OSSIPEE LAKE REPORT

Volume 9, Issue 4 • October – December 2010

SEEKING ANSWERS ON THE 'NATURAL' LEVEL

By Jean Marshall

Editor's Note: The author is a volunteer researching historic information on the natural level of the lake relative to the state's '410 Rule.' Her latest report, on the impact of damming the lake, highlights the challenges of the search.

FREEDOM — Historical research suggests that a forge was built at the head of the Ossipee River where there were two very steep rock falls. An industrial village grew up around this location, called Iron Falls, and by 1860 two dams had been built.

In 1879 a John Demeritt built an 800' canal and constructed a six-gate dam at its head, which could raise or lower Ossipee Lake and its tributaries by 6' during high power demands by the industrial users. An 1859 deed shows a Quimby family sold their land on the western side of Pine River and preserved the right to flood or drain the land "with a dam at the outlet of Ossipee Pond."

By the mid-1870s, however, the Saco River Water Power Company began buying up all of the land on what is now "Long Sands," by the Bearcamp River, and in parts of Broad, Leavitt and Berry Bays. The deed from January 9th, 1880 from Ephraim Knox to the Saco Company says "…the above being all the

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Jim McElroy of Freedom's Aquatic Invasive Species Committee (center) prepares for a milfoil survey on Danforth Pond with Marc Bellaud of Aquatic Control Technology and DES limnologist Amy Smagula. Part two of our series on Freedom's milfoil control program starts on page 5. *Photo: R. Oram*

A PERFECT DAY FOR WATER SAMPLING

By Allan and Gale Riley

Editor's Note: The Alliance provides volunteers, boats and funding for DES' annual deep water tests. The authors are volunteers and have been Berry Bay residents since 1997.

FREEDOM — Thursday August 19th, 2010, was a picture-perfect, Chamber of Commerce day on the lake, or better yet, an Ossipee Lake Alliance day on the lake!

The bays were smooth as silk, there was just a gentle breeze, the temperature was perfect and boat traffic was at a minimum. It was a perfect day for deep-water testing. At 9:00 a.m., as promised, our NH Department of Environmental Services biologist, Liz, appeared in our driveway along with Sara. They unloaded the mass of equipment necessary to conduct the deep-water tests for Berry Bay, Leavitt Bay and Broad Bay. Sara headed off to do the testing for Danforth and Ossipee Lake.

My wife Gale and I volunteered to provide the boat and some manual labor for the day. We began by helping Liz carry all of the gear

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KEY DATES:

- Wednesday, October 27: GIS mapping Workshop with UNH Cooperative Extension. $20 fee. Info from GMCG @ (603) 539-1859.
- Friday, October 29: Conserving Your Land Workshop. Freedom Village Store, 6:30-8 PM. Info @ (603) 539-3077.
- Thursday, November 18: Ossipee Watershed School Presentation and Open House, 6-7:30 PM. Info online @ www.gmcg.org.

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OSSIPEE LAKE, THE BAYS, THE RIVERS AND CHANNELS, DANFORTH POND, LOON LAKE AND ROUND POND

A PERFECT DAY FOR WATER SAMPLING

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from the front yard down to the boat. As it turned out, our boat, a 21' Tracker Party Deck, was a perfect platform for the work we had to do. After stowing the gear we gave Liz a pre-flight about the boat and the lake. She is a recent UNH graduate and this was her first trip to our bays.

We decided to begin our testing on Broad Bay and then proceed to Leavitt Bay and end up on Berry Bay close to our dock. Liz had maps and a depth gauge so we could locate our testing spots. All three spots required the same tests and approximate depths were at 60' for Broad Bay, 43' for Leavitt Bay and 41' for Berry Bay.

As we were leaving the canal from Leavitt Bay heading into Broad Bay, we encountered the famous "2010 Ossipee Lake Loon Family" next to Camp Robin Hood.

I immediately cut the motor and coasted to a stop. One of the "chicks" approached the bow of the boat and swam within a foot of us…totally fearless. We could hear the low chatter between the mother and the two chicks, who are now almost the size of the parents.

The two chicks have a brownish color with mute loon markings that resemble an adult sporting their winter coat. We have seen the chicks practicing their runway moves by "running on the water" as they will soon be taking flight. This was an unexpected pleasure added to an already beautiful day.

As we reached our first and deepest test site on Broad Bay, I lowered the anchor with a bit of anticipation; do I have enough rope to reach the bottom? I did and we began the tests.

