

Lake Steward



The newsletter of the WLR Lake Stewardship program Vol. 4, No. 3 Summer 1997

What do you mean there's crappies in my lake?

Taking stock of small lake fisheries

Do you fondly remember your grandfather's fish tales? Have you seen folks drifting about your lake at dawn or dusk with fishing gear in hand? Did you ever wonder what elusive fish they were in search of?

Western Washington has approximately 46 native freshwater fish species, including several varieties of sculpins, rainbow and cutthroat trout. But that's just the beginning of this tale! In the 1890's, when settlers from the East Coast began colonizing the Puget Sound Area, they found many lakes, but the fish weren't biting like back home.

The settlers wanted to bring their

favorite catch out west, so they lobbied Congress and got approval from the federal government to bring eastern fish cross country. Bass, crappie, bluegill, perch, brown trout and brook trout were brought to Washington State by the trainload.

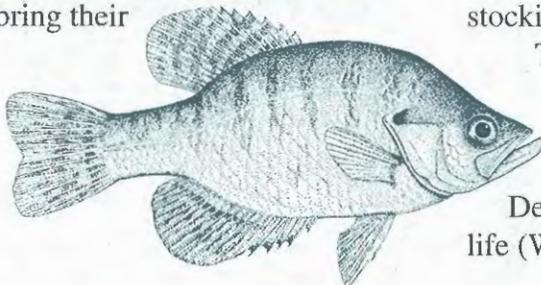
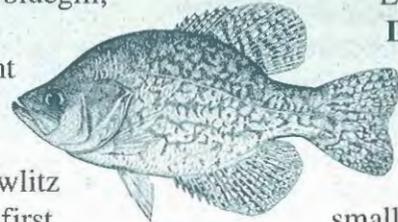
Silver Lake (in Cowlitz County) was one of the first lakes stocked with these imported fish. Fish from the few originally stocked lakes were later distributed to many others in the region. Approximately 30 species of fishes were eventually introduced into Puget Sound Area lakes. By the 1920's, responsibility for stocking lakes shifted to the state.

These days, most King County lakes are stocked either by private organizations or by the Washington Department of Fish and Wildlife (WDFW). According to Bob

Pfeifer at WDFW, trout are planted in mid-April to mid-May so that fish are available for the opening of fishing season.

Lakes **Cottage, Desire, Peterson, Pine and Sawyer** are currently stocked with

small young trout (fingerlings). Kokanee (land-locked sockeye salmon) are stocked in **Angle, Deep, Meridian, and Sawyer** lakes. Young brown trout are planted in **Green and Pine** lakes. To check the stock in your lake, look up the WDFW web site at www.wa.gov/wdfw or call (206) 775-1311. 🐟



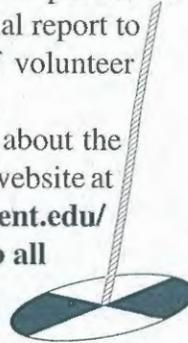
Volunteers take the big dip!

Over 70 King County volunteer lake monitors were asked to participate in "The Great American Secchi Dip-In", sponsored by Kent State University (KSU) Biology Department.

Volunteers across the nation took Secchi depth (water clarity) measurements and completed a lake-related questionnaire in mid-

July. The data will be published by KSU in an annual report to raise awareness of volunteer monitoring efforts.

You can read about the dip-in on the KSU website at <http://humboldt.kent.edu/~dipin>. **Thanks to all of you who chose to participate!** 🐟



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Lake monitors report

Soggy spring keeps lake levels up

Rainfall totals were once again above average for the quarter, reflected by elevated lake levels around the County. For 24 of the 25 lakes submitting quarterly data in time for publication, rainfall totals (Figure 1) exceeded the SeaTac historical average value of 142 mm (5.6 inches).

Additionally, seventeen lakes reported precipitation levels that exceeded the 1997 regional quarterly rainfall total of 250 mm (9.8 inches), 76 percent above average. Precipitation levels from our reporting lakes ranged from a low of 138 mm at **Trout Lake** (in-
(continued on page 3.)

