

Chocorua Lake Conservancy

Fall/Winter 2015

Fall/Winter 2015 Conserving the Basin since 1968



Little Lake Chocorua at sunrise, August 2015

Photo: Alex Moot

In this issue:

Life Cycle of a Lake
Water Quality Report
Chocorua Dam Repair
Curation of CLC Archives
The Cost of Perpetuity
Chocorua Lake Fish Stocking
Might a Forester Help?
Wildlife Notes
Tamworth's 250th Anniversary



The Chocorua Lake Conservancy is an all-volunteer, non-profit land conservation organization dedicated to the protection of the scenic and natural resources of the Chocorua Lake Basin and surrounding area for the benefit of all present and future visitors.

Find us online at:

www.chocorualakeconservancy.org

[facebook.com/
chocorua.lake.conservancy](https://www.facebook.com/chocorua.lake.conservancy)



Life Cycle of a Lake

By Alex Moot

Most of the lakes in New Hampshire were formed as the glaciers receded, carving out basins in the landscape. In these newly formed lakes, the edges and bottom were exposed rock, which doesn't erode very quickly, meaning there were not many nutrients available. As a lake ages, sediment from the watershed is washed in, filling in the bottom of the lake. This sediment is rich in nutrients, and therefore increases the fertility of the lake. More fertile lakes have more nutrients and therefore more plants and algae.

A lake is usually classified by scientists as being in one of three possible classes: oligotrophic, mesotrophic or eutrophic:

- **Oligotrophic** lakes are pristine and ideal for swimming and trout fishing. Such lakes are characterized by high water clarity, low nutrient concentrations (phosphorus and nitrogen), minimal levels of aquatic plant growth (weeds), and low algae concentrations. In oligotrophic lakes, oxygen is found at high levels throughout the water column. In addition, low algal concentration allows deeper light penetration and less decomposition. When algae, zooplankton and fish die, they sink to the bottom and are decomposed by microbes and invertebrates. This decomposition process uses up oxygen. Since oligotrophic lakes are less fertile and have less algae and other organisms, there is less decomposition and the oxygen doesn't get used up.

Continued on page 2

The fish found in oligotrophic lakes like cold, high oxygenated water, such as rainbow trout. Chocorua is an oligotrophic lake.

- Mesotrophic** lakes are commonly clear water lakes and ponds with beds of submerged aquatic plants, medium levels of nutrients, and increasing levels of algae and/or weeds. Mesotrophic lakes may have mostly clear water but can experience algal blooms in late summer. Mesotrophic lakes behave differently than oligotrophic lakes in that they stratify, meaning they separate into layers in the summer. The top layer of water becomes warm from the sun and contains algae. Since the by-product of photosynthesis is oxygen, oxygen concentration remains high at the surface of the lake. The bottom layer remains cooler and can become anoxic (oxygen depleted) in mid-summer. This change occurs because as all the algae and other organisms die and are decomposed at the bottom of the lake, oxygen gets used up. Since this bottom layer of water does not mix with the top layer of water in the summer, oxygen cannot be replenished. The implications of anoxia are that no fish or other organisms can live where there is no oxygen; therefore, in late summer, fish move shallower where there is still oxygen available.
- Eutrophic** lakes are shallow, green and have murky water and mucky, soft bottoms. They also have a lot of plants and/or algae. Such lakes are characterized by low water clarity, high levels of aquatic plant growth, high algae concentrations, high nutrient concentrations, and very low dissolved oxygen concentrations near the lake bottom. Eutrophic lakes are found where the soils are more fertile and where there is a lot of farmland.

It is important to remember that lake trophic state is not interchangeable with water quality. Water quality is subjective and depends on how you intend to use the water body. A lake that is good for duck hunting is not necessarily good for water skiing. In turn, a lake that is great for swimming may not be great for bass fishing.

Water Quality Report

By Dwight Baldwin

Water quality data was collected by Conservancy volunteers between May 8 and 11, 2014 at the deep Chocorua Lake sampling station.

Overall, the 2014 seasonal water transparency in Chocorua Lake was high, the amount of microscopic plant algal growth (greenness) was low to moderate, and the phosphorus (nutrient) concentrations were low and reflected the conditions considered typical of an unproductive New Hampshire lake.

Funding for the water quality monitoring program in Chocorua Lake was provided by the Conservancy. The Chocorua Lake Conservancy has been participating in the New Hampshire Lakes Lay Monitoring Program since 1981.

