

# The Watershed News

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## Heath Pond Bog is a national natural treasure

By Celia Abrams

Heath Pond Bog, at the south end of Ossipee Lake, is one of New Hampshire's exemplary kettle hole bog systems. Because of its great diversity of peatland plants, the bog was designated as a National Natural Landmark in 1977. A trail leads southeast through the uplands from the parking lot on Route 25, and a short walk brings visitors to an overlook on the north end of the pond then down to the edge of the bog.

Kettle hole bogs were formed as glacial ice retreated from the landscape and large chunks of ice broke off and were buried in the glacial outwash. As these chunks of ice melted, they became ponds. With little or no water inlet or outlet, nutrient and oxygen levels were low, and the water was very acidic, slowing the rate of decomposition of any vegetation. Over thousands of years, layers of peat, partially decomposed vegetation, gradually built up around the edges and filled in much of these ponds.

Heath Pond Bog today is a 5 acre pond within a 40 acre heath shrubland. The vegetation in some portions of the bog is ungrounded and floats on a peat mat. The pond is surrounded by concentric rings of three different peatland plant communities. The ring closest to the open water is a narrow black band, the liverwort-horned bladderwort mud bottom community. The bright yellow flowers of the bladderwort can be seen in midsummer. Next is a somewhat broader red ring of

sphagnum rubellum-small cranberry moss carpet. The outermost, and largest, ring is a leatherleaf-sheep laurel dwarf shrub community, with scattered stunted black spruce and larch. Viewed in aerial mapping software, game trails can be seen criss-crossing the shrubland.

Bogs present many challenges to the plants that grow there. Sphagnum moss underlies most of the vegetated portion and absorbs much of the limited nutrients. This perpetuates the acidity of the water and incomplete decomposition of the peat. Peatland plants have developed



several strategies that enable them to live in these waterlogged conditions with low pH (< 4.0), low oxygen, and low nutrient levels. The bladderworts, pitcher plants and sundews are carnivorous, capturing insects and tiny aquatic animals to supply their nutrients. Some peatland plants have formed symbiotic relationships with bacteria and fungi to obtain nutrients, while others use specialized tissue, aerenchyma, to transport oxygen from their leaves to their root zone to support respiration.

The bog is a fragile habitat and the floating portions can also be dangerous to walk on, so Heath Pond

Bog visitors are asked to stay on the trails of the surrounding uplands and not venture out onto the peat mat. Other bogs in the state, such as Philbrick-Cricenti Bog in New London, have boardwalks that cross the peat mat and allow visitors a close-up view of the unusual plants of these peatland communities; go in late June or July to see the orchids and pitcher plants in bloom.

*Celia Abrams is a UNHCE Covert Volunteer. The New Hampshire Coverts Project volunteers promote wildlife habitat conservation and forest stewardship. For more information on NH Coverts Project*



*contact Haley Andreozzi at (603) 862-5327.*

## The Watershed News

The Watershed News is a quarterly publication of the Green Mountain Conservation Group, a non-profit, 501(c)3, charitable organization established in 1997 and dedicated to the preservation of the natural resources in the Ossipee Watershed. The towns of Eaton, Effingham, Freedom, Madison, Ossipee, Sandwich and Tamworth make up the boundaries of the Ossipee Watershed. This watershed includes one of the largest and deepest stratified drift aquifers in New Hampshire. GMCG also partners across the Maine border into Parsonsfield and beyond. Water does not have any political boundaries.

GMCG's purpose is twofold:

1. To provide an organizational structure for a coalition of citizens and local officials interested in identifying sensitive areas within the Watershed in need of protection;
2. To offer public educational events about conservation issues and possible solutions regarding the preservation of unique natural resources.

Through research, education, advocacy and land conservation we strive to promote an awareness and appreciation of our watershed's natural resources and encourage a commitment to protect them.

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## As leaves fall, reflections grow

By Blair Folts

Fall is a poignant time for many of us. We are reminded of the cycles of life particularly with this season's passing. Summer's bounty is now withering and passing into a renewal in the soils. Birds are moving on to new climes, bees are closing up hives for a winter rest and with GMCG our summer water quality season is winding down a few weeks early due to funding constraints.