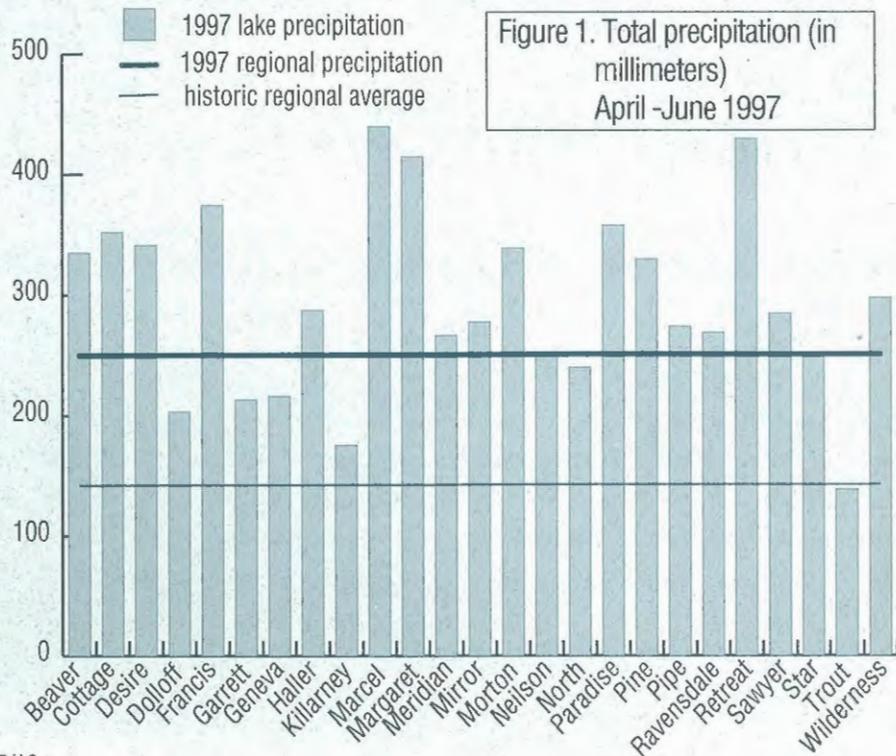


Figure 1. Total precipitation (in millimeters) April - June 1997

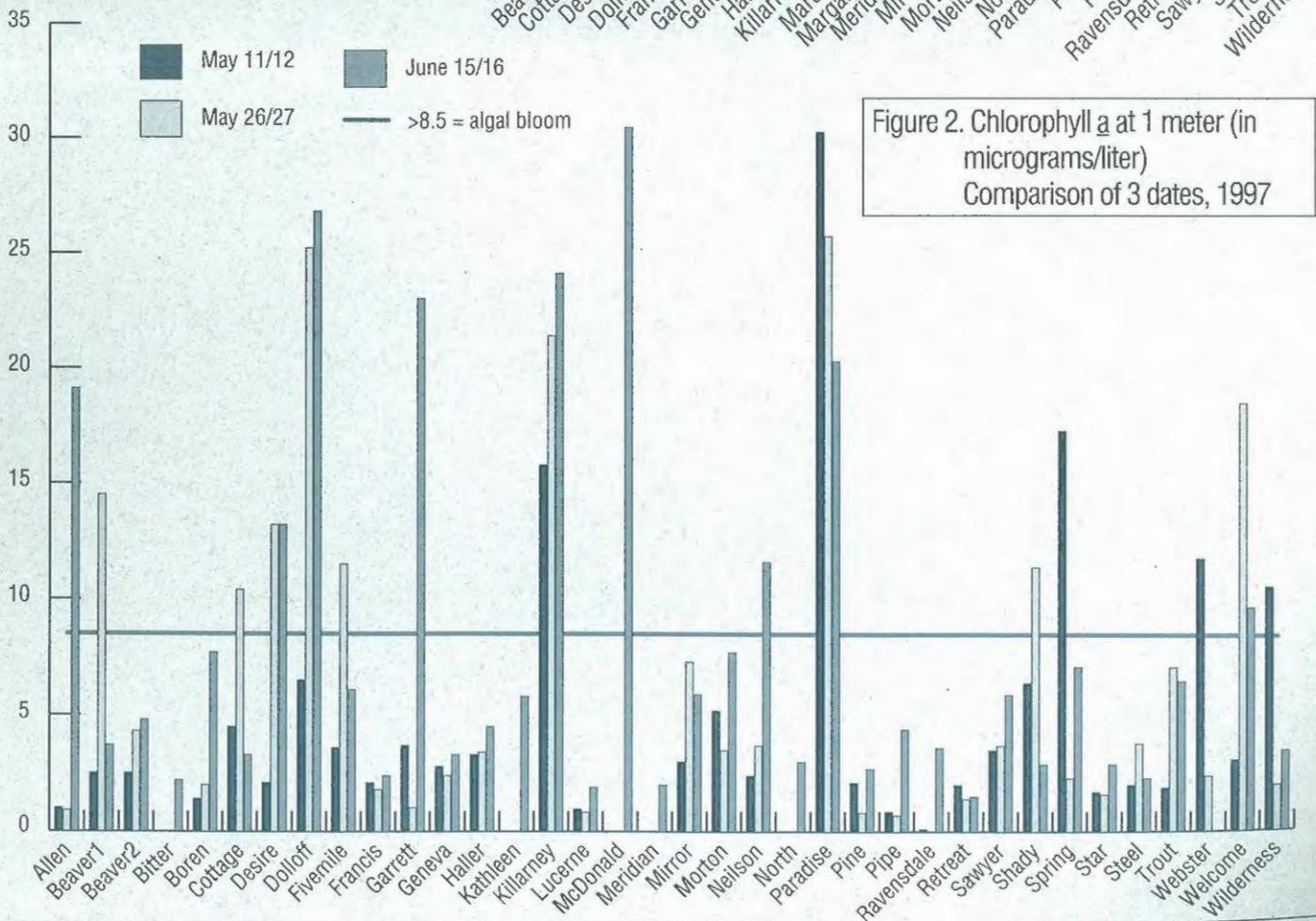


Figure 2. Chlorophyll a at 1 meter (in micrograms/liter) Comparison of 3 dates, 1997

We can never thank our volunteers enough

Dedicated volunteers do it their way

We all know that it's a busy world, and time is a precious commodity. That makes promising your time as a volunteer a special gift. In view of this, we want to encourage and acknowledge the volunteer lake monitors who make a substantial time commitment to track water quality on their lakes. They help us understand not only their own lake, but how lakes are faring throughout the region.

Why do people volunteer?

Showing concern. Lakeside residents who band together show a history of involvement in their lake. By collecting data, they document trends and potential problems. This documentation — and a track record of involvement — may be beneficial when applying for grants to fund stewardship activities that restore or protect lake water quality.

Staying in tune. Many volunteers were paddling 'round their lakes on a regular basis long before they joined the stewardship program. They enjoy observing

wildlife and like to keep tabs on changing conditions. For some volunteers, keeping a regular record of these outings adds to their enjoyment and understanding of their lake.

Continuing education. The stewardship program trains volunteers in the how's and why's of data collection, and provides lots of resources on lake issues. Volunteers can then share what they learn with family, friends, and

neighbors. Sharing one-on-one is a great way to educate each other about our environment and encourage stewardship.

