

# Lake Steward

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



Saying goodbye to another water year

## Dedication to lakes is deeper than ever

October 1<sup>st</sup> marked the beginning of the 1998 water year. Level I monitors closed the book on their 1997 daily measurements, and Level II monitors wrapped up their sampling season at end of the month.

This year was by far our most successful for volunteer participation and collection of com-

prehensive lake health data. The lakes staff send a heartfelt thanks to our volunteers for their monitoring efforts. Every bit of data adds to our understanding of county lakes!

Be sure to give the monitor at your lake a pat on the back -- their hard work is vital to tracking and managing lake health!

- Francis* – Brian & Erica Moriarty
- Garrett* – Dick Thurnua, Al Flemmer
- Geneva* – Gary Hyde
- Haller* – Rud Okeson, Jim Taylor & Barbara Gross
- Joy* – Kathy Brasch, James Polybank
- Kathleen* – Phil Weeldreyer, Joe Coda
- Killarney* – Craig Rice
- Leota* – David Mangels
- Lucerne* – Milo Dullum, Connie Sanderson & Lou Nysewander, Toby Ensign
- Marcel* – Chuck Willis
- Margaret* – Douglas Johnston
- McDonald* – Mike Minkiewitz, Susan Lowry
- Meridian* – Kathe Dizard, Leeann Dickson, Deborah Garner, Brian Merdich, Myla Martin
- Mirror* – Bob Roper
- Morton* – Dick Balash, Karen & Curtis Walker, Del Hesseltine, Paul & Laura Mueller

- Alice* – Mary Sampson
- Allen* – David Burton
- Angle* – Ed & Jean Montry, Jim Matelich, Dean Brinton
- Beaver* – Acar & Kazuko Bill, Donna Carlson, Joe & Mary Lippi, Robert White & Catherine Rice
- Bitter* – Dan & Pauline Doyle, Rick

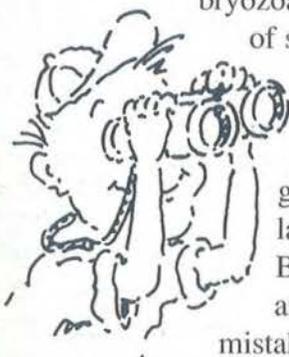
- Oestman, Timmie Faghin
- Boren* – Ray Clark
- Burien* – Leonard Hulsman
- Cottage* – John Strand
- Desire* – Ed & Min Merrill
- Dolloff* – Jason Hesla
- Easter* – M. Tiffany
- Fivemile* – Janet Gillies



## Bryozoans on the loose

This summer a lot of lake residents called in about large gelatinous blobs attached to logs and docks or visible along the lake bottom. Their question: *What is it and is it harmful?*

These blobs are actually a primitive animal, known as a bryozoan, made up of smaller microscopic animals fused together by gelatinous goo. Bryozoans are often mistaken for the



egg masses of fish or amphibians. These goopy creatures are commonly found in unpolluted and unsilted lake waters at temperature ranges of 15-28 °C. They are typically found at depths of 1 meter or less. Colonies are frequently as large as a basketball. Bryozoans are harmless but pose somewhat of an aesthetic problem when they attach to docks and other structures.

To get more information, look up freshwater invertebrates at your local library, visit <http://splash.metrokc.gov/wlr/water/res/lakes/10citr.htm> or call Sharon Walton at 296-8382.

