

Salt Spring Island WATER PRESERVATION SOCIETY

Newsletter Fall 2011



EILEEN WTTEWAALL: WITH OUR THANKS

"The Board of Salt Spring Island Water Preservation Society is happy to have the chance to publicly recognize the invaluable contribution made over many years by retiring Director Eileen Wttewaall.

Many island residents will know Eileen from her decades of tireless work for progressive causes ranging from the protection and preservation of Salt Spring's watersheds with WPS, to social justice issues with First Nations, world development, environmental and educational groups, the United Church and others.

Her unflagging hard work, her optimism, her willingness to speak truth to power, and her belief in the ability of ordinary people to improve our world through principles of equality, fairness and justice, will long be an example and an inspiration to all of us who have worked alongside her in these endeavours. For example, it is notable to read two of her recent comments which illustrate these attributes:

BC coastal forests are one of the world's largest stored carbon sinks and source of removal of CO2. We must maintain and restore the forests for this value as a vast water filter and storage resource. They must not become a green carbon "trap", by being planted for bio-energy to fuel our addiction to our vehicles. This makes nature into our slave and is false science. We can only

reduce emissions by drastically cutting fossil fuel use. This includes our stopping "eating" fossil fuels, in the production and transportation of our food.
WPS Newsletter, Fall 2010

Water is not free, but a public trust, now and into the future. There needs to be a new water Infrastructure based on conservation, stewardship, and reuse with accountability through independent oversight.

WPS Newsletter, Spring 2011

Always one to put her beliefs into practice, Eileen has also personally preserved and protected in perpetuity, a sizable area of the watershed of one of Salt Spring's lakes with a conservation covenant, for the benefit of present and future generations of islanders.

For all the above reasons, the Directors of SSI Water Preservation Society are happy to name her our newest Life Member.

Thank you, Eileen -

you have helped make Salt Spring Island and the greater environment a better and a brighter place."



Photo: Grace Sevy



NO FLOATPLANES ON SALT SPRING ISLAND LAKES!

One of the important accomplishments of the Water Preservation Society is taking the legal case to the Supreme Court of Canada that after a ten-year battle, established that communities nation-wide can declare their lakes Electric Motors Only (EMO) for the purpose of preventing pollution. WPS has always believed that floatplanes do not belong on SSI drinking water lakes. Two years ago, when a floatplane landed on Cusheon Lake, former WPS Board Member Wayne Hewitt called Transport Canada to see what could be done. The Transport Canada staff agreed that the floatplanes are not allowed on SSI drinking water lakes and promised to make a note of this in the appropriate pilot guides.

We recently learned that the Transport Canada Water Aerodrome Supplement, Planning Section, under Flight Restrictions Affecting Seaplanes, page 85, now officially lists Cusheon, St. Mary, Stowell, Weston and Maxwell Lakes as restricted from floatplane access.



Unfortunately, pilots are not always aware of this. Should you observe a floatplane on any of these lakes, please record the location, date and time of the landing or take-off and if possible the registration letters and numbers on the plane. Report it to our RCMP who will contact the pilot or household hosting the floatplane. Our experience is that the local RCMP will respond to such a report.

Maxine Leichter

KNOWING ABOUT WATER: Regional Groundwater Movement

Part 6/7 of a series by Tom Wright

The fresh water lens contained within our aquiclude is bounded on all sides by sea water and also underlain by salt water at depth. It is therefore a finite resource, though the uppermost few tens of metres from which we draw our groundwater (if we are lucky enough to encounter fracture porosity) are recharged with fresh rainwater each winter season. If we pump too many wells the water table will begin to fall.

Over-pumping near shore wells draws down the water table and can cause permanent salt water incursion.

Lateral migration of groundwater is commonly only a few centimetres per day. At this rate it can take nearly 700 years for water falling on an upland 'recharge' area to migrate down to a lowland

'discharge' area 5 kilometres away, where it could replace water pumped out today.

It is commonly said that our groundwater 'originates' from somewhere near Mount Baker. Don't believe it! Our fresh water lens is completely isolated by surrounding salt water, and besides it would take about 20,000 years for groundwater to migrate this far, even if there were a reason for it to do so. There isn't.

We had better get used to the idea that once each dry season has arrived we are dealing with a non-renewable resource. This brings us to the importance of protecting the integrity of our precious fresh groundwater supply. It is already contaminated in some areas by natural minerals such as arsenic or salt. Above all, it deserves our best efforts to protect it from pollution caused by human activities.

More about this in Part 7.



REPORT ON CUSHEON LAKE

This year has, in general, been a good year for Cusheon Lake. Whereas St. Mary and Weston lakes have had cyanobacteria blooms, Cusheon Lake's water has been clear. We, the lake monitoring committee, have seen this each time we check the lake. Every two weeks, we check how clear the water is by measuring how far down into the water we can see and we record the oxygen and temperature levels at each metre for all nine metres of lake depth. Our final reading of the morning is to measure the change in the depth of the lake.

Our last reading, on August 16th, showed that we could see 6 metres into the lake. This is amazing. Last year at this time, we could see only 2.5 metres into the lake and in 2009, the mid-August reading was 1.5 metres. As for the temperature of the water, as usual, as the weather warms, the temperature close to the surface has risen to 22 degrees Celsius while the bottom temperature remains cool at 9 degrees. The oxygen levels, also as usual, are high close to the surface and drop drastically between 4 and 6 metres. Due to all the rain we have had, the lake level has been high this year.