Volunteering can be its own reward. Sometimes the results of our efforts aren't directly observable or measurable, but we do them anyway because they make us feel good. Volunteering is an affair of the heart! *Whatever their reasons, we rely on and sincerely thank our volunteers!* 🐾

Soggy spring keeps lakes...

(continued from page 2.)

complete data set) to a high of 439 mm at **Lake Marcel**.

A record thirty-six lakes participated in the May and June Level II water quality monitoring sampling events! Average total phosphorus (TP) concentrations for the three sampling dates were elevated. Fifteen of the participating lakes had average TP concentrations greater than 30 (ug/L) compared with 9 of 30 lakes in

1996. These elevated levels are likely due to greater spring runoff of nutrients to area lakes from higher than average precipitation levels.

Chlorophyll a concentrations (presence of algae) for three sampling dates are shown in Figure 2. Increased light levels in combination with elevated nutrients have resulted in higher than average chlorophyll a levels for many lakes.

Sixteen lakes reported bloom concentrations of 8.5 or greater for at least one of the three sampling dates. Lakes **Killarney** and **Paradise** had elevated concentrations for all three sampling periods while **Desire**, **Dolloff**, and **Welcome** had elevated concentrations for two of the three sampling periods. In addition, twenty-three of the 36 lakes recorded peak chlorophyll a concentrations for the June 15/16 sampling dates. 🐾

Just the fax ma'am...

Send us data over the wire!

Are you looking for an easier way to send in your data at the end of the quarter? If you have access to a fax machine send your data to **Wendy Cooke** via **Water and Land Resources'** fax line at (206) 296-0192.

