otters and muskrats have been spotted. Surveying the scene, it's hard to believe her property is only three miles northwest of Maple Valley.

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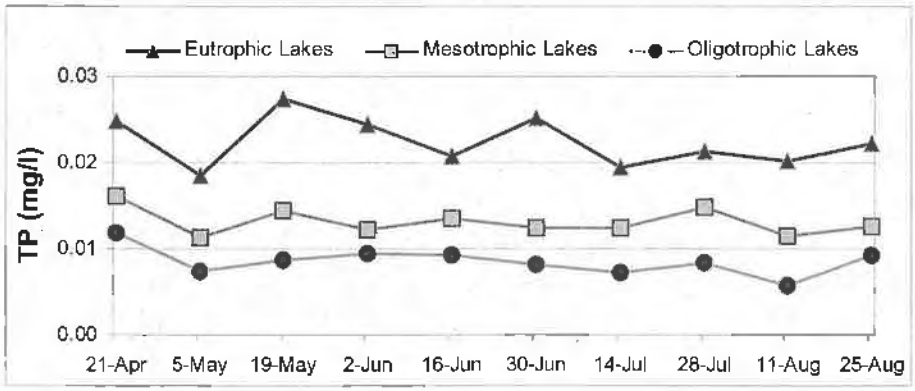
Necessary Nutrients

Nutrients in lakes serve much the same purpose as those in gardens. Plants on land or in water are an integral link in an expansive food chain and need nutrients to grow. There are two nutrients of key importance to lakes: **phosphorus** and **nitrogen**. Both are elements that occur naturally in the environment. But there can be too much of a good thing for human uses of lakes.

Under normal conditions, plant growth in most northwest lakes is limited by the phosphorus available in the water. In *phosphorus-limited* lakes, even small increases in phosphorus concentrations can trigger significant plant growth—sometimes creating algae blooms. Algae blooms can be undesirable to residents and other lake users, causing unsightly surface scum, foul smells as algae decay, and a reduction of dissolved oxygen as bacteria decompose dead plant material. Although not common, some blooms can be toxic (like the one that occurred at Green Lake in Seattle this summer).

Because phosphorus is an element that occurs naturally in soils and organic matter, some phosphorus input to lakes is normal and desirable. However, as watersheds are developed, additional sources of phosphorus often come with the building. Sources in urbanized areas include lawn and garden fertilizers, pet waste, leaky septic systems, or even manipulation of lake-associated wetlands.



Because phosphorus concentrations fluctuate naturally with changing watershed conditions and aquatic plant growth cycles, it is important to examine long-term trends (5–10 years) rather than short-term snapshots. A long-term, sustained increase in phosphorus concentrations in a lake could indicate significant land use and/or human behavior change in the watershed and would warrant further investigation.

The chart accompanying this article illustrates the average total phosphorous (TP) concentrations from samples collected by King County lake monitors from April through August 2002. Lakes are grouped according to their biological activity or trophic state as reported in *King County Lake Water Quality* (2001). Lakes with low concentrations of nutrients and algae and high transparencies are considered **oligotrophic**. A lake with high concentrations of nutrients and algae and low transparency or clarity is considered **eutrophic**. Lakes between eutrophic and oligotrophic are considered **mesotrophic**.

TP concentrations play an important role in the determining a lake's trophic state, but don't provide a complete picture on their own. Secchi transparency and chlorophyll *a* concentrations are sometimes used in determining a lake's trophic state. Future *Lake Steward* articles will describe a process for determining a lake's trophic state.

The chart above shows an expected scenario: eutrophic lakes have, on average, higher TP values than mesotrophic lakes, and mesotrophic lakes higher TP values than oligotrophic lakes. Notice that there is variation in TP concentrations from sample to sample. These may relate to the growth and sinking cycles of algae as they absorb the phosphorus.