	Chocorua Lake Lake (range)	Chocorua Lake Classification
Water Clarity	5.1 meters (3.7 - 6.1)	Oligotrophic (pristine)
Chlorophyll <i>a</i>	1.7 ppb (1.2 - 3.1)	Oligotrophic (pristine)
Total Phosphorus	4.4 ppb (3.5 - 7.7)	Oligotrophic (pristine)
Color (color units)	20.7 units (12.3 - 27.1)	Lightly tea colored
Alkalinity (mg/L)	4.0 mg/L (2.8 - 5.2)	Moderately vulnerable
pH (standard units)	6.9 std units (6.6 - 7.0)	Optimal range for fish growth and reproduction
Specific Conductivity (uS/cm)	32.7 uS/cm (31.0 - 33.6)	Characteristic of minimally impacted NH lakes

Chocorua Lake Water Quality: Long Term Trends

by Dwight Baldwin

- **Water Clarity:** Water clarity, measured as Secchi disk depth, decreased between 1982 and 2014. Water transparency data collected before (1982-1999) and after (2000-2014) the implementation of erosion control measures along the Route 16 travel corridor both display a trend of decreasing water clarity; however, the amount of decline over time has decreased since the Conservancy's installation of the erosion-control practices.
- **Chlorophyll:** Chlorophyll *a*, a measure of microscopic plant life within the lake, increased between 1982 and 2014. An examination of the chlorophyll data collected before and after the installation of erosion control measures along the Route 16 travel corridor indicates the water quality has improved in recent years. The chlorophyll *a* concentrations increased by approximately 2.0 parts per billion (ppb) between 1982 and 1999 while the chlorophyll *a* concentrations documented between 2000 and 2014, following the installation of erosion controls measures, have stabilized.
- **Total Phosphorus:** Phosphorus is the nutrient most responsible for microscopic plant growth. The long-term total phosphorus data display a trend of decreasing concentrations between 1999 and 2014. *Total phosphorus data were not collected consistently prior to the 1999 sampling season.*
- **Color:** Color is a result of naturally occurring "tea" color substances from the breakdown of soils and plant materials. Color has varied annually and displays a relatively stable trend between 1986 and 2014.

➔ Read this online at: bit.ly/1OjLGei

Wildlife Notes

Bald eagles and ospreys have been sighted particularly during late summer, a testament to the extraordinary recovery of these 2 species after the elimination of poisonous DDT in the 50s and early 60s. The good news is that they, along with peregrine falcons, loons and others who breed in the northeast, have rebounded, particularly the eagles. The bad news is that many other birds that migrate to nest in New England are not doing so well. Our breeding thrush survey, now in its 22nd year, shows steep declines in the wood thrush and, less so, in our Hermit and Veery thrush populations. Songsters, who breed in the basin but winter in the south, are also showing decline.

Fish Stocking in Chocorua Lake

by Alex Moot

Every year the New Hampshire Fish and Game Department stocks nearly a million catchable-sized trout for your angling enjoyment. Fish stocking in New Hampshire occurs primarily from mid-March to early July. Trout cannot tolerate water temperatures when they reach the mid-70s, so the fish need to be stocked before the weather gets warm. As the young trout start to increase substantially in weight during the spring and summer months, their densities need to be spread out among the available rearing containers.

Every year, the New Hampshire Fish and Game Department stocks Chocorua Lake with 1,500 Rainbow Trout (1+ year old) in May and in the fall. Over 400 Eastern Brook Trout (1+ year old) are stocked in the Chocorua River.

For more info on the New Hampshire Fish and Game Department's stocking program, visit www.wildlife.state.nh.us/fishing/trout-stocking.html

➔ Read this online at: bit.ly/1IHxFhb

Chocorua Dam Repair

A crew of Chocorua Park LLC volunteers made repairs and improvements to the village dam and park. A wonderful piece on the project, and the history of the dam, can be found in the September issue of the [Tamworth Civic News](#). For more photos and a fascinating step-by-step description of the repairs, see the photo album posted on August 19 at www.facebook.com/chocoruaipark.

For now, Chocorua Park LLC is operating under the umbrella of the Chocorua Community Association (PO Box 185, Chocorua, NH 03817), which encourages tax-deductible contributions to support this important village project. The CCA has established a dedicated account for the support of the dam and park.



Photo by Peter Smart.

Wildlife Notes

Bobcat or Lynx?