Our first task was to lower a sensing unit by a graduated chain to various metric depths and then record the temperature readings and oxygen levels as displayed on an equipment screen in the boat. I do not remember the name of the piece of equipment, but it also computed a third bit of data I shall call the saturation level…I think!

Liz then took the clipboard, reviewed the data and divided the information into "three lake levels". I found out that the lake has three varying levels and each level has different characteristics, just for the biologists!

Our second task was to lower a Kemmerer bottle down to various levels to collect water samples specific for each desired depth. These samples were transferred to plastic bottles, marked and stored in a large ice chest we brought aboard.

Our third task was to lower a long, integrated, 1 5/8" diameter, clear plastic hose to a designated depth, pull up a "core sample" and empty it into a bucket. Part of the mixed sample was poured into another plastic bottle, labeled and put in the ice chest.

Our fourth task was to lower a plankton net to various depths and collect little microscopic critters! These were emptied into special bottles containing iodine and put in the ice chest. The iodine prevents the big critters from eating the little critters before NHDES can complete testing in their lab.

The final test was lowering and measuring the depth of a Secchi disk, an 8" diameter metal disk, divided into quarters and painted black and white just like the ones used on test dummies. We lowered these to test the clarity of the water. It usually disappeared at about 5' to 6'.

After finishing our work on Broad Bay we proceeded to Leavitt Bay and Berry Bay and did ditto, ditto! As we finished up with Berry Bay I received a call from Sara on my cell phone. She was finishing her work at Danforth and Ossipee Lake and was heading for our house to meet Liz. We docked the boat, unloaded the gear and carried everything to the front yard. Sara arrived in ten minutes - perfect timing!

All of the data and samples will be carried back to the NHDES lab for lots of testing and analysis. It was another perfect day on the lake. I'm sure Liz will be back to Ossipee Lake…either on official or non-official business!

The Alliance thanks the Rileys and this year's other water testers: Marcia Murphy, Dave Maidrand and Bob Reynolds. Test results are at www.des.nh.gov/organization/divisions/water/wmb/vlap/annual_reports/2009/graphs/index.htm.

HANSEN JOINS ALLIANCE BOARD

Ossipee resident Jean Hansen has been named to Ossipee Lake Alliance's Board of Directors. Hansen, an RN by profession, is a decorative arts designer, teacher and businesswoman.

After spending a number of years vacationing on the big lake and Broad Bay, she became a member of the Ossipee Lake community in 1983 and a year-round resident in 1996.

In 2005 she helped revive the inactive property owners group Long Sands Association, where she championed DRED's Ossipee Lake Natural Area management plan and helped win $2 million in property tax abatements for the Long Sands community. She is a member of the Alliance's Lake Representatives Forum and the Ossipee Conservation Commission.

OSSIPEE LAKE REPORT:

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Send mailing address changes to info@ossipeelake.org or PO Box 173, Freedom NH 03836.

OSSIPEE LAKE NEWS delivers up to the minute information about the lake by email, as events warrant. Sign up @ www.ossipeelake.org/email.

The Alliance is a member of the New Hampshire Lakes Association and Loon Preservation Committee

SEEKING ANSWERS ON THE 'NATURAL' LEVEL

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land I own in Ossipee Waters which will be damaged by flowage or drainage by the dam and Canal at Iron Works Falls in Effingham…" Evidently the Saco Company was not only buying up the land to protect its own rights for power generation at the falls, but also possibly as some kind of compensation for the flooding of lands.

In 1884, John Demeritt sold 475 acres which included land on Broad Bay and its outlet, Leavitt Bay down to Effingham Falls. Thus the dams were now under the ownership of a Maine power company whose responsibility was to provide water for hydroelectric power production at downstream generating stations.

In 1916, the Saco Company conveyed to the Pepperell Manufacturing Co. all of the land which it owned along with the easements for flooding these lands. Pepperell was now responsible for the storage of water necessary to provide hydroelectric power production.

During Pepperill's ownership, the Effingham dams were rebuilt so that two locations in series were replaced by two dams side-by-side, which worked together as a single hydraulic feature. In 1978, the Head Works Dam contained five sluice gates operated from a gate house which spanned across the dam. This emptied into the canal. The Berry Bay Dam was a spillway with provision for up to 2.5′ of flashboards. (In 1978 the structure had a maximum height of 5′, which when combined with the 2.5′ height of the flashboards and the streambed height at the center line of the dam of 400′, suggests that this 407.5′ was the maximum level which could be maintained at this dam.)

