

NEWSLETTER

SUMMER 2005

COCOLALLA LAKE ASSOCIATION

OUR MISSION: "TO HALT AND REVERSE THE EUTROPHICATION PROCESS IN COCOLALLA LAKE"

LAKE CLARITY FOR 2005 (by Cary Poston)

Water clarity measurements taken in May and June were consistent with those taken at the same time last year. Clarity for both months was at 3 meters (9.8 feet). Temperatures and levels of dissolved oxygen, again much like this time last year, were fairly consistent from the surface to the bottom.

Testing consists of readings and samplings taken at the deepest point in the lake. The readings consist of temperature, dissolved oxygen concentration and saturation percentage...all taken at 1 meter increments. Water clarity is measured using a Secchi Disc. It is approximately eight inches in diameter and painted white and black. The disc is lowered into the water until it can no longer be seen and this depth is recorded. Typically, we see recordings of 3 to 4 meters during the spring and early summer, with the recordings decreasing to less than 2 meters through November. Water samples are taken at "Secchi Disc" depth and near the bottom. These samples are submitted to a contracted laboratory in Coeur d'Alene where analyses for phosphorus and chlorophyll A are conducted. Concentrations of these elements, along with water clarity measurements, give DEQ scientists information on nutrient loading in the lake. High nutrient loading yields a high likelihood of blue-green algae blooms.

FISHING REPORT (by Cary Poston)

All wild trout are beautiful fish...wonders to behold and to hold in our hands. They are perfect reflections of their unspoiled habitats. But there is much more to the magic associated with trout. There are times when the fish are so easily caught that one actually begins to believe that he knows everything there is to know about these fish and that he can pull up to a river, lake or pond whenever he desires and take trout on every cast. Then there are those maddening outings where one flings every spoon, spinner, plug, fly, worm, hellgrammite and grasshopper in one's possession at the fish and nothing comes of the efforts. And to make matters worse, the fish, usually large colorful ones can be seen rising with a delicate style right next to where the last cast was made.

There are reported to be an abundance of maddening outings this spring and early summer on Lake Cocolalla. There are a few decent stringers of trout in the greater-than-12-inches category. Most success is reported along the east shore.

Panfishermen looking for crappie are not having any luck in the fish hangouts of the past few years...specifically near the northeast corner below the railroad tracks. However, there are crappie being caught in the lake.

MEMBERSHIP REPORT

At the July 12, 2005 meeting, the Membership Chairperson, Sonia Gladish reported that the Association has 89 members.

ANNUAL MEETING

The Association's Annual meeting was held on June 21, 2005 with the Board providing ice cream to all the attendees. The meeting was well attended with about 45 people present. After a short business meeting, the Nominating Committee presented a list of officers effective in July 2005. Nominations were requested from the floor. The new officer who was unanimously elected is:

Herman Collins Vice President

The remaining officers were the same as the previous year. A list of all the officers and the Board are listed later in this newsletter.

The program this year was presented by several members of the association to talk on ideas and projects that are being considered to improve Cocolalla Lake shoreline and water quality. Short outlines of several of the talks are included below.

STREAMWALK (Talk by Bonnie Anderson)

Cocolalla Lake has a watershed 52 times greater than the lake. Much of the pollutants causing the lake degradation come into the lake from the streams. Problems in the watershed include livestock, logging road runoff, stream bank erosion and land development. The association does a streamwalk on three sections of Fish Creek and three sections of Cocolalla Creek. The streamwalk process is threefold:

- Habitat Assessment
- Water Chemistry
- Macroinvertebrate Communities (bugs)

Habitat Assessment includes 12 parameters including:

- Canopy cover (amount of trees and shrubs cooling the stream)
- Riparian zone (grasses and brush along the stream to catch and prevent nutrients from coming into the stream)

Water chemistry measures temperature, PH and dissolved oxygen. Macroinvertebrate communities (bugs) are collected from the stream. They are identified and counted. Diversity and presence of pollutant sensitive bugs can indicate a healthy stream. Other bugs can indicate an environmentally impacted stream.

Our annual streamwalk will be held September 10th and 11th. If you are interested in joining us, please call Bonnie Anderson at 208-773-5783.