Feline wildlife sightings are rare, exciting, and sometimes confusing. What is that wild cat? In the Basin, it's most likely a bobcat, which is enjoying a population rebound in response to a hunting ban enacted in 1989. The ban has been so successful, in fact, that hunting may be allowed again. The organization Voices of Wildlife in New Hampshire is following the issue and collecting signatures for a petition to keep the bobcat protected. For more, go to voicesofwildlifeinnh.org

Both the bobcat and the Canadian lynx belong to the *Lynx* genus, which adds to the confusion. The Canadian lynx is a snow-loving cat that's more populous in northern climates, but is occasionally seen in New Hampshire. If you're lucky enough to get a good look at a cat in the wild, look for these traits:

- A bobcat's tail tip is black on top and white beneath (when running away, the white shows clearly). The lynx's tail tip is all black.
- A lynx has larger paws than a bobcat, and a lynx's hind legs are notably longer than its front legs, enabling it to run faster in the snow.
- The lynx has a long, mottled grayish coat and pointed ears with pronounced, pointed tufts. The bobcat is brownish in color with clear markings, with smaller-tufted ears.

Please send sightings of all kinds of wildlife to Harriet Hofheinz: hhofheinz38@gmail.com.

Want to know more?

To see the work of the Chocorua Lake Conservancy in action, stay in tune with the latest Conservancy activities, and support our efforts to preserve the natural beauty of the Chocorua Lake Basin, please visit our web site and Facebook page:

chocorualakeconservancy.org

[facebook.com/chocorua.lake.conservancy](https://www.facebook.com/chocorua.lake.conservancy)





Narrows Bridge and reflection, summer 2015

Photo: Alex Moot

Board of Directors (2015-16)

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Wildlife Notes

It has been a quiet summer and fall from the point of view of Chocorua Basin wildlife with a few exceptions. Bears have been spotted in various places, mostly on the prowl for food. One young 3-year old showed up at my house early in the summer interested in the bird feeder. He came right up to the house, knocked on the window, and would hang around waiting for me to leave before helping himself. He moved on when I removed the feeder but was spotted around the basin by several folks. Don Johnson had a mother bear with four cubs visiting his back yard from time to time.

~ Harriet Hofheinz

➤ See all Wildlife Notes at:
bit.ly/1NHSgbE

Might a Forester Help?

Whether you own a small woodlot or a large expanse of forest, its diversity of trees, plants, and animals may perplex owners as to its best management and potential uses. This is where a Forester's input is helpful. A Forester is a trained natural resource professional who generally has at least an associate degree in forestry from a college or university and is professionally licensed by the state in which he works. To determine whether a Forester would be helpful for your particular needs, you can call the County Forester (Wendy Scribner) at the University of New Hampshire's Carroll County Extension at 603-447-3834 who could come to your home or woodlot and make suggestions as to a course of action and also supply a list of Consulting Foresters who may offer the services that you are looking for.

At the first meeting with a Consulting Forester, the discussion centers around the specifics of your forest ownership such as the size of the parcel, length of ownership, history, maps or surveys, boundary lines, type of ownership (easements, covenants, trusts, current use), knowledge of special conditions or natural resources, and most importantly the goals and objectives for the forest.

Based on the forest conditions and what the landowner wants from his land, recommendations may be made by the Forester regarding forest reconnaissance, timber inventory and appraisal, forest management plan, harvest planning, forest improvement, forest resource management (wildlife, water, recreation, aesthetics, protection, and legacy). Any one of the practices suggested has a lifespan and perhaps follow up practices with which the Consulting Forester can further help. It is always advisable that the landowner be available if not present during the actual work.

Prepared by: Donald Johnson, Forester, NH License #80

➤ Read this story online at: bit.ly/1OqdwFD

Curation of the CLC Archives

➔ Read this story online at: bit.ly/1I2jOvT

by Margaret Wheeler

Since the formation of the Chocorua Lake Conservancy in August, 2014, former CLA Board members and CLCF Trustees have searched their attics, basements, closets, and spare rooms for records of CLC's parent organizations. The result has been the delivery of boxes, bags, and other containers of files to the basement of John and Mary Watkins, who kindly offered to provide a home for these valuable records. Lateral 4-drawer filing cabinets were donated by Myles Grinstead and Ned Eldridge, and were arranged to form a room divider in the Watkins' walk-out basement, providing the most secure and environmentally friendly home these documents have enjoyed for many years.

For the month of July, CLC contracted with professional archivist Mary Pettengill to provide guidance and assistance in identifying historical documents, removing rusting and dangerous staples and paper clips, filing fragile materials in archival files and boxes, and compiling minutes and newsletters throughout the history of CLA and CLCF which, with the help of others, comprised 7 person-weeks of work. Mary returned to the area Columbus Day weekend to enjoy hiking in the White Mountains and to join the CLC Board meeting on October 11, where she reported on her work in July and provided suggestions and references for digitizing important records and for seeking funding for that work. Our partnership with Mary has been a happy one, as she seems to have fallen in love with the White Mountains, and she has proved to be a valuable collaborator in our records management efforts.