FYI file

Our Good Friends the Spiders

Spiders: creepy, scary creatures of Halloween? No! Spiders get a bad rap at this time of year, but they are very beneficial, especially for people living near water. Without spiders to munch mosquitoes and other pesky bugs, we might be running for cover all summer long.

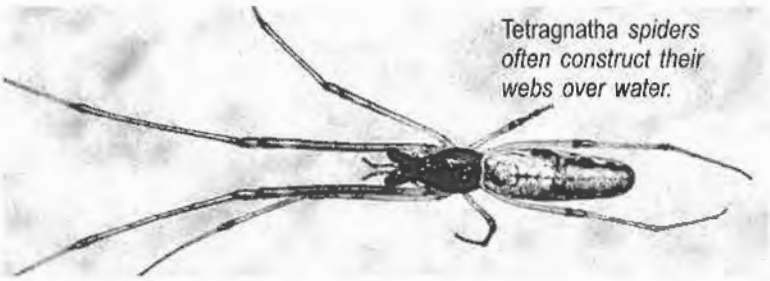
European garden spider

Many kinds of spiders live in King County, but the most prominent spiders seen in the fall are the orb weavers. They are the spinners of beautiful webs, sparkling in the morning dew or strung precariously across your path. Close to home you are most likely to see the European garden spider and several species of *Tetragnatha*, or long-jawed spiders.

The European garden spider has a large tan/gray body with mottled tan/brown markings across the back, highlighted by five or more large white dots forming a cross. Generally garden spiders are first noticed in their adult stage during early fall. Eggs are laid in autumn in a silken cocoon about one inch long, fastened under leaves, flowerpots, or any secluded and sheltered spot. The cocoon protects the eggs until late spring, when hundreds of tiny spiderlings emerge. After a few days they scatter, each spinning an irregular web about two inches across. In late summer the spider's growth accelerates, and the females make larger webs, up to two feet across, devouring everything that blunders into the web. Most adults die with the first frost, leaving cocoons to restart the cycle.

Tetragnatha spiders prefer a watery setting. Their webs are usually horizontally inclined over sunlit edges of lakes, wetlands, and streams, enabling them to snatch up aquatic insects as they emerge. *Tetragnatha* spiders take down and reconstruct their webs daily, so the spider is often found on an incomplete web. Once the web is spun these spiders stretch their front legs forward and back legs backward so they resemble a piece of dry grass.

Next time you're walking through your garden or down along the shoreline, take a moment to admire these amazing creatures and thank them for eliminating pests!



Tetragnatha *spiders often construct their webs over water.*

Wild. . .

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Every Little Bit Helps

You don't need acres and acres of land to encourage wildlife to your property. Even the smallest strip of land will bring visitors as long as it provides a little shelter, water, and the right food source. The simple act of setting out fresh water can attract a variety of birds. That's because many birds prefer smaller, more secluded places to wet their wings instead of the large expanse of the lake. Caren has an old-fashioned birdbath and a giant washing tub filled with rocks that birds, chipmunks, and Douglas squirrels all use.

Caren Adams' house sits under a canopy of mature trees, but still has sight lines down to the lake.

Additionally, wildlife will come if shelter for protection, nesting, and/or resting is available. Caren has a wood duck nesting box, but that is the only artificial shelter found here. Everything else is natural, like the brush piles Caren leaves for the smaller critters, such as the chipmunks that are making a big comeback on her property. Small mammals, reptiles, and a variety of

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King County at work

Drainage Questions? We've got Answers

Need assistance with a drainage problem? If you live in unincorporated King County, start with the **Drainage and Water Quality Complaint Investigation Line** at **(206) 296-1900.** Staff respond to citizens' concerns regarding stormwater runoff and surface

King County staff respond to water quality and drainage concerns.

water quality problems and will address complaints on both residential and commercial property. Drainage Services investigates all drainage and water quality complaints it receives, unless the complaint obviously falls under another agency's jurisdiction.