Personally, I have been challenged with my own family's struggles as my mother has been facing health issues. I am grateful to the many volunteers, staff and board members who have supported me all summer though some difficult days. Philosophical ponderings have been doubly expanded as I have also been reflecting all summer on the past twenty years of my own work with GMCG that many of you have been following on our Monday Memories posts. So many wonderful volunteers, interns, staff, board members and colleagues have graced my life and I am humbled to have had the opportunity to work and partner with so many great folks across New England. As the leaves fall, I am also reminded that all things come and go and come again—just not always in the same way.

Summer visitors have also shared many stories with me this season about their own observations of changes across the watershed from land use changes to water course changes to re-birth changes in terms of things like eagles coming back and more loons. Again, things come and go and come again. Conservation work is sometimes very difficult because it is a constant reminder of the three "ps": the need to be patient, persistent and to pace yourself. Nature is much better at this than we are. Take a moment to observe a tree and note that fall brings with it a chance to watch this transition in action.

It is with a heavy heart that I write to let our readers know that this is Corey Lane's last season as the Water Quality Coordinator. Corey will be leaving GMCG in December. She has been such a strong and passionate leader with the water monitoring program and has guided so many volunteers over the past five years that she will be greatly missed. We

will be celebrating Corey's time with us at our annual Cookie Swap in December so please join us as we bid her a hearty and warm farewell.

With the arrival of autumn, I sit by



the vernal pool at Blue Heron House and am mesmerized by the reflection of this new home-to-be for the organization. Each month brings us one step closer to completion. The framing, insulation, electric, plumbing, sheetrock and mudding are all completed. We have had some wonderful volunteer help over the past summer but are needing to reach out again for more help as we enter this next phase. We need help with interior painting, kitchen and bathroom installation and flooring installation. Please let us know if you have any extra time or expertise and can help volunteer weekends through the fall and early winter. We would be happy to include you on our volunteer task force! Thanks.

In sitting by the pond, one can listen to the force of the river, marvel at the water that fills the pond via underground springs, watch the pond overflow into the vernal pool and wind its way to the creek and to the river and ponder that this one spot is the exit of all the water from the entire Ossipee River Watershed as it heads to Maine and the Saco River and the sea.....we are all connected by water. Peaceful blessings to you all this fall.

## GREAT VOLUNTEERS help GMCG complete 15th year of water monitoring

With help from over thirty dedicated volunteers every other week, May through October, thirty tributary sites have been monitored throughout the Ossipee Watershed for the 15<sup>th</sup> year. The collection of this data helps track the long term chemistry of the water and provides information about changes to the system. While volunteers are a central part of collecting the water quality data, not to be forgotten are the local businesses around the watershed that assist with the exchange of the meters and monitoring equipment so that testing can be completed before 9:00 am per EPA protocol.

The winter testing of ten sites will continue to be monitored once a month from November through March. Once again we are grateful to Dave Downs and Rich Dandeneau who continue to take this task on without a complaint. Thanks to UNH's Water Resource Research Center for support with analysis of grab samples for the RIVERS program as well.

GMCG is also grateful for all of The VLAP volunteers (Volunteer Lake Assessment Program) who made monthly trips five times on the Lake and

Bays for deep water sampling from ice out through fall turnover.

All of this data is essential to the Ossipee Watershed Management Plan which is in the final stages of Phase 2 with FB Environmental.

Recommendations with the report are expected to be available at [gmcg.org](http://gmcg.org) by December. *Funding for the watershed management plan is provided through a Watershed Assistance Grant from the NH Department of Environmental Services with Clean Water Act Section 319 funds from the U.S. EPA.*

### **Update on Lower Danforth Pond:**

After three years of continuous, year-round monitoring for temperature and sediment influx, the Danforth Pond initiative by Plymouth State University researcher Dr. Lisa Doner is wrapping up. While many of the findings are still being assessed, one of the most important findings about the water quality there is that the pond is in a state of continuous severe anoxia below the thermocline from April to December.

Most lakes experience some anoxia near the bottom during the summer months, especially when the thermocline gradient (the transition from warm upper

waters to cooler deep water) is high. This anoxia usually develops slowly as summer progresses. Temperature and oxygen profile data from Dr. Doner show that Danforth Pond, from May to Aug 2017, had oxygen levels at 10 feet that were as depleted as at the bottom, at 65 feet—basically “zero.”