BIOMANIPULATION (Talk by Teri McGrath)

Nutrient loading into Lake Cocolalla is a major contributor of algae blooms. 63% of the total nutrient load comes from the 5 tributaries that feed our lake. 23% of the total nutrient load is known as “internal loading”. It sits on the bottom and is stirred up by boats, fish and lake turnovers. This internal loading requires aggressive treatment and must be done alongside the controlling of what comes into the lake – one without the other is futile. Biomanipulation is one technique that shows promise of a long-term solution. It is the deliberate creation and maintenance of “trophic cascades.” A simplified example of a trophic cascade; we have algae which is eaten by Daphnia (water fleas) which in turn are eaten by small planktivorous fish (Perch) etc. So Biomanipulation is basically the manipulation of fish. It has been around for decades. There have been studies done in China, Finland, England and Australia. It has been shown to be a cost effective means to control algae blooms, especially in small shallow eutrophic lakes such as Cocolalla, which are often the most difficult to control. It is now being recognized that it’s easier to manipulate fish than nutrients. Biomanipulation can also improve sport fishing. Outcomes of Biomanipulation field trials have been varied and may depend on the magnitude of nutrient loading, the depth of the lake, the availability of refuges (shelter) for plant eating fish and to the extent zooplankton (water fleas) can be harvested or controlled by piscivores (fish eating fish). Increased harvest of fish eating fish by anglers may foil Biomanipulation, therefore sometime it works and sometimes it doesn’t. The board is looking to receive more qualified education on this subject.

EURASIAN WATERMILFOIL (Talk by Cary Poston)

Interest in the presence of Eurasian Watermilfoil in Cocolalla Lake was kindled about two years ago when a windstorm left the north end beaches with deposits of a plant that looked suspiciously like Eurasian Watermilfoil. The material was shown to the Bonner County Weed Supervisor and, in his opinion, it was native or Northern Watermilfoil. In Oct. 2004, a small survey was conducted by a commercial diving company. The survey occurred at the north end of the lake in the vicinity of the public boat launch. Samples of Watermilfoil were gathered and the diving company presented the results to the lake association members as a minor infestation of Eurasian Watermilfoil. Members of the lake association felt it was necessary to get a second opinion: so, with the aid of the county weed supervisor and a representative of the DEQ, several samples were taken in the

same vicinity. These samples were delivered to the University of Idaho Weed Diagnostic Laboratory for analysis. Although not conclusive, the report from the lab indicated the samples were most likely Northern Watermilfoil. Conclusive determination will be from the analysis of the plant flower spikes. The flower spikes will appear on the lake between the months of June and September. Members of the lake association are on the lookout for the flower spikes, and will gather whatever samples are available for submission to the lab. Considering the presence of Eurasian Watermilfoil in most of the nearby waters, it is highly unlikely that it is not in Cocolalla Lake. The lake association remains watchful for the spread of this very invasive non-indigenous plant, and suggests that all users of the lake remain alert for areas of infestation, and for flower spikes. Reports of sightings of watermilfoil can be made to anyone on the lake association board of directors.

ALUM TREATMENT (Talk by Rose Chaney)

WHAT IS AN ALUM TREATMENT AND HOW DOES IT WORK?

ALUM (aluminum sulfate) is commonly used to clarify drinking water. In lakes, it is used to reduce the amount of nutrient phosphorus available by preventing *internal recycling*.

ALUM is sprayed over the surface of the lake. On contact with water it forms a fluffy aluminum hydroxide precipitate called *floc*. This floc works by binding with phosphorus to form an insoluble compound removing the phosphorus as a food source for algae. As the floc settles to the bottom, some phosphorus is removed from the water column. Other suspended particles in the water are removed as well, leaving the lake immediately, noticeable clearer. As the floc settles onto the bottom of the lake, it forms a layer that acts as a “phosphorus barrier.” By combining with the phosphorus as it is released from the sediments, it prevents it from reentering the water column.

A study of twenty treated lakes across the U.S. showed that alum treatments are effective in controlling phosphorus in shallow lakes for an average of eight years. Applications in stratified lakes were highly effective and long lasting. The percentage of reduction, in controlling *internal phosphorus* loading, was shown to be continuously above eighty percent. The study did, however, find that alum treatment of lakes with *high external loading* was not effective.

Is ALUM toxic to aquatic life?

There are two primary concerns:

The first concern is the impact on the benthic fauna (the critters that live in the sediments). One of the most comprehensive studies on this matter, reported that

alum treated lakes showed *no long term* effects on the diversity or assemblage of benthic fauna.

The second concern is *dissolved* aluminum toxicity. The proper use of alum dictates that the amount applied to a lake be sufficient to control phosphorus availability, but not so great as to cause the pH (acid/alkalinity balance) to shift below 6.0. This is critical because dissolved aluminum, at high enough concentrations, is toxic to aquatic biota, in particular fish, and the solubility of aluminum in water is directly related to pH levels. This problem occurs mainly in soft water lakes and is prevented by buffering the ALUM.

How much does an ALUM treatment cost?

Costs of an alum application are primarily dependent on the type of alum used (wet or dry), dosage rate, area treated, equipment (rental or purchase) and labor. The Wisconsin Dept. of Natural Resources in 2003 reported treatment costs ranging from \$280 per acre to \$700 per acre. Cost for Cocolalla Lake, using the Wisconsin figures, would range from \$225,000 to \$563,000.