Or, if you would like to enter

your data in a computer, we can send you data sheets in Microsoft Excel format. Data report could be done with the press of a button! To explore this possibility call **Wendy Cooke** at (206) 296-1949 or send her an e-mail at wendy.cooke@metrokc.gov 🐾

Report from the shoreline

Lake Morton's health is monitor's focus

We live near the Emerald City but it can't compare to our gem for quality of life! Lake Morton is a 66 acre lake located four miles west of Black Diamond within a 256 acre watershed. Maximum depth is 23 feet with a mean depth of 15 feet. The lake is in "good shape" according to King County. It is a spring fed lake with a natural outlet at the narrow southern end, draining to Covington Creek, Soos Creek and then the Green River.

By the end of June, water ceases to flow from the lake. Evaporation and seepage are the only sources of water loss during the summer months. Because there is no flushing effect in the summer, chemicals, motor oil, gas and any floating plant or animal life remain in the lake. The wind typically blows from the north and all surface materials eventually accumulate in the shallow bay at the south end. Floating debris piles up until it either sinks or gets blown onshore for residents to clean up.

This is the fourth year I have monitored conditions on Lake Morton. Weekly measurements on the lake are performed regardless of climatic conditions. The only conditions that prevent trips out on the lake for data collection are ice (about once per year) and lightening storms (once or twice a year).

Water levels throughout the 20 years of resident observations have been predictable. Except for



Dick Balash has monitored Lake Morton for four years.

February '96 and January '97! My dock was under 5 inches of water for a week in February '96. Since I take my daily measurements at 11:00 o'clock at night when many neighbors are asleep, I can't rely on them for immediate help. So during high water I put on my boots and life preserver and carefully waded the length of my dock through ice cold water about three inches above my boots to take lake level measurements!

The only aquatic plants that tend to be a nuisance at Morton are water lilies near our docks. They're not a problem yet to the many swimmers we have on a hot summer's day. There were also more algae reported last year than in previous years as noted by several neighbors. We are keeping an eye on both problems.

Morton has a great variety of

waterfowl, especially during the winter season. Bald eagles, Canada geese, kingfishers, many varieties of diving and puddle ducks, and of course the dreaded cormorants, who can clean out a new trout planting in an hour or less. We have witnessed up to 50 cormorants on the lake at the same time. Rainbow trout and bass are a prime target for fishermen.

Many residents are interested in forming a lake association to maintain our quality of life and protect Lake Morton. We still have a chance to mold the lake, still able to polish our diamond to be the lake we want!

(Thanks to Richard Balash, Volunteer Lake Monitor and active community member, for this article.) 🐾

Limnology for the layperson

Lifestyles of the strange and spineless

Ponds and small lakes harbor many more invertebrate organisms (animals without backbones) than vertebrate organisms (animals with backbones). Not surprisingly, invertebrate organisms such as worms, insects and crustaceans provide a big part of the diets of fish, birds and amphibians. In turn, invertebrates eat smaller things. Either as dinner or diner, invertebrates have a particular role in the lake or pond food chain.

Like different types of fish, freshwater invertebrates can be found in different areas of a lake: on the water, in the water, and along the bottom or shoreline. Each critter has different adaptations for survival in these habitats.

Surface skimmers

Some invertebrates make the water's surface their temporary or permanent home. Water striders may skim along the surface, while other organisms such as hydras

and snails may hang from the surface. The larvae of mosquitoes and midges look like hairy wriggling worms near the water surface, which they pierce with specialized tubes to breathe the air above. They eat algae, microscopic animals and organic debris on the surface of the water before metamorphosing into pupae, later emerging as winged adults.

Bottom dwellers

Invertebrates that dwell on lake bottoms consume a rich diet of algae and decaying gunk that sink from the surface above. Aquatic earthworms eat soil and produce egg-bearing cocoons. Crayfish are found on lake bottoms, too, and are omnivorous (eating plants and animals). They are fairly large for invertebrates and have ten legs, as opposed to the six legs of insects or eight legs of spiders. Crayfish are adept at avoiding fish, birds and mammals

by using their stalked eyes to keep a sharp lookout and powerful tails that quickly propel them backwards.