Tim Otterbach, left, collects deep water samples on Ossipee Lake.

## Source Water Protection grant to provide homeowner brochure

With over 75 residents from around the Watershed participating in the Aquifer Protection Steering Committee through a NH Department of Environmental Services Local Source Water Protection Grant, there is hope that a permanent, watershed wide non-regulatory committee will be established in the near future. The creation of a regional Aquifer Advisory Board will ensure that shared drinking water resources will be protected from incompatible development.

As you may know, education is part of GMCG's mission and it is a strong tool for water quality protection. With the aquifer being highly susceptible to contamination, educational brochures will be available around the watershed and at [gmcg.org](http://gmcg.org) soon. You will also be able to find a business brochure that will have a checklist to assist businesses with meeting Env-DW 401 NH State Rule Requirements if they have five gallons or more of a Potential Contamination Source (PCS) as well as emergency contact info in case of a spill.

The Committee is currently creating a homeowners brochure that will be distributed across the watershed. This document will help educate homeowners about

easy ways they can protect shared groundwater resource including suggestions for using non-toxic alternatives to pesticides; disposing leftover chemicals and paint at annual household hazardous waste collection days; checking your fuel storage tanks for leaks; inspecting your septic tank every year and pumping it every 3-5 years and how to avoid damage to your leach field by keeping vehicles, livestock and other heavy objects off your leach field. The brochure will also outline ways to keep absorbent materials such as rags, pads, “Speedi-Dry” or kitty litter near work areas and the need to refuel or repair engines over an impervious surface, such as a concrete floor or tarp. Finally, the brochure will also note the need to follow medicine disposal guidelines described at [www.nh.gov/medsafety](http://www.nh.gov/medsafety) because these products, too, can contaminate ground water.

We can all make a difference by learning about how to protect our water and following Best Management Practices (BMPs).

## Fall school programs commence with VBAP



Fall is time for the Volunteer Biological Assessment Program (VBAP)! GMCG is now in the 12th year of this program. This additional monitoring program, created by former GMCG Program Director Tara Schroeder, provides a way to engage youth in data collection and water quality analysis in the streams that are sampled through the adult water quality monitoring program. Students are trained to collect macroinvertebrate samples, assess water quality and stream conditions



Brett students sampled Bearcamp

and to analyze and present their data at a community meeting.

Participating schools this year included sixth graders from KA Brett School in



Sandwich students by Cold River

Tamworth who collected data from the Bearcamp River; fourth, fifth and sixth graders from Sandwich Central School who gathered water quality information for the 12th year in a row on the Cold River; Effingham Elementary School students who spent an afternoon on the South River across the border in Parsonsfield, Maine sampling for “bugs;” Ossipee Central School who sampled water quality in the Swift River in Tamworth and Madison Elementary School whose students were responsible for collecting data on the Lovell River in



Effingham student collecting samples

Ossipee. A new school has also been added this year —our down stream neighbors at Sacopee Valley High School in Maine.

If you would like to learn about the program and the water quality in our tributaries, please join us on November 30th when students will come together at Madison Elementary School and give a community presentation on water quality. Thanks to all the teachers, schools, students and volunteers for another successful fall sampling!

## Pequawket Foundation supports Water Literacy programs in Madison

The Ossipee Watershed Water Literacy- Educator Guide has been created and thanks to funding from the Pequawket Foundation of New Hampshire Charitable Foundation, will be piloted with teachers from Madison Elementary School.

The purpose of this guide is to act as a resource for educators in the Ossipee Watershed. The guide outlines hands-on programs which encompass discovery and problem solving while allowing students to explore and learn about their local watershed. As part of their discovery process, students will explore a research question, conduct investigations, collect evidence, use the evidence to describe their findings, and communicate their findings to an audience.

Additionally, students will learn and practice map skills, such as reading and recognizing map components, spatial and geography awareness, and how to convey science through technology. The programs and activities in the guide correlate to the Next Generation Science

Standards.

GMCG will pilot this free educational program to students and teachers in Madison. The programs will run over the course of the 2017-2018 school year. GMCG is deeply grateful to the Foundation for their support.