King County requires the person responsible for the infraction to resolve the drainage and water quality problems and/or implement on-site best management practices (BMPs) as outlined in King County's Storm Water Pollution Control Manual. Drainage Services takes enforcement action only when there is a clear and/or flagrant violation of the Water Pollution Code or Drainage Code.

Flood Protection

With winter fast approaching, it's also time to think about rain and the potential for flooding during a storm event. While most lakefront property owners do not have to worry about flooding, it is wise to be prepared nonetheless.

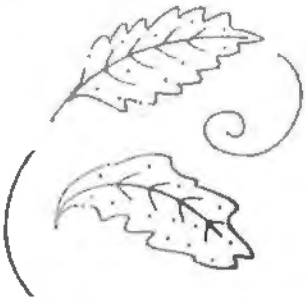
During fall and winter months, flood patrol staff work in the field inspecting County flood control facilities for damage and structural problems, locating and reporting flood problems and emergency conditions. They also investigate citizen and landowner complaints. Patrols are activated when flooding conditions are significant and warrant visual inspections of facilities and landowner problems.

Monitoring staff work closely with the King County Emergency Operations Center during major flood events and help prepare and coordinate information on flooding conditions with the media and cooperating agencies such as the National Weather Service.

More information is available at **http://dnr.metrokc.gov/topics/flooding/FLDtopic.htm.** General information about the Flood Warning System: **(206) 296-8001.**

Fall Tips for Reducing Weeds While Protecting Water Quality

Do you want a healthy, easy-care lawn? Would you like to reduce weeds in your lawn? Are you concerned about lawn chemicals and water quality?



If the answer to any of these questions is "yes," now is the time to take action! Fall is the best time to fertilize your lawn. Fertilizing now will help your lawn grow thick and healthy, so it can crowd out weeds next year.

The best fertilizer to use is a "natural-organic" or "slow-release" fertilizer (look for these words on the bag). These fertilizers release nutrients to feed the lawn slowly, and less is wasted through leaching or runoff to streams or lakes. "Quick-release" fertilizers are 100 percent water soluble and wash into streams or lakes easily.

Fall is also an excellent time to improve a poor lawn with aeration and overseeding. Use a rented power aerator to break up compacted soil and improve root development. Then overseed with a perennial rye/fine fescue mix designed for Pacific Northwest conditions.

To find out more about how to have a naturally healthy lawn, call the **Natural Lawn and Garden Hotline at (206) 633-0224**, or e-mail **lawn&gardenhotline@seattletilth.org**.

In the Swim with Zooplankton

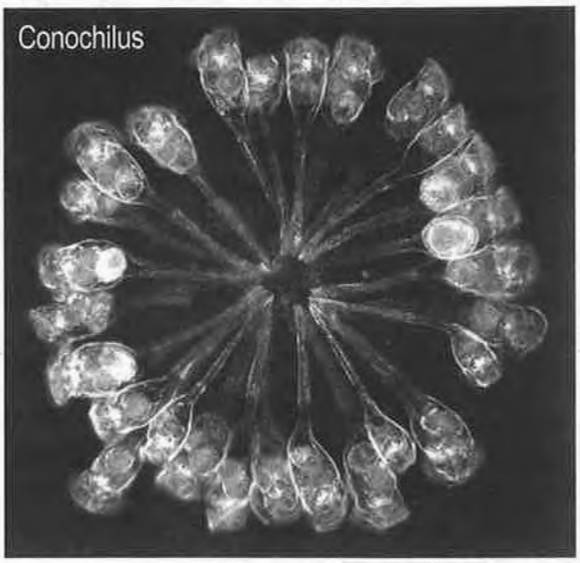
If you look down through the water of your lake on a calm, gray day with very little glare, you may see tiny dark spots moving irregularly through the water. Those dots are likely to be planktonic animals, freshwater cousins to the plankton in the earth's oceans that provide abundant food for whales and a variety of other animals. In freshwater systems, many fish depend on planktonic animals ("zooplankton") as a major food source. The zooplankton in turn depend on algae, and the algae. . . well, you know how that food chain goes!