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Lake monitors report

# Water, water, everywhere...

## Rainfall Totals Finish High

Rainfall for the final quarter of the 1997 water year was once again above average. Not surprisingly, monitors around the County reported higher lake levels this

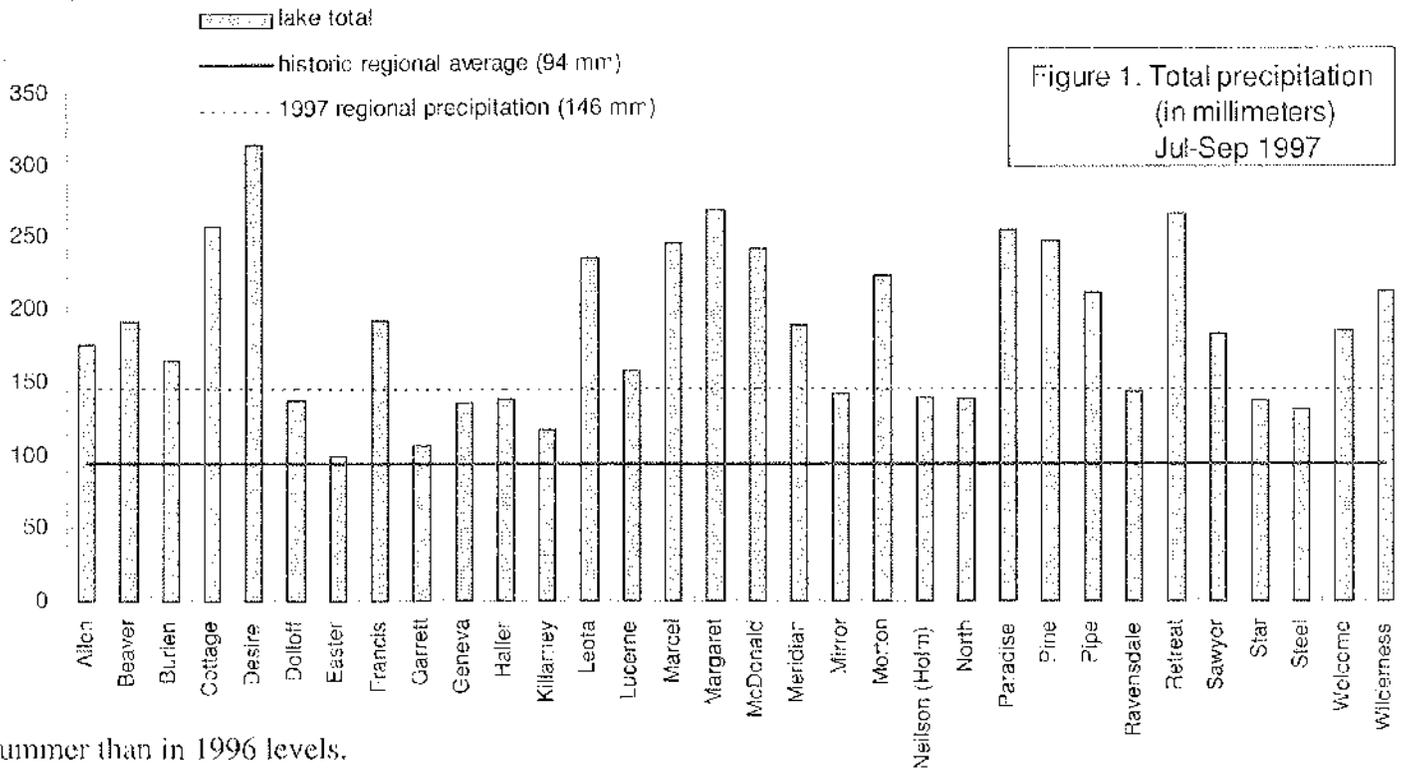
quarterly rainfall of 146 mm (5.7 in). It's no wonder our lake levels have been so high!