Dennis Morgan, President of The Pequawket Foundation, Education Coordinator, Karen Deighan with a check for \$2000.00 for youth water literacy programs.

## Quick Reference Guide to Winter De-Icing can help protect water quality

By Mark Longley

Here's a list of products commonly used by home owners to improve traction on icy sidewalks and driveways. There are over 100 commercially available products, most of which are blends of the basic components shown below. We suggest that you focus on product composition rather than the claims on the package. For example, many manufacturers tout the environmental and safety benefits of one of their product's components when, in fact, that component comprises only an insignificant part of the blend. You might have to ask for a MSDS (Material Safety Data Sheet) if you're not sure of the composition. Please keep in mind that chlorides contaminate our soils and water, so the goal is to choose a product that is effective, safe, and economical while keeping chloride levels to a minimum. Of course, it is always a good idea to remove as much snow and ice mechanically before applying traction controls. We hope this short list helps you find a product right for your application.

**Pure Sand:** Sand is very inexpensive and readily available at hardware and big box stores. Play sand is grittier than all-purpose sand, and is therefore a better choice. Pure sands add NO chlorides to the environment. Sand improves traction on surfaces but doesn't melt ice and in cold weather may slide on top of the ice surface while giving a false sense of security. You'll probably need to sweep the sand buildup at the end of the season.

**Town Sand:** Residents may fill five 5-gallon pails of sand at the highway garage on North Sandwich Road, courtesy of the Highway Dept. and Town of Sandwich. This sand contains about 3% (by volume) sodium chloride, so be careful where you apply it because even at this low level sodium chloride will kill grass and

vegetation on the borders of your walkway, driveway, or parking lot. Tracking sand into the home can be an issue with the person doing the cleaning.

**Wood Ash:** Sprinkled on walks and driveways, wood ashes will melt ice and provide traction. They don't work quite as well as salt, and they can be messy if you don't take steps to prevent the ashes from getting tracked into the house. But they're free, and they won't damage alkali-loving plants, animal paws, or paved surfaces. One cord of wood produces about 50 lb. of wood ash. You may want to screen raw wood ash before use.

**Magnesium Chloride:** ( $MgCl_2 \cdot 6H_2O$ ) In its pure form, this chemical melts ice down to 13 deg. below zero Fahrenheit. Pellets are more effective than flakes. A 50 lb. bag costs about \$18 - \$25. The chief advantage of Mag is that it releases 40% less chloride ions to the environment than sodium or calcium chloride. It is relatively safe for concrete and pets.

**Calcium Chloride:** ( $CaCl_2$ ) This product is effective to -25 deg F. and costs about \$15 for a 50 lb. bag. This chemical is also used for dust control. Unfortunately, it is harder to store (may become soggy), harmful to skin & paws, and releases as many chloride ions as sodium chloride.

**Sodium Chloride:** ( $NaCl$ ) Also called 'rock salt', this material is very inexpensive but doesn't melt ice below 25 deg. F. and adds significant sodium and chloride ions to our soil and water.

**Acetates & Other Non-Chloridic Compounds:** Although these products contain no chlorides, they are very expensive or less effective than the products listed above. CMA (Calcium Magnesium Acetate) has the best properties available. It is free of chlorides, non-corrosive to metal, and is safe for concrete as well as pets. It was

our favorite choice last year but is no longer available in the area. Again, take care to avoid claims such as 'enhanced with CMA', since most of these blends contain less than 5% CMA.

**Kitty Litter or Oil Absorbing Pellets:** These silica-clay based materials don't contain salt, but also don't melt ice and may present a cleaning problem when tracked into your house.

The Town of Sandwich continues to follow its low-salt approach to winter road maintenance. In fact, the town's sand/salt blend has one of the lowest chloride levels in New Hampshire. Many New England towns are abandoning road sand as this commodity becomes more and more expensive, but fortunately for Sandwich, our proximity to the Ambrose Pit helps keep our costs to a minimum (for now).