In 1930, Pepperell conveyed these lands with their easements to the Cumberland County Power Company in Maine. Then in 1942, Cumberland conveyed all of the lands which it had received from Pepperell and Saco to the Central Maine Power Company (CMPC). These lands now either surround the lakes created by damming of the river or are flooded.

Ossipee resident and Alliance board member Dr. Perry Fine makes a point at the Alliance's public forum on the controversial 410 Rule in August. More than 200 people attended the meeting to hear officials discuss how the state plans to reassess the rule, which affects a large portion of the lake community. *Alliance Photo*

At the end of World War II, CMPC sold the lands which the power companies had been holding since the 1870s, but required that each sale was accompanied by the deeded right of the grantor to be able to "...overflow and flood the…premises as the same may be overflowed and flooded by means of the present dam as now constructed, together with 4′ of flashboards…"

Many of the sold properties were subdivided by developers, but this easement remained in the deeds. The area became a summer recreational location for boating, and sometime in the early 1970s the CMPC and the State of New Hampshire Water Resources Board made an agreement that the CMPC would maintain

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INVEST IN THE FUTURE OF OSSIPEE LAKE

It's New Hampshire's best north country lake for fishing, boating and swimming. Home of the state's finest remaining examples of unique habitats. The location of one of your most important real estate investments. It's Ossipee Lake, and there's only one organization dedicated to preserving and protecting it: Ossipee Lake Alliance. **Please invest in the future of your lake by joining us.**

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Dear Susan:

Enclosing our annual check and sorry it's so late. We've headed up to the lake next weekend to stack wood and rake pine needles. Reminds me of closing up with my parents when I was a kid, and now I do it with my kids. I wonder how many pounds of pine needles I've raked in my life?

Our daughter Jen hiked Green Mountain while she was at camp and now her brothers want to do it too. So it looks like we'll also be stretching our legs next weekend. The lake has great mountain views but there's nothing like being up on the tower.

I was eight when my dad first took me to climb the tower. Amazing all the mountains as far as you can see, and all those farmlands out toward Maine. The fire ranger let us look through his binoculars and said on a clear day you could see the buildings in Portland and the sun reflecting off the ocean. I think I saw that, but it was a long time ago. Do you know if there's still a ranger up there in the fall?

Anyhow, we close up the first week of November after our annual breakfast cookout for lake friends, whoever is still around. I cook and my husband and kids serve and clean up. Everything gets done on the grill. Another tradition from my dad!

It's great to get your newsletters over the winter so we know what's up. Just wanted to say thanks for what you do and it was nice meeting you (briefly!) at the Calumet event. I hope you have a great winter.

Betsy P.

MINIMIZE OR ELIMINATE? THE CHALLENGES OF MANAGING MILFOIL IN FREEDOM

By Jim McElroy and R. A. Oram

Editor's Note: This is a continuation of an article that appeared in the Summer 2010 issue of Ossipee Lake Report.

FREEDOM – Under direction of the Board of Selectmen, Jim McElroy worked with Aquatic Control Technology (ACT) to draft a contract for the 2010 herbicide treatment.

In order to get the most preferential treatment dates, the selectmen signed the contract in the Spring of 2009 (first in line for 2010!).

Treatment dates must be chosen to ensure robust plant growth (after the winter dormancy period) and minimal water flow to ensure good placement control of herbicide pellets (the clay pellets sink to the bottom and then release the active ingredients).

Recent experience in New Hampshire, such as in Wolfeboro's Back Bay, has demonstrated better effectiveness for large scale infestations if a second herbicide application is conducted within 12 months.

As a result, additional funding was approved at the 2010 Freedom Town Meeting, which should allow for a 2nd herbicide treatment and/or DASH when needed.

Conducting the Herbicide Treatment

Based on the revised milfoil management plan, the Danforth permit application was made to the State of NH by ACT in January of 2010.

Well surveys were sent to all abutters by the Town of Freedom to determine how many wells would be impacted by the drinking water restrictions. The permit was approved by the State on 5/12/10.

NHDES, ACT, and FAISC conducted a pretreatment survey on the morning of 6/2/10. New areas of Milfoil were discovered on Danforth at this time. We also noted that existing infestation areas had increased plant density.

In addition, NHDES surveyed the area near Ossipee Lake Marina. As a result, additional control measures were recommended for that site, which has had milfoil for a number of years. Based on the conditions there, it was determined that DASH would be used.

ACT applied the herbicide treatment on the afternoon of 6/2/10. Abutters were informed by letter prior to treatment. The Danforth shoreline was also posted with warning signs.

Wells within 50 feet of shoreline were restricted for drinking until water test results indicated proper levels (other uses of water are OK). Lake water tests were conducted to indicate the "all clear" signal.