## Summer Algal Blooms

Nutrient and algal data were collected on thirty-nine lakes dur-

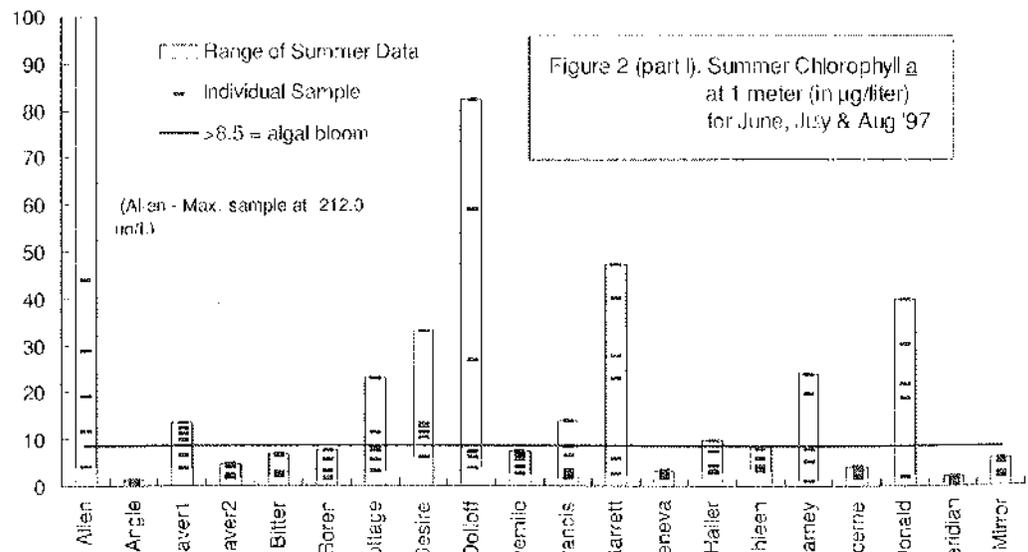
ing June, July, and August. Summer ranges of surface chlorophyll *a* concentrations (algae estimate) are shown in **Figure 2 (part I and II)**.

For 22 of 39 King County lakes, water quality remained very *(continued on page 3.)*



summer than in 1996 levels. On average, lakes were 13.8 centimeters (5.4 inches) higher than last summer.

Summer precipitation levels from our reporting lakes ranged from 99 mm at Easter Lake to a high of 315 mm at Lake Desire (**Figure 1**). All 32 lake monitors submitting data this quarter reported rainfall totals higher than the SeaTac historical summer average value of 94 mm (3.7 in.). Twenty of those lakes reported rain levels even higher than the regional average for summer



# Thanks . . .

(continued from pg 1.)

- Neilson* – Kevin & Kurtis Schultz
- North* – David & Karen Langridge,  
Bud & Nancy Rathe, Deborah  
Hanson, Lynn Naumann
- Panther* – Brian Thelander
- Paradise* – Kay Doolittle, Nancy  
Doolittle, Shirley Egerdahl
- Pine* – Kate Bradley
- Pipe* – Ralph Beede
- Ravensdale* – Mike Schroeder
- Retreat* – Todd & Janice  
Hammerstrom
- Sawyer* – John Davies, Dick  
Veldhuis, Doug Geiger
- Shadow* – Virgil Mudd
- Shady* – Ray Konecke
- Spring* – Herb Sanborn & Caren  
Adams, Mike & Lisa Mullay
- Star* – Mark Baughman, Terry  
Oswald
- Steel* – Margaret, Marc & Ted  
Reyhner, Art Bender, Jack Porter
- Trout* – Pam & Karl Hilsenberg,  
Tony Powell
- Twelve* – Cathy & Dean Voelker
- Webster* – Jim Huston
- Welcome* – David Hadley, Beth Hart
- Wilderness* – John Vasboe, Elmer  
Benedict



## Grants benefit county lakes

The Metropolitan King County Block Grant Program just awarded three grants for projects designed to improve the water quality in lakes!