This information provided by the **Sandwich Agriculture Commission** Bob Butcher (chair), Maggie Porter, Dick Devens, Holly Cook, Pat Russell, Betty Alcock, Pat Russell, Ginger Heard, Mark Longley

Questions? Call 284-6294

*Mark Longley is the Sandwich Representative on the GMCG Board of Directors.*

## Conservation Conversations

**Editor's Note:** *Conversations is intended to provide a forum for the seven towns of the Ossipee Watershed to share news of their conservation and planning activities and an opportunity to find creative solutions to challenges.*

### Eaton



This summer blueberry management on Foss Mountain continued. Loam was delivered to Brooks pasture to fill holes. Also, sulfur was spread on the Brooks pasture fields and by the end of the summer positive results were seen. Kristy Foster Carbone led a hike on Foss Mountain.

Foss Mountain is 1647 feet tall and is an easy hike. The trail is a 0.9 mile trail located near Eaton, New Hampshire. It has scenic views and is used for hiking. Foss Mountain has two summits and blueberries (in season). There is a trailhead kiosk.

### Effingham



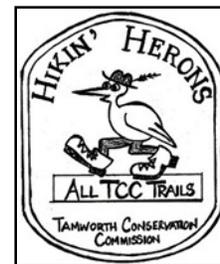
The Effingham Conservation Commission held a grand opening at the Pine River Cherubini Preserve on Pine River Road. They were celebrating the new trail that connects the property to an old logging road and then continues to the river. The ECC boasted that this is the best view of nature in Effingham. This trail is open to the public and all are invited to visit!

### Ossipee

During the summer months and continuing into the fall, the Ossipee Conservation Commission (OCC) has been involved in their ongoing process of conducting site observations of land parcels currently held in Conservation Easement. As part of this effort, the Conservation Commission will be identifying those parcels which have natural features and size to warrant creating site access with a trail or trails through the site, a designated parking area, and an informational kiosk. This effort is being pursued in order to provide access to some of these natural areas for the public (in a low impact manner) to enhance the experience of living in or visiting Ossipee.

The OCC is also in the process of designing and eventually fabricating and erecting signage identifying major parcels currently held in conservation easement. It is anticipated the first of these signs will be erected in the spring. Several of the parcels have unique wildlife habitats and special ecosystems; along with great views.

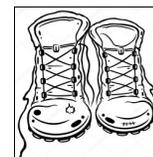
The commission is also in the process of performing some site maintenance at the Windows on the Ossipee Mountains. This will enhance the spectacular views of the Ossipee Mountains. The Ossipee Conservation Commission continues to monitor both development and forest management activities within Ossipee to ensure these activities are conducted to benefit the town's overall environmental value, as well as, accommodate economic growth.



### Tamworth

Hikin' Herons are a group of hikers who have hiked six Tamworth trails maintained by the Tamworth Conservation Commission. At each trailhead there is a mailbox with maps of that area. Hikers are recognized with an official Hikin' Herons patch. The Hikin' Herons challenge encourages people to discover, use and enjoy Tamworth's trails. This summer, a group of thirteen students from Brett School earned their Hikin' Herons patch. For more information go to

[www.tamworthconservationcommission.org/hikin-herons](http://www.tamworthconservationcommission.org/hikin-herons).



### Sandwich

Sandwich is home to many top rate trails; from easy walking paths to long bike trails you'll find them in Sandwich. Many trails are pet friendly. For more information, visit

[http://www.sandwichnh.org/information/area\\_hiking\\_trails.php](http://www.sandwichnh.org/information/area_hiking_trails.php)

## Save the Date! 2017 Autumn Calendar

**October 7, 8, and 9 Sandwich Fair**, 7 Wentworth Hill Road, Center sandwich, NH. GMCG will have an educational booth near the craft building. We are looking for volunteers to help run the booth. We are asking folks to commit to a 3-hour shift. If you are interested, please email Karen at [education@gmcg.org](mailto:education@gmcg.org)

**November 30, 2017 Youth Water Quality Presentation, 6 –8 pm.** Madison Elementary School, 2069 Village Road, Madison, NH. Youth from ten schools in the Ossipee Watershed will give a presentation on their water quality results. Through the Volunteer Biological Assessment Program (VBAP) they tested the water quality of the local streams and rivers by collecting macro invertebrates.

**December 19, 2017 2nd Annual Less Plastic Day** People are invited to avoid plastic for one day and share it on the dedicated Facebook page. Please visit [GMCG.org](http://GMCG.org) for more information.