At the Washington State Lake Protective Association meeting in April, Dr. Harry Gibbon stated that it is impossible to give a meaningful estimate of the cost of alum treatment without a survey to determine the amount of phosphorus dissolved in the lake water and contained within the lake sediments. He estimated the cost of a survey of Cocolalla Lake would be \$10,000. He said cost per acre of treatment varies greatly and gave two examples: The cost of the recent alum treatment of Green Lake in Seattle, which is 380 acres, was \$800,000. The cost of retreatment of 5½ acres in Liberty Lake near Spokane was \$350,000. When asked if \$100,000 could possibly be a realistic estimate of cost for alum treatment of Cocolalla Lake he said no. His response to “partial alum treatment” was that it was not effective. He offered the suggestion that limited available funds would be better used in working on the reduction of nutrients entering the lake.

CYANOBACTERIA (ALGAE) (Talk by Linda Muskopf)

Did any of you go out on the lake last year and notice the water was a yucky green mess? Well, what you were seeing was the results of an algae bloom, one of the worst recorded on Cocolalla in recent history. Idaho DEQ announced that it was blue-green algae or “cyanobacteria”.

Blue-green algae blooms are a naturally occurring phenomena which are found world wide, in both marine and freshwater habitats. They occur most often in calm, nutrient rich water. Because of continuing eutrophication and other negative impacts on aquatic ecology, this problem will undoubtedly become worse in Cocolalla Lake. This has been more problematic in other countries, notably Australia and Canada where they now have large programs investigating

water quality issues and causes of freshwater blooms because of the growing impact on their water sources.

There are a number of different species, some of which produce toxins that affect animals and humans. Not all species produce toxins; some don't always but have the potential. Often there is more than one species present in a particular algae bloom. The most frequent and serious health effects are caused by drinking water containing the toxins or by ingestion during recreational water contact. Disease due to cyanobacterial toxins varies according to the type of toxin and the type of exposure (drinking, skin contact, etc.) Humans are affected with a range of symptoms including skin irritation, stomach cramps, vomiting, nausea, diarrhea, fever, sore throat, headache, muscle and joint pain, blisters of the mouth and liver damage. Swimmers may suffer an allergic reaction, such as asthma, eye irritations, rashes, and blisters around the mouth and nose. Animals, birds and fish can also be poisoned by high levels of toxin.

The most serious toxins are hepatoxins (affecting the liver) and the neurotoxins (affecting the nervous system). While toxins from cyanobacteria are among the most lethal substances known, where the cyanobacteria are well dispersed, there is no immediate risk to animals or humans. There is no antidote for blue green algae toxins once a lethal dose has been ingested and conventional treatment and disinfectant afforded most public drinking water supplies are not effective in removing or deactivating the toxins. Water that is free of blue green algae following a bloom may not be free of the toxin. Because the toxins are released when the algae cells are damaged or die, many common assumptions are erroneous and perhaps dangerous when applied to dealing with cyanobacteria. For example:

1. Boiling water releases the toxins into the water you are attempting to purify.
2. Wearing a wetsuit can concentrate the toxins around cuff areas on the arms and legs, resulting in allergic reactions, rashes, etc.
3. Chemical treatment of the water source to get rid of the algae doesn't eliminate the toxicity problem: it kills the algae, releasing the toxins!

INTERVENTION

So what do we do to prevent problems? The time to control a toxic algae bloom is before the bloom develops:

1. Reducing the nutrient build-up in the lake, especially by better management of wastewater disposal systems and control of pollution by fertilizers (including manure).
2. Educate the public about the risks of bathing or water sports in the lake when it is likely to contain high densities of cyanobacteria.
3. Managing runoff of nutrient rich silt resulting from new construction, earthmoving, etc.

LAKE SHORE CLEANING PROJECT (Talk by Glen Weatherly)

Members of the association have taken a day in 2003 and in 2004 and cleaned the shoreline in the public access and in 6 to 8 fishing spots on the east side of the lake. Last year we had 6 people working on this project. We had a full pickup load of trash. The most important trash is the ash from campfires. It is rich in nutrients and so contributes to our algae problem. We have made this project an annual event as it is important to the health of the lake. If you would like to help with this project, please call a board member at a number listed near the end of this newsletter.