Four major types of animals comprise the majority of the zooplankton found in King County lakes: **protozoans**, **rotifers**, and two groups of crustaceans—the **cladocerans** and the **copepods**.

Daphnia, *the water flea*

Protozoans usually cannot be seen without a microscope or high magnification hand lens. Not as much is known about them as the larger plankton, but they are occasionally very numerous. These single-celled creatures often eat detritus or bacteria, as well as small algal cells. Sometimes they move by beating very tiny hairs called cilia.

Rotifers are amazingly complex creatures that come in many shapes. They are usually less than 0.5mm in size. They are multi-cellular and soft bodied, often having a crown of cilia to create currents bringing food into their mouths. Most rotifers will eat anything they can swallow, but a few are actually predatory, looking for protozoans or other smaller creatures. Most rotifers are solitary, but several species are colonial, such as *Conochilus*, with many individuals attached to a single central point by stalks, looking similar to a dandelion seed head. The animals you will most likely see are freshwater cousins to shrimp in the class Crustacea. The cladoceran *Daphnia*, the water flea, is the best known. They can reach up to 2mm in length, which may seem small, but is actually large for freshwater plankton. They have been called vacuum cleaners for the way that growing populations can eliminate blooms of algae. *Daphnia* are filter feeders, eating anything of the right size that comes their way. In many lakes, they stay deep in the water during the day to avoid being seen and eaten by fish, then move to shallow water at night to feast by moonlight. A quirk in their life history makes male *Daphnia* very rare. Nearly all *Daphnia* are females who produce offspring without sex by a reproductive process called parthenogenesis. Thus, all their danghters are really clones of themselves. Under certain conditions, males can develop from the eggs and, when they mature, sexual reproduction occurs.


Conochilus

Copepods are evenly divided between males and females, reproducing in the usual way. They seize food and eat it, rather than filtering it from the water as the cladocerans and rotifers do. Some copepods prey on other animals, while others will eat algae or detrital particles. Copepods may be colored bright red at certain periods of the year. This is thought to be for protection against strong light. However, in places where they may be eaten by fish or amphibians, the same species are colorless.

Wild. . .

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insects will make their homes in these structures. It is also a great way to dispose of yard waste. (For more on brush piles, see sidebar.)

Another tip from Caren: forgo the mower. "I had a weedy patch, but I don't mow it anymore so as not to harm any of the toads and other animals that may be there." This may seem like a prescription for one messy, overgrown yard, but that is not the case here. Caren has managed to merge ornamental flowerbeds with native plantings, creating the best of both worlds. To bring some additional color into the mix, Caren planted a variety of maples including striped bark for winter interest and some that offer beautiful fall leaves. She also recommends red-twig dogwoods and willows as trees that are easily trimmed for height so sight lines to the lake are maintained.

As evening falls, Caren notices that the chirps and twitters from the birds in her yard increasing with urgency. Suddenly a merlin flies overhead. "The animals and birds are the real joy of gardening," observes Caren.

For more information on backyard wildlife, visit the National Wildlife Foundation's website at: **www.nwf.org/backyardwildlifehabitat/** In addition, a great reference book is *Landscaping for Wildlife in the Pacific Northwest*, by Russell Link. You may also contact Caren Adams at **(425) 432-1324** for more tips and advice. She'd be happy to help you create your own backyard wildlife sanctuary and fairy tale ending.

Brush Pile Brush-Up

* Construct brush piles with a strong base of logs, followed by smaller branches criss-crossed in a slightly tighter pattern.
* Add old pipes to the base to serve as tunnels for small mammals, reptiles, and amphibians.
* Place it in an area that has both sun and shade.
* Use stones as part of the base to create hiding places and along the edges for basking sites.
* Partially submerged piles in ponds will attract tree frogs and northwest salamanders.
* Plant climbing native flowering/fruiting vines among the pile for songbirds and hummingbirds.
* Weave evergreen branches into the roof of the pile to provide cover from rain and snow.

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