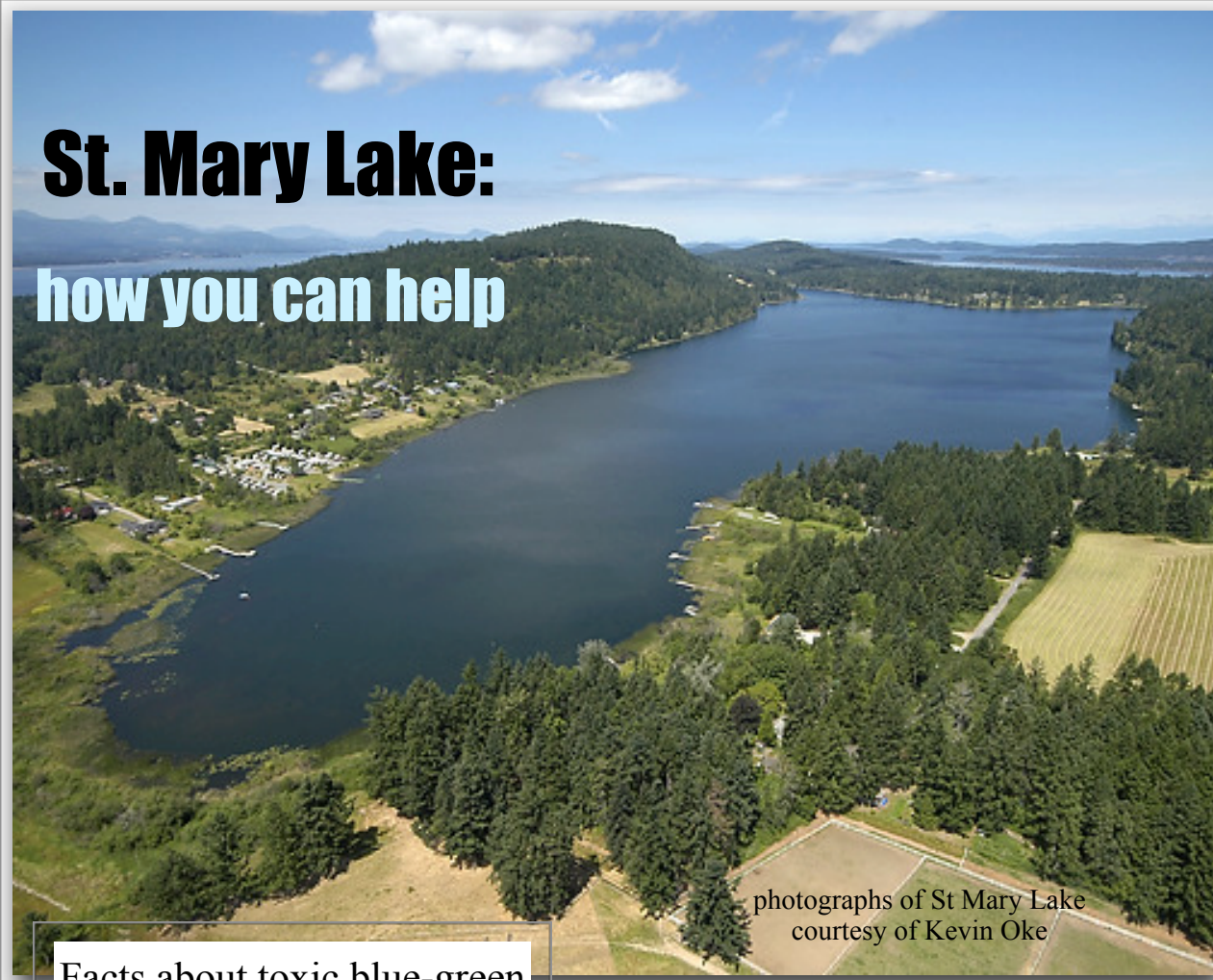


St. Mary Lake:

how you can help



photographs of St Mary Lake
courtesy of Kevin Oke

Facts about toxic blue-green
algal blooms and some
everyday actions
you can take to help restore
St. Mary Lake
to health

for
steps to take
see inside

This brochure is sponsored by
The Salt Spring Island Water Council:
<http://ssiwatercouncil.com>
S.S.I. Water Preservation Society:
www.ssiwaterpreservationsociety.ca
North Salt Spring Waterworks:
www.northsaltspringwaterworks.ca
St. Mary Lake Stewardship Committee:
creelguy@telus.net
Highlands & Fernwood Water Districts:
Sharon Bywater 250-537-5000

You can help restore St. Mary Lake to health

Why did the water in St. Mary Lake turn brown?

Toxic blue-green algal blooms on
St. Mary Lake are clear signs that
it is a lake in trouble – a lake that
thousands of islanders depend on
for their water.

As a watershed resident, your every-
day actions can help restore St. Mary
Lake to health - and keep it that way.

St. Mary Lake: Facts and Figures

- St. Mary Lake watershed covers 7 square kilometres.
- The lake has an area of nearly 2 square kilometres.
- The lake contains nearly 16 million cubic metres of water
- It has a maximum depth of 16.7 metres.
- It takes 15 years for the water in the lake to be replaced with rain water draining into the lake.
- St. Mary Lake is the slowest Salt Spring lake to clean itself out.

photographs ©Kevin Oke
www.KevinOkePhotography.com

What causes the algae to grow?

Blue-Green Algae

Blue-green algae (also known as cyano-bacteria) are in fact **bacteria** that grow in freshwater lakes, ponds and wetlands. A mass of cyanobacteria is called a bloom. When these large masses die, they settle to the bottom of the lake and decompose. This process of decay reduces the oxygen at the lake bottom. Low levels of oxygen put fish and other aquatic species at risk.