- ◆ \$21,812 went to the Lake Wilderness Preservation Association to control the lake's milfoil problem by installing bottom barriers;

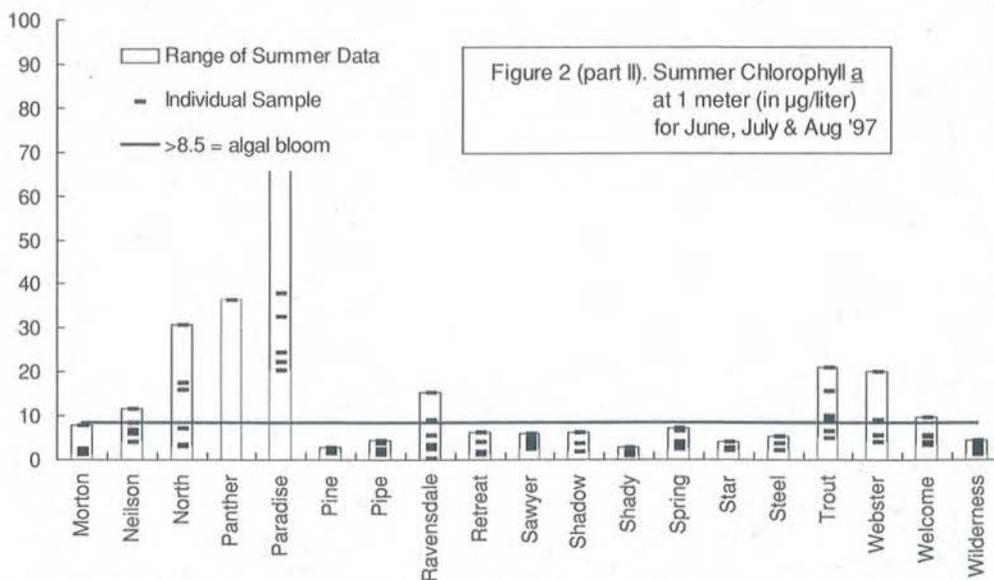
- ◆ \$18,500 may help the Haller Lake Conservation Association alleviate sewer contamination problems during heavy rains by replacing an outlet pipe;

- ◆ \$7,288 lets the City of Kent control milfoil at the Old Fishing Hole and Lake Meridian;

“Polluted lakes are a useless

resource,” said King County Councilmember Larry Phillips. “By protecting water quality, these projects help ensure that King County residents will have great recreational opportunities on our lakes and rivers for years to come.”

Grants of up to \$50,000 are available to schools, local governments, tribes, private non-profit organizations and special districts looking to fund projects to protect or improve water quality. Informal groups can apply if the grant is administered by an eligible organization. For more information please contact **Ken Pritchard** at **(206) 296 8265**.



## Water . . . . .

(continued from pg 2.)

good with the range of summer chlorophyll *a* concentrations remaining at levels of 8.5 mg/L and below. The remaining seventeen lakes reported at least one sampling date at bloom concentrations of 8.5 mg/L or greater. Lakes **Allen**, **Cottage**, **Desire**, **Dolloff**, **Garrett**, **McDonald**, **North**, and **Paradise** had frequent bloom conditions, showed the largest summer ranges and had chlorophyll *a* concentrations of 25 mg/L or greater at least once during the summer.

Report from the shoreline

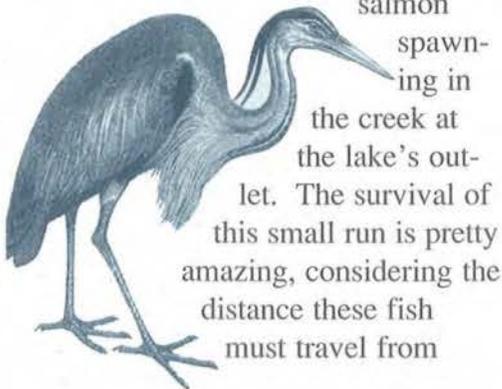
# Monitor and wildlife love rural Ravensdale

Ravensdale Lake is a relatively shallow spring-fed lake of about 17 acres, located in south eastern King County. Averaging about 4 feet in depth, the lake is over 16 feet at its deepest part. Ravensdale Creek, Lake Sawyer, Soos Creek and the Green/Duwamish River system connect Ravensdale to Puget Sound.