## SAVE THE DATE!!!! CELEBRATE GMCG'S 20TH ANNIVERSARY

### Blue Heron House Renovation "RAFFLE" Tickets - \$100



Limited Raffle - Only 100 tickets to be sold to **WIN**

### Nearly New TWIN Prijon 16' and 16'- 9" Kodiak Kayaks w/paddles and PFD's



**More Details:**

- Large Perception hydration bags
- Medium Dry Sacks
- Cockpit skirt

**Kayak features:**

- Adjustable seats
- Fore and aft deck hatches with Sealed bulkheads and watertight covers on both hatches
- Fore and aft deck mounted cargo netting
- Deck mounted safety line extending full length, both sides
- Retractable rudder with foot rest activated cable's
- Adjustable foot rests
- Carrying handles fore and aft

**Contact the GMCG office at 603-539-1859 to purchase your tickets or see below to purchase on-line.**

Kayaks donated by local Ossipee Watershed Resident

**PLEASE! Renew your membership today! Every drop counts! Thank you!**

*(Please make checks payable to Green Mountain Conservation Group Box 95, Effingham, NH 03882)  
You may also donate online at [www.gmcg.org/we-need-your-help/](http://www.gmcg.org/we-need-your-help/)*

~~Wetland Pool~~ \_\_\_\$25 Stream \_\_\_\$50 River \_\_\_\$75 Pond \_\_\_\$100 Bay \_\_\_\$250 Lake \_\_\_\$500 Aquifer \_\_\_\$1000 Other \_\_\_

NAME \_\_\_\_\_

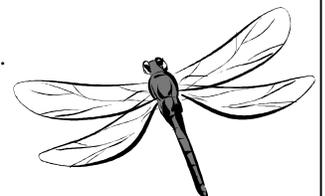
ADDRESS \_\_\_\_\_

PHONE \_\_\_\_\_ EMAIL \_\_\_\_\_

Are you interested in being a GMCG Volunteer?  YES

GMCG is a non-profit 501 (C)3 tax-exempt organization funded by grants, memberships, and donations.

THANK YOU FOR YOUR CONTINUED SUPPORT!





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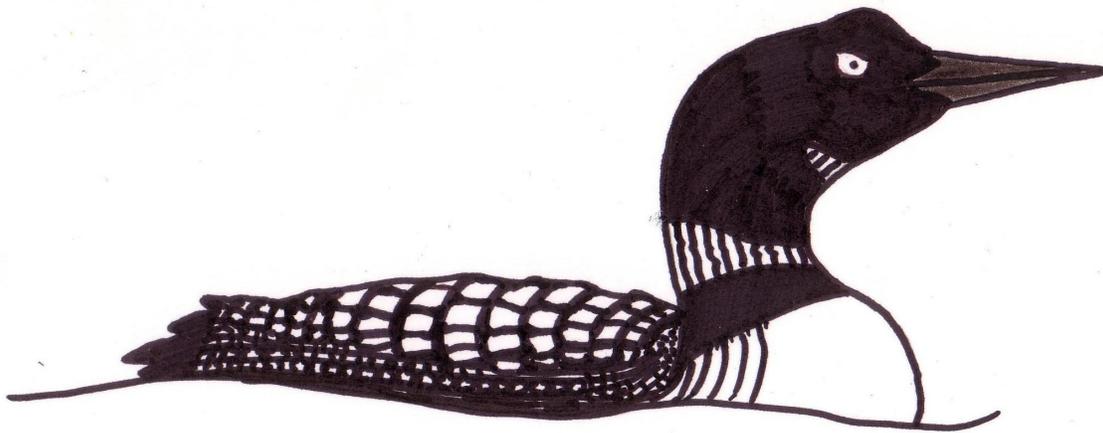
# The Watershed News

**Save the date!**

**Youth Water  
Quality  
Presentation  
November 30  
Madison, NH**

**Winter Newsletter  
submissions due December 10**

EVERY PERSON CAN MAKE A DIFFERENCE AND EACH PERSON SHOULD TRY.



Sign up for event updates with *Watershed Happenings* and stay in the flow! Sign-up at [www.gmcg.org](http://www.gmcg.org)