Results:

- An inventory of the contents of the archival boxes has been prepared.
- Newsletters have been filed chronologically and gaps identified.
- The records of each covenant and conservation easement have been gathered in a single file, with sub-files for legal documents, maps and plans, and notes relevant to the specific circumstances of that covenant or easement.
- Records of each parcel of land owned by CLC have also been gathered in a single file, with sub-files for legal documents, maps and plans, and information about the history and resources of the parcel.
- Financial records have been gathered in a single file drawer.
- Natural resource information, such as lake water quality, has been gathered in a single drawer.

To do:

- Review financial and natural resource information to eliminate duplicates and outdated material.
- Identify records to be digitized for easy working access and for backup to paper records, and implement.
- Determine which records should be entered in the CLC database, and implement.

HELP COMPLETE THE CLA-CLCF ARCHIVES!

Please review your personal files, in particular for:

- CLA Newsletters
- Minutes of CLA Board meetings and Annual Meetings, and CLCF Trustee meetings
- Photographs of the Chocorua area in the late 1960's and early 1970's
- Survey plans of covenanted properties
- Newspaper clippings of CLA and CLCF activities

If you find any of these materials, please contact a member of the [CLC Board](#). If they are of personal significance and you do not wish to part with the materials, CLC will work with you to make copies for CLC records and to return the originals to you.

Thanks for your help!

President's Letter: The Cost of Perpetuity

The Chocorua Lake Conservancy is dedicated to the protection of the Chocorua Lake Basin “for the benefit of all present and future visitors.” This means that we have committed to preserving the areas under our stewardship “in perpetuity.” Each agreement the Conservancy accepts comes with a promise to continue the conservation protections placed on the land forever.

Over the past 47 years, the Chocorua Lake Conservancy and its two predecessor organizations have been able to protect over 3,900 acres of land in the Chocorua Lake Basin from commercial development, to keep Chocorua Lake pristine, to keep the lakeshore in a near natural state without visible houses, and to provide public access to Chocorua Lake to thousands of annual visitors.

The health of the Chocorua Lake watershed, the quiet and wild of the surrounding woods, and the sense of historic continuity that these protections ensure, would not have been possible without the generous financial support of our members. The archiving described on page 6 is an example of the work required to manage and maintain protection agreements, which has been undertaken by many generations of board members, committee members and volunteers. And of course, we are grateful to all of those who over the years donated conservation covenants, easements or land.

Like all land trusts, the Conservancy has a perpetual responsibility to maintain the properties we own for the benefit of the public. The Conservancy's conservation agreements and fee-owned properties must be monitored and managed, and these activities cost money.

Unfortunately, none of the 74 conservation covenants and easements donated to the Conservancy's predecessor, which now span 2,914 acres across 100 properties, came with any funds to cover the costs of these long-term responsibilities. Similarly, none of the 18 properties owned or managed by the Conservancy, which now encompass almost 1,000 acres of conservation land, came with funds to pay for annual maintenance.

As a result, the Conservancy is entirely dependent upon generous annual donations from our members, plus occasional donations from visitors to the Grove and Island, to cover 100% of these ongoing costs.

During 2014, the Conservancy spent \$35,121, almost half our annual budget, maintaining the Grove, Island and other Conservancy-owned properties so Conservancy members and other visitors would continue to have access to Chocorua Lake. We spent another \$19,613, a quarter of our budget, on land conservation projects and stewardship of 74 conservation easements and covenants held by the Conservancy on properties in the Chocorua Lake Basin.

Through the first nine months of 2015, the Conservancy received about \$33,000 in membership contributions and donations from 262 households. Over the past two years, the Conservancy has added 86 first-time members and donors, and 124 lapsed members have renewed their support.

To cover the Conservancy's operating costs and break even during 2015, we need to raise an additional \$40,000 in contributions during our annual year-end appeal.

On behalf of the Board of Directors, I want to thank each and every one of our donors and volunteers for helping the Chocorua Lake Conservancy continue our work preparing for perpetuity!

I hope you will consider a generous year-end gift to help the Conservancy balance its 2015 budget.

Alex Moot
President (2015-2016)

 Read this online at: bit.ly/1Mt9FH6

Tamworth 250th Celebration

2016 marks the 250th anniversary of the Town of Tamworth. Bookmark these pages to stay apprised of events as they are added to the schedule:

www.tamworthnh.org/page/250th_celebration

www.facebook.com/Tamworth250

CLC is planning the following events:

Winter 2016

Snowshoeing or skiing into
CLC Conservation Lands

Early spring 2016

Vernal Pool Workshop

Labor Day 2016

Festivities on the lake,
with a special Parade of Lights

Plan your float now!



Photo by Betsy Whitman Memishian.

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Chocorua Lake Conservancy

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RETURN SERVICE REQUESTED