The most rural of lakes in the County monitoring program, Ravensdale is bordered mainly by private forest land, with railroad tracks running along its south shore. While a sand mining operation located just across the tracks uses the lake as a water source, there is no other development directly impacting the lake.

Alpine Fly Fishers and the Adopt-A-Stream program introduced me to Ravensdale Lake. For 2 years (1991-93), we monitored stream flows and water quality in Ravensdale Creek. It proved to be quite healthy in general, in spite of impacts from the railroad, mining operation, and destructive off-road vehicular traffic in the streambed itself.

Among other observations, we noted a late-winter run of coho salmon



spawning in the creek at the lake's outlet. The survival of this small run is pretty amazing, considering the distance these fish must travel from

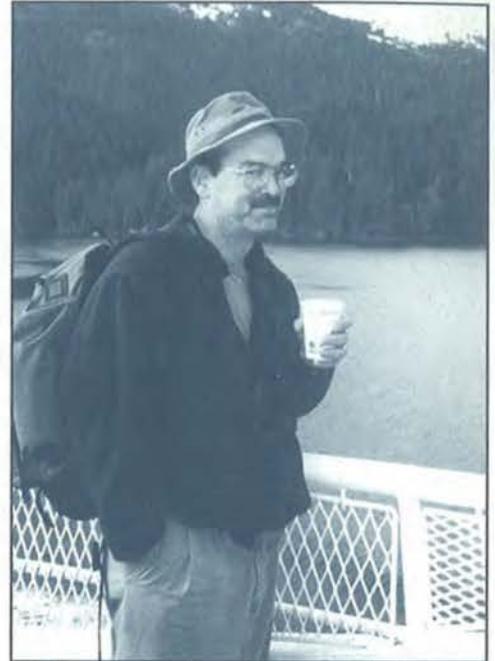
their saltwater rearing grounds, and the growing number of man-made obstacles in their path.

The Adopt-A-Stream group disbanded, but as a fisherman and nature-lover I maintained a personal interest in the lake and its well-being. I enjoyed fishing for resident trout, and observing the large variety of birds using the lake's natural setting. Ravensdale Lake seemed a resource worth preserving. So, when the opportunity presented itself in 1994, I volunteered as a lake monitor!

Not living at the lake has made sample and data collection a challenge. Because of the limited access, I typically do my sampling from a float-fishing tube, finning my way slowly to the area of feeder springs at the deepest part of the lake.

Ravensdale Lake is managed as a selective fishery (artificial flies or lures with barbless hooks only) by the state, and is home to a population of small (6-12") native cutthroat trout. These fish can often be seen feeding splashily on surface hatches of midges, mayflies, and caddis. Sometimes when sampling, I take along my flyrod and try my luck, along with an occasional fellow fisherman. Every so often, I might even be successful.

No matter what else, I always keep an eye out for birds. The lake naturally provides food and shelter to a variety of feathered species. Swallows constantly skim the water's surface, feeding efficiently on the same insects as the fish.



*Mike Schroeder enjoys the Northwest's treats – Ravensdale Lake, a good cup of coffee, or a ferry trip out of town.*

Great blue and little green herons stalk the shallows for fingerlings, while belted kingfishers hunt the same waters from branches overhead. Canada geese and various ducks raise families here in the summer, complaining loudly at any intrusion on their privacy. Ospreys have been seen seizing the occasional unwary trout, and (once) a bald eagle perched high in a lakeside tree.

Every excursion to the lake seems to bring a new experience. I guess that's why I still like being a lake monitor. I get to combine a practical activity (data collection) with a relaxing and enjoyable bit of exercise.

*Submitted by Ravensdale's Volunteer Lake Monitor, Mike Schroeder.* 🦉

# As season's change, so does your lake



As cooler weather sets in and days get shorter, your lake is changing physically, chemically and biologically. Some changes can be observed directly, while others must be measured with instruments.