A brief survey conducted by FAISC on 6/12/10, showed the milfoil plants to be in significant distress. Other plant species appeared to be unaffected by the treatment.

It will be some time before we can determine the overall treatment effectiveness as it is expected that some plants will survive and then continue to spread. In fact, surveys in August do show some re-growth already occurring.

In a recent discussion with Jim McElroy (FAISC), Craig Niiler, Assistant General Manager of the Danforth Bay Camping Resort (a Purity Springs Property), said "Milfoil is an unwanted guest at our resort. Danforth Bay Camping Resort is committed to working with the Town of Freedom to help manage this invasive species as it has a direct impact on the experiences of our campers."

Based on results of Danforth milfoil survey and the management plan, FAISC requested DASH funding from the Town of Freedom for several days of work by New England Milfoil.

This request was approved by the Freedom Board of Selectmen on 6/7/10 and was supplemented with a generous contribution by local residents Bruce and June Howlett. This allowed removal of milfoil in a number of small areas (both old and new discoveries) where

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"Once milfoil has colonized a water body, it is practically impossible to eliminate the invasive species. Long-term management is required to control the spread."

THE LAKE SHORELINE IN LATE AUTUMN

By Dave Eastman

The following article originally appeared in the Conway Daily Sun and is reprinted with permission.

TAMWORTH – It may seem odd to continue commenting on shorelines as we close down our lakefront cottages and find the water too chilly for any further swimming, but this is a most interesting time of year for noting birds' foraging needs.

Mountain holly clumps often have bright, livid greenery and covered with the significant bright, maroon-red berries that make this unique species so wonderful to behold at the lake's edge. This indigenous North American shrub is part of the composition of cool, boggy shorelines that begin here and extend northward. It has other common names, too, like false holly or catberry. It is now included in the genus of Ilex, where it wasn't before now.

The rich, lime-green leaves turn yellow before dropping in autumn; however, the main ornamental trait is the bright red berries, which are almost indescribable in their intense magenta hue. These globose drupes are about 6 mm in diameter, contain 4 or 5 nutlets and are borne on very slender stalks. They are not considered edible for us humans, but are probably as beneficial for wildlife as all holly fruits are.

Another plant found only in wet areas is red-osier dogwood. Restricted not only by moisture requirements, it doesn't tolerate high temperatures and needs glaciated soils. It grows from tundra-line in Canada down through the Northeast, but is very spotty below New England to Washington, D.C. Its blossoming time is right behind the common elder, about a week later in July, and it is one of the last living bird feeder shrubs to blossom.

Highly adaptable to soil type, it is an "edge" species that mostly grows on river and creek banks, in low moist meadows and swamps, and is a great bank stabilizer. Often its roots are immersed in water. As its Latin name *Cornus stolonifera* denotes, it spreads by stolons or runners. This form of reproduction occurs from stems touching or growing under moist ground, and even from shoot growth from roots. Many large stemmed clumps are found where the plant is doing well, with new stems arising to replace the old.

When I first noticed the red-osier dogwood, I was attracted to the reddish-colored twigs radiating out and upward from the thicket forming clump. The common name recalls the resemblance of these reddish twigs to those of some willows called osiers, which are used in basketry. This attractant crimson color has led to developing commercial varieties of the plant which you might want to purchase for your bird-scaping. "Red Twig Dogwood" is the cultivar's name and will be useful for backyard birding endeavors. This native dogwood has strange white berries, which also may be leaden grey or leaden blue. They look like dolls' eyes from those old China dolls children had just past the turn of this century. "Mama-a-a..." The fruit matures in August.

Plants are generally 4 to 8 feet tall with a spread of l0 feet. The upright twigs are a preferred nest site of the goldfinch. A great variety of birds eat the odd fruit. I once saw a pair of hermit thrushes stalk quietly down a fruit laden branch where it extended over a backwater streambend. They took a long time to expose themselves, as I had been eating my lunch for a good l5 to 20 minutes before they reappeared.

Birds are quite furtive eating these fat rich berries late in the summer season. They just want to recoup from nesting and raising young and get out of here. Streamside thickets are rich in companion plants such as arrowwood, and the thrushes were getting needed energy for migration. I remained very quite as the hermit's devoured the white berries in that calm afternoon. The dark glade was just starting to turn with the early colors of fall foliage.