Algal Blooms and Phosphorus

Algal blooms are caused by high levels of phosphorus in the lake. Algae and aquatic plants need phosphorus to grow. When the phosphorus gets used up, algae and plants stop growing. When the lake is covered in algae, testing will probably find high levels of phosphorus.

Why is this important?

Some blue-green blooms can be toxic to people, wildlife and livestock if the water is swallowed untreated. Swimming in contaminated water can cause itchiness to skin, and irritation to the eyes.

Between 30 and 50 percent of cyanobacterial blooms are not harmful. But blooms containing even one species of **toxic** cyano-bacteria are potentially dangerous. To determine how dangerous the toxins are, water samples have to be analyzed in a laboratory.

“What can I do?”

The reverse side of this brochure has
actions you can take to help restore
St Mary Lake to health:-

READ ON:

You can help restore St. Mary Lake to health

To prevent algal blooms, the amount of phosphorus entering St. Mary Lake must be lowered. A reduction in algae levels reduces the water treatment needed.

Here is what you can do:

Keep your septic tank in ‘Top Condition’

Pump out your septic tank on a regular basis and have it inspected every three to four years. This is particularly important because the exceptionally porous soils on the east side of St. Mary Lake result in runoff from faulty septic tank drain fields and erosion.

Check for and remove blockages in the inflow and outlet pipes of your septic tank.

Use only phosphorus-free soap to clean clothes, dishes and bathrooms. Prevent oils, greases or other chemicals from getting into your septic tank.

Make sure to put only clean water and human waste down your toilet.

Keep detailed records of repairs, pumping, inspections and maintenance.

Watch for these signs of septic problems: sewage surfacing over the drain field, slow draining toilets or kitchen sinks, or bad smells.

If you live in the watershed:

Leave as much land undisturbed, and as much natural ground cover intact as possible.

During construction projects: leave natural vegetation in place, cover exposed soil with tarps or burlap, trap sediment-laden water in settling-ponds, replant disturbed areas quickly.

Use gravel, bricks or interlocking paving stones for walkways, drives or patios; these allow water to soak into the ground.

Plant erosion-prone slopes with native plants or ground cover.

Cut your grass higher:
you'll increase water absorption and reduce run-off.

Aerate your lawn to increase its ability to absorb and hold water. Punch small holes in the lawn with a garden fork or power equipment.

If you live on the lake:

Your lake-front property is the last defense against phosphorus entering the lake. Shoreline property owners need to pump out the septic tank even more frequently.

Establish a buffer zone of native plants along the lake shore. Such a buffer can prevent up to 75% percent of the phosphorus-laden sediment entering the lake.

A 15-metre wide buffer zone is good, but the wider it is, the better. Tall grasses, shrubs, trees, and aquatic vegetation such as reeds or cattails will help prevent shoreline erosion.

Plant other native vegetation also, such as dogwood, willow, spirea, red elderberry, Indian plum and Pacific ninebark. Willows are ideal for stabilizing shorelines - their extensive root systems anchor soil along fragile banks, they grow quickly, and they thrive in damp, boggy soil.

Keep your entire property well vegetated. Native trees and plants hold the soil.

Eliminate phosphates from your home, lawn, and garden

Use non-phosphate detergents in your home. Use organic, slow-release fertilizer such as rock phosphate for adding phosphorus to your garden or lawn. Most soils on Salt Spring already have adequate phosphorus. Use non-phosphorus fertilizers with a 2-0-1 ratio (e.g. 16-0-8) and with 50-60% slow-release nitrogen.

Other Initiatives to Restore Health to St. Mary Lake:

The Watershed Management Plan for St. Mary Lake; this is based on scientific studies through a collaboration of residents, elected officials and scientists.

The Management Plan provides recommendations and direction for stakeholders to work together towards restoring the lake's clean and healthy water.

Where does the phosphorus come from?

For St. Mary Lake, the sources of phosphorus are:

- Regeneration from bottom sediments: phosphorus deposited in sediments in previous years will subsequently re-enter the lake's water every summer when oxygen levels become low near the bottom of the lake.
- The aerators in St. Mary Lake put oxygen into the deep part of the lake to keep phosphorus locked in the sediments. Measurements taken after the installation of the aerators have shown a decrease in regenerated phosphorus.
- Poorly functioning septic systems or those too close to the lake have been found to contribute 29% of the phosphorus in the lake.

- sources of phosphorus (continued)

- Surface runoff from land cleared of its natural vegetation, and from soil erosion along stream banks and the lakeshore contribute new phosphorus to the lake. Phosphate (the biologically active form of phosphorus) binds tightly to soil particles and is carried into the lake through erosion.
- Phosphates in automatic dishwashers, detergents and fertilizers add to lake phosphorus.
- Livestock waste from farm animals allowed too close to a shoreline or stream can also contribute to phosphorus in the lake.

What can we do about the phosphorus?

A little phosphorus goes a long, long way -

One cell of algae can divide into as many as 16 cells before needing more phosphate for further growth.

One gram of phosphorus can support 100 grams of algae.

Every 10 grams of phosphorus kept out of the lake (no more than the weight of 2 nickels) prevents the growth of one kilogram of algae.

With an over-abundance of phosphorus, plant and algae growth can quickly spiral out of control.

- but so does a little prevention

Because it takes very little phosphorus to support algal blooms, cutting back on the amount of phosphorus entering St. Mary Lake is predicted to reduce algal blooms.

The actions above are ways to cut back on phosphorus entering our island's most precious water sources - **our lakes.**