In most lakes, water transparency begins to increase in the fall as algal production slows down, due to lower light and cooler temperatures. But there's a lot more going on too.

## Turning and churning

During fall, when the water's surface cools Northwest lakes "turn over". Since cool water is more dense than warm water, as surface water cools it sinks, causing lake waters to circulate.

During turnover, lake waters mix from top to bottom and eventually the entire water column reaches a constant temperature. In addition, windy fall weather can stir up the lake and lift sediments into the water column. This might cause Secchi disk readings to decrease during fall lake turnover.

## What's with the scum?

When the lake mixes, algal blooms sometimes result as bottom nutrients mix with surface waters.



Typically, the blooms are blue green algae such as *Aphanizomenon* or *Microcystis* which can "fix" their own nitrogen (thus virtually fertilizing themselves) and form surface scums.

You may also smell decomposing organic matter as aquatic plants die back. Some lakes can smell like rotten eggs as deeper waters release sulfur during turnover.

Fall rainstorms bring sediment, nutrients and pollutants to the lakes. Higher concentrations of suspended sediments may temporarily decrease water clarity. On the other hand, incoming surface water may dilute small lakes and actually increase their water clarity. Each lake is truly unique in the way it reacts to its watershed.

## It's for the birds

Fewer insects will be swimming on the water surface as they too get ready for winter, laying eggs and dying or burrowing into sediments to overwinter. Birds like flycatchers, swallows, and warblers head south to warmer climates. Ducks from up north come down to our lakes for the winter. You might see Gadwalls, Northern Pintails or American Wigeons.

Some migratory birds, such as Canada Geese and Mallard ducks, just stay put (to the dismay of most lake residents). You may also see shorebirds such as sandpipers pass through as



they migrate south.

## Now that's fishy!

Some lake residents might even find spawning salmon in their lake at this time of year! Although most salmon spawn in streams and rivers, there's a type of salmon that actually spawns in some of our King County lakes.



Sockeye salmon require a lake for part of their life cycle. Fry (young salmon) spend a year or more in lakes before migrating to the sea; then return as adults to spawn in their lake.

Some sockeye, called kokanee, never migrate to the ocean and remain in the lake for their entire lifetime. **Angle, Deep, Sawyer and Wilderness** contain these "land-locked" fish, which provide excellent fishing during the summer months.

In fall, they stop eating, dig nests of gravel, and find partners. After spawning, fish die and may wash onto the banks of the lake. The minerals from decaying carcasses form the basis of the food chain for the new generation of salmon.

With all of the physical, chemical and biological changes during fall turnover, there's a lot going on around the small lakes throughout King County – and a lot to keep the lake enthusiast busy as the weather cools.

# Bloomin' Lake Sammamish

On September 19 a severe algal bloom occurred in Lake Sammamish. The bloom, determined to be the blue-green algae (cyanobacteria), *Microcystis aeruginosa*, tested positive for toxicity.

Lake residents and visitors were cautioned to keep children and pets away from areas containing the bloom until the bloom disappeared. No known human deaths have ever been attributed to cyanobacteria poisoning.



Toxicity levels were still high throughout the lake on October 1 although the bloom was diminishing. By October 9 samples showed that the lake water was no longer toxic. To find out more, visit our web site at <http://splash.metrokc.gov/wlr/waterres/lakes/bloom.htm> ➤

## Legislature focus

# Working to improve lakes

The Washington State Legislature's Joint Select Committee on Lake Health worked this summer to develop state-wide lake management recommendations for the 1998 legislative session. Work sessions focusing on lake management planning, water quality, per-

mitting, aquatic plant control, funding options, public education, and technical assistance are continuing this fall.

To find out how this may affect your lake, or how you might have input, call committee staff at (360) 786-7407. ➤



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## Lake Steward Fall 1997

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