So why do we do this and what does it mean? These measurements give us a way to see whether the lake is in danger of having an algal bloom. When the lake water is cloudy, it can either be due to sediment washed down in the form of erosion, or the growth of algae. During the spring a cloudy lake is probably due to sediment whereas late in the summer after the sediment has had an opportunity to settle, a cloudy lake is probably due to the growth of algae. If the lake is cloudy in the spring, this may mean there has been a lot of erosion and since phosphorus is contained in soil it is likely the lake will have a lot of phos-

phorus in the water. Since algae need phosphorus to grow, high levels of phosphorus may result in an algal bloom. When we can see only 2 metres or less into the lake late in the summer, it is time for chemical analysis to find out what kind of algae is growing and whether dangerous toxins may be present in the water.

The temperature measurements tell us when and how strongly the lake is stratified. Since warm water rises and cool water sinks, the cool water at the bottom of the lake stays there until the winter chill cools the lake to a uniform temperature and the winter storm winds cause the lake water to mix from top to bottom. In addition fish like cool water and so as the temperature of the water increases at the surface the fish swim more deeply.



The oxygen levels tell us two things. Since there is no mixing of the water in a temperature stratified lake, oxygen at the bottom of the lake gets used up. When this happens, a chemical reaction occurs that allows phosphorus in the mud to be absorbed into the lake water. Since algae need phosphorus to grow, the longer the lake is stratified, the more phosphorus enters the water and this, combined with phosphorus carried in sediment could spell danger in the future.

Since fish need oxygen to live, low oxygen levels mean no fish are living in the lower portion of the lake. In a warm stratified lake the fish avoid high temperatures at the surface. During a long hot summer, the fish have no place to go and may be killed off.

There is one more dynamic to be considered when looking at phosphorus concentrations. While lots of rain may cause erosion and an increase in phosphorus, increased lake levels result in more water gushing down Cusheon Creek. This water carries phosphorus out of the lake.

What this means for 2011 is that there appears to be little erosion since the spring lake water was so clear and the increased flow down Cusheon Creek cleared some of the phosphorus out of the lake. Since the storms lasted until the end of July with little sunlight, the water remained cooler longer and the lake stratified later. Since algae grow more quickly when there is lots of sunlight in warm water with lots of phosphorus all of which have been in short supply this year, we can see deep into the lake at the end of August.

One last word. It is surprising and wonderful that there has been little sediment this year. This can only mean that there has been little soil disturbance and therefore little erosion in the Cusheon watershed. A big factor in the past has been the clearing of the ditches along Cusheon Lake Road which has caused significant amounts of soil being washed into the lake each winter. Main Roads new policy of not clearing the ditches along Cusheon Lake Road has helped tremendously. Hats off to you.

John Borst



CYANOBACTERIA BLOOM ON ST MARY LAKE 2011

This year, St. Mary Lake has experienced an algae bloom that lasted approximately six months, from January into the summer. The problem is that the bloom was composed not only algae; it was also composed of cyanobacteria, a type of bacteria that can produce toxins that if not removed or treated will make the water unsafe to drink. Not all cyanobacteria produce toxins and even those that do, don't always produce them. But, the type of cyanobacteria that were in St. Mary Lake do produce toxin and did this year.

Most of the time the toxins stay inside the cells and are not harmful. That's why, even with a bloom, most of the time the water is safe for bathing and washing. But, if the water is ingested, stomach acids break the cell walls and release the toxins. Most people who drink water from St. Mary Lake are customers of one of three water districts that filter and treat the water to remove cyanobacteria cells and toxins. The blooms should be a concern to all because they require added testing and treatment that raises the cost of water to residents and businesses in Ganges. Also, wildlife and pets could be harmed by drinking water from the lake.



The cyanobacteria bloom is a concern to property owners immediately around the lake. Most of them are not customers of the water district and get their water directly from the lake. They need to make sure they have an adequate water treatment systems and change filters often enough. Clogged filters can squash the cyanobacteria cells and release the toxin.

The biggest threat is when the bloom dies off. Cyanobacteria are unpredictable. But in the past, at die off, the cells have released the toxins into the water. When this happens, it is advisable not to come in contact with untreated lake water.

Residents who get their water directly from the lake, need to be sure their treatment system will remove or treat the toxins. In doing research for this article, I found out that much remains to be learned about why and when various cyanobacteria grow into blooms and when they produce and release toxins. MB Labs, who provided much of the information in this article, are researching this and hope to have more answers as time goes on.

Maxine Leichter



WHO ARE WE?

The **SSI Water Preservation Society** was founded in 1981. The Society owns and protects 272 acres of St Mary's Lake watershed and 20 acres of Maxwell Lake watershed.

We are a volunteer, non-profit group that promotes the protection of the sources of potable water on SSI and the increase of public awareness of the value of water resources.

Memberships, donations and volunteers of all ages are essential to the survival of our Society just as clean drinking water is essential to humans and ecosystems so please keep the cheques flowing.

Our website has pertinent information regarding our history, purposes, bylaws etc. Volunteers are always appreciated for fundraising, writing brief articles, annual broom cutting and serving on the Board.

OUR EXECUTIVE

President
Secretary
Treasurer
Directors-at-Large

Ron Hall
Penny Polden
Wayne Taylor
Rodney Polden
John Borst
Maxine Leichter



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COUNTRY GROCER TAPES

Please put your tapes in box