A companion plant to the two wet-site species mentioned above is Northern arrowwood. This viburnum is named for the stalks on older plants that were supposedly used as arrow shafts by Algonquin Indians. Look for them; they certainly seem straight enough for this purpose. See the deeply indented margins of the round leaves of this plant. Its name is Viburnum dentatum, which speaks of the sharply toothed edges these glossy leaves possess. It blooms just after mapleleaf viburnum and alternate-leafed dogwood do on their drier sites.

The overall visual effect of this favored expertise of mine is akin to the appearance of a Japanese Garden. The shoreline remains with a north woods look, giving privacy to the lakefront dweller and a feeling of an undiscovered wild lake to the boater. Probably noise reduction occurs, too, when sound travels across water. The entire lake benefits from this green watershed approach and the bird life gets even more food during its autumn migration, stopping over to feed on these plants' seasonal bounty.

In addition to writing for the Conway Daily Sun, Dave Eastman broadcasts "Country Ecology" four times weekly on WMWV, 93.5 FM. For consultation, additional information, and to purchase his writings., visit his website at www.countryecology.com.

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a lake level adequate to satisfy recreational interests, which was an elevation of 405′ Mean Sea Level (MSL) between June 1 and October 12 - but they actually maintained it at 407′.

They installed flashboards in the spring and removed them to lower the water level in the fall. There is a record of a gauge reading of 413.0′ in April 1953 and one of 411.8 in 1945. Normally the Head Works Dam is at 408′ and the Berry Bay Dam is at 407.5′ with the flashboards in place.

By the 1980s, most of the land had been conveyed by CMPC except the few acres surrounding the dams in Effingham and Freedom. The CMPC conveyed this land to the N.H. Water Resources Council in 1992.

Analysis of Shorefront Properties

Thirty-one deeds were reviewed to determine if any of them particularly mentioned a height above MSL as being part of the description of their property.

During the 1800s, all of the references to property as conveyed to the power companies were described by very vague references: "to the Great Ossipee Lake", "lying at the mouth of the Bear Camp River", "bounded on the East and Southeast by Ossipee Lake", "the northeasterly side of Bear Camp River" and "northerly by waters of Broad Bay". By the early 1900s, the phrases are not much more descriptive, but some do refer to the level of the water: "…high water mark of said river and Ossipee Lake"; "…to the shore of Leavitt's Bay"; "…by the shore of Leavitt's Bay".

There are a few deeds which do refer to specific marks, among them: 239/187, "…by the shore of Broad Bay and Causeway Cove to an iron pin located on the southerly shore…"; 439/139, "…monument set in the ground at the high water mark on the southerly shore of Ossipee Lake…"It might be worthwhile to have a surveyor find these points.

Conclusion

The study of the dam suggests the power companies maintained a mean high water level of 407′ at least from the 1940s. In several deeds of conveyance by the power companies they maintained "…the right and easement to overflow and flood the….premises as the same may be overflowed and flooded by means of the present dam as now constructed, together with 4′ of flashboards thereon,…". (This 4′ of flashboards is at variance with the 2.5′ that the 1978 study said was on the dam, but the height of the dam could have been changed during that time.)

It is highly unlikely that one of the monuments that is ascribed in the deeds will lead to a particular placement on the ground.

Jean C.M. Marshall, AICP, is a professional planner who has been part of the Berry Bay community since the early 1950s. She lives in Southwest Harbor, Maine.

MINIMIZE OR ELIMINATE

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herbicide treatment is not practical. The work was completed in mid August.

Additional FAISC milfoil surveys are being conducted with the intent of looking at all water bodies within Freedom to obtain a baseline. Recent surveys have included Berry Bay (dam area), Trout Pond, and Loon Lake.

The following summarizes other recent tasks of the Freedom Aquatic Invasive Species Committee (FAISC):

- FAISC met with Squam Lakes Association on 6/18/10 to exchange information on milfoil management.

- FAISC is developing a communications plan to help educate people on aquatic invasive species (e.g. this article).

- FAISC attended the NH Lakes' Lakes Congress on 6/25/10 to increase our knowledge of milfoil management, and we gave a milfoil talk at the GMCC's "State of the Lake" meeting in Ossipee held on 8/10/10.

Summary

Once milfoil has colonized a water body it is practically impossible to eliminate the invasive species. Long term management is required to control the spread of variable milfoil, and ongoing residential, business and public investments are needed to conduct long term management.

Forming teams of local residents as well as the available town, state, and commercial experts is the most cost effective approach to milfoil management.

Jim McElroy is Chairman of the Freedom Aquatic Invasive Species Committee, and R. A. Oram is Chairman of the Freedom Conservation Commission. Both reside year-round in Freedom.

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Preserve. Protect. Educate.