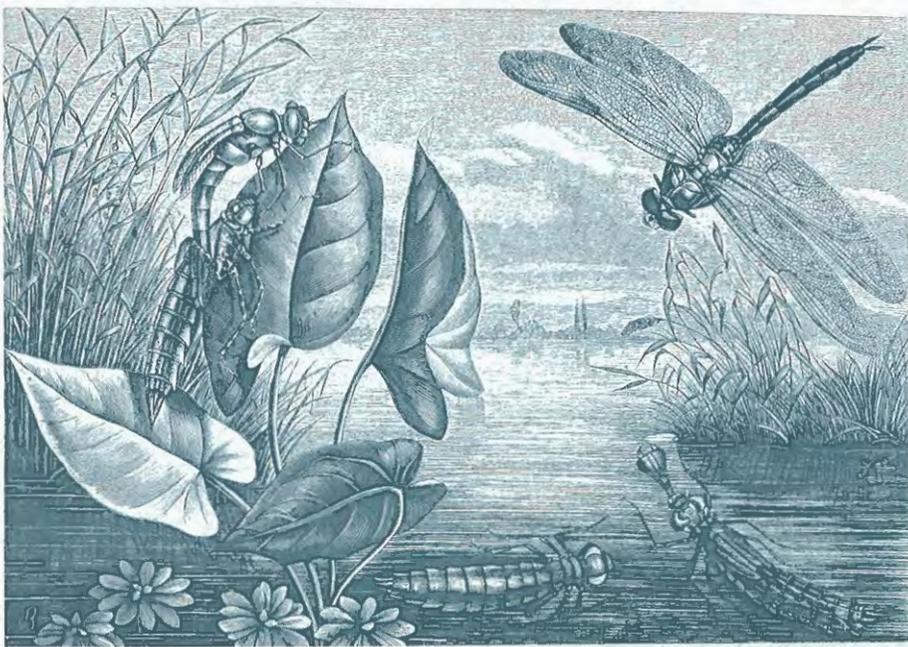
What about the shoreline?

Some of the most interesting invertebrate organisms are found in the plants along the shoreline. Here, creatures are specially adapted to living near large aquatic plants. A group of aquatic insects common to the shoreline are known as "true bugs" (order Hemiptera). Two common true bugs — hackswimmers and water boatmen—can be seen swimming on the surface, crawling along vegetation or flying at night. They have specialized mouthparts for piercing or sucking their plant or animal prey.

Some of these true bugs, like the giant water bug (3 inches long!) can ambush prey as large as tadpoles, frogs and fish. They inject their piercing mouthpart into the unfortunate animal and ingest their dinner. Water bugs have been known to try out their mouthparts on human prey—hence their common name of "toebiters".

Dragonflies

Other near shore insects are the nymphs (immature stages) of dragonflies and damselflies. These water dwelling nymphs are as dramatic looking as the winged adults. They have long, hinged mouthparts with two sharp pincers to pierce their prey and rapidly draw them in for dinner. Dragon-
(continued on page 6.)



Lifestyles of the spineless...

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flies can prey on fish and frogs as easily as the giant water bugs can.

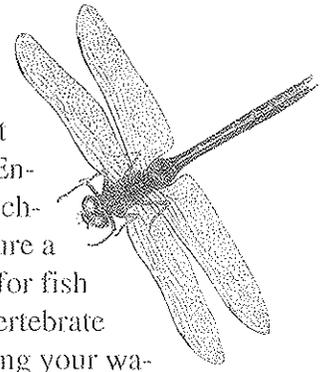
After a year or two, depending on the species, the dragonfly nymph will crawl out of the water onto the stem of an aquatic plant, shed its skin and emerge as a majestic winged adult. The adults, like the larvae, are carnivorous and prey mostly on other insects such as mosquitoes. Their superb vision and large wings make dragonflies the aerial acrobats of the insect world – they have been clocked at speeds over 25 miles per hour! (Dragonflies were around 300 million years ago—and had wingspans over 25



inches!)

You can easily observe the riot of invertebrate life in your lake with a few simple tools from your kitchen. With a strainer or meat baster, scoop up some water near shoreline plants. Put your sample in a white pan or deep white plate. A hand lens or magnifying glass will help you see very small organisms. Sampling

different places will net different creatures. Enjoy bug watching, but insure a steady diet for fish and other vertebrate life by putting your water sample and invertebrate organisms back in the lake!



Want to learn more about freshwater invertebrates?

Caduto, M.J. 1985. *Pond and Brook: A Guide to Nature in Freshwater Environments*. Prentice-Hall, Inc., Englewood, N.J.

Lehmkuhl, Dennis M. 1979. *How to Know the Aquatic Insects*. Wm. C. Brown and Co., Dubuque, Iowa.

Or check out the *Aquatic Ecology Page* on the World Wide Web at <http://www2.netdoor.com/%7Epinky/aquatic.htm>



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Water and Land Resources Division

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