RESEARCHING HYPOLIMNETIC INJECTION AND WITHDRAWAL (Talk by Glen Weatherly)

This is a process that was used in Ballinger Lake near Mountlake Terrace, Washington. The process involves installing a pipe into the hypolimnetic (bottom) layer of the lake. Clean, highly oxygenated water is injected into the lake through the pipe. In addition, another pipe is installed in the bottom. This pipe was used to withdraw the nutrient rich water from the lake. The injection and withdrawal is done with atmospheric pressure and gravity. We would need to analyze Cocolalla Creek to see if it is clean enough to inject into the lake and we would need to study what affect the withdrawn water would have on the outlet stream. This process caused an 86% reduction in the internal cycling of phosphorus in Ballinger Lake and the dissolved oxygen improved substantially. Unfortunately, several years later, the inlet stream was polluted with storm water and the results deteriorated badly.

Another part of this project was the building of two sedimentary ponds in the inlet stream to capture phosphorus. The ponds are dredged and are capturing about 273 lbs. of phosphorus each year. This is phosphorus that never gets into the lake.

This project was done in the 1980s. I have written to an engineer in Mountlake Terrace to find the current status of the water quality in Lake Ballinger.

Lake*A*Syst (By Jamie Davis Idaho Association of Soil Conservation Districts)

Jamie Davis, Water Quality Resource Conservationist, made a presentation on Lake*A*Syst. Lake*A*Syst is a voluntary educational/implementation program designed to protect and improve lake waters by preventing non-point source pollution arising from lakeshore residential property.

A Lake*A*Syst project is being developed for Pend Oreille Lake. The project purpose is "Through education, informed watershed residents and lake users will be more conscious of how their activities affect the lake and thus may be more

willing to modify those activities to meet water quality goals that they understand.”

Program materials include a series of fact sheets and corresponding self-assessment sheets. These materials are developed specifically for the lake being studied. Subjects on the fact sheets include stormwater runoff, lawn and garden management, ensuring a safe drinking water supply, household wastewater treatment, household hazardous waste, petroleum product management, landscape and new construction considerations, access roads and driveway runoff, forest lot and riparian area management, pasture and riparian management, and an environmental resource directory.

Lake*A*Syst is a 3 step process:

1. Assesses residential property for pollution risks using the Lake*A*Syst Pollution Management Fact/Work Sheets.
2. Individuals complete the Action Checklist to inventory potential contamination sources, and then
3. **Take Action!** By implementing lakeshore best management practices as listed on the fact sheet.

There are possible funding sources for developing a Lake*A*Syst project for Cocolalla Lake.

SANDY BEACH ESTATES (By Rose Chaney)

Sandy Beach Estates has received preliminary approval from all involved agencies for a nine lot planned unit development. Based on hydro geologic findings, we drilled two wells on the property. Unfortunately they did not produce water. We are now planning to go forward with a pilot water treatment plant as requested by DEQ to satisfy their requirements for using surface water.

YEAR 2005 ACTIVITY CALENDAR

April 12	7:00 pm	Association Meeting at Andersons
May 10	7:00 pm	Association Meeting at Community Hall
May 23		Cocolalla Lake clarity testing
June 14	7:00 pm	Association Meeting at Community Hall
June 21	7:00 pm	Cocolalla Lake Association Annual Meeting at the Community Center
June 29		Cocolalla Lake clarity testing
July 12	7:00 pm	Association Meeting at Community Hall
July 25		Cocolalla Lake clarity testing
August 9	7:00 pm	Association Meeting at Community Hall
August 29		Cocolalla Lake clarity testing
September 10-11		Annual stream walk
September 13	7:00 pm	Association Meeting at Community Hall
September – as needed		Develop the annual stream walk report

September 26
October (to be determined)
October 11 7:00 pm

Cocolalla Lake clarity testing
Lakeshore cleanup
Association Meeting at Community Hall

Note that the above dates are subject to change. Please call Bonnie Anderson at (208) 773-5783 to confirm the dates. (Leave a message if Bonnie is not there.)

COCOLALLA LAKE ASSOCIATION BOARD OF DIRECTORS

*Bonnie Anderson – President
(208) 773-5783 (Post Falls)
(208) 263-4176 (Lake)*

*Sonia Gladish-Membership
Chairperson
(208) 263-6515*

*Herman Collins – Vice President
(208) 263-7282*

*Teri McGrath – Social Team
(208) 265-9754*

*Charles Gladish – Treasurer
(208) 263-6515*

*Edwin Nurmi – Agency Liaison
(208) 263-5350*

*Linda Muskopf – Secretary
(208) 265-0295*

*Rudy Mead – Agency Liaison
(509) 747-1210*

*Kerry Longwell – Publicity
(208) 263-1455*

*Glen Weatherly – Newsletter
(509) 466-7299 (Spokane)
(509) 710-4828 (Lake)*

*To join the Cocolalla Lake Association, mail this form and the \$25.00 annual membership fee to:
Cocolalla Lake Association
P. O. Box 133
Cocolalla ID 83813*

Name _____

*Mailing
Address* _____

Telephone () _____