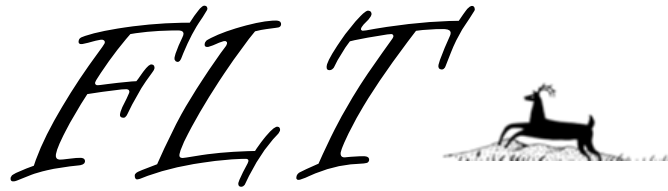


Notes from



The Newsletter of the Francestown Land Trust, Inc. Spring 2013

CLIMATE CHANGE—A NEW LOOK

It has been six years since our newsletter focused on trends in temperature data and the implications of that research for our lives¹. Since then weather events like Hurricanes Irene and Sandy or the 2012 drought in the mid-west have peppered the news. On May 4th the Mauna Loa Observatory in Hawaii recorded the highest carbon-dioxide concentration in the atmosphere in the past 4 million years. It is an opportune time to revisit the subject.

Our feature article by Meredith Allen brings a naturalist's eye to some of what is at stake with our water resources. At our June 13th Annual Meeting, keynote speaker, Dr. Cameron Wake, will share his research as it pertains to New Hampshire and give us a sounding board for our questions, observations and concerns.

No need to be concerned about polar bears or deformities in frogs or countries disappearing under the waves (although that doesn't hurt) to think about attending. If you are concerned about taxes, you'll want to hear how changing weather patterns are impacting costs at all levels of government and what, if anything, we can do about it.

The NY Times and USA Today report that Hurricane Sandy will cost more than \$60 billion dollars. The State of Vermont reported that Hurricane Irene damaged 500 miles of state roads and 200 state bridges with an estimated repair cost of \$175—\$250 million; at the municipal

level, over 2,000 road segments, 280 bridges and 960 culverts were damaged.

A simple increase in the intensity of rain events, in combination with increased development, can also cause serious damage. Francestown has had two flood damaged bridges re-



Francestown's Highway Department now keeps a stockpile of different sized culverts available for emergencies.

placed with the help of FEMA funds since 2009. Total cost was over \$1 million of which the town's share was \$272,000.

As costs mount, governments are beginning to identify compensatory actions. In 2009 the State of NH adopted a Climate Change Action Plan. Studies, such as one that is now being done in the Piscataquog River Watershed, are identifying undersized culverts as well as identifying spots where the passage of aquatic life can be improved. Results have the potential to reduce costs related to water damage.

¹. To review the insert included in our newsletter, see http://www.climatechoices.org/assets/documents/climatechoices/new-hampshire_necia.pdf. The data in this report was taken from research done by Dr Cameron Wake and his colleagues.

(Continued on page 8)

Notes From the Chair

Dear Friends,

It has been an honor to serve on the FLT Board for seven years and to act as Chair this past year. As I near the end of my term, I reflect upon the amazing support and caring all our supporters have brought to this organization and to our community. You have provided the financial resources, energy, thoughtful proactive planning and awareness that have allowed us, together, to make great strides in providing stewardship for critical habitats, waters and recreational areas during my tenure. We not only use as much science to evaluate projects as we can but we also try to keep our eye on the ever changing landscape.

I recently read an article in the NY Times citing the Audubon Society's membership observation that nearly 60% of the 305 bird species found in North America in winter are on the move, shifting their ranges northward by an average of 35 miles. You too may have been surprised by the sight of a robin in winter. Audubon scientists analyzed 40 years of citizen-science Christmas Bird Count data — and their findings provide new indications that global warming is having a serious impact on natural systems.

I am thrilled that my last official duty will be to introduce one of the country's most renowned and respected researchers of climate change at our annual meeting. After years of trying we have been successful in persuading Dr. Cameron Wake to join us on Thursday evening June 13th. Do take advantage of this wonderful opportunity to share the latest scientific data, discuss theories, ask questions.

See you there.



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Franeestown Arts Fest

Part 1—Create



Do you paint, draw, take photos, make music, dance, sculpt write poetry, carve, or enjoy creating any art form with inspiration from nature? If so, share work you have al-

ready done or get outside in the next few weeks and create something new. Work may be little or big. FLT, in collaboration with local artist Marcy Tripp Graham, will provide the venue for exhibiting visual arts and performing poems, dances, etc.

Bring your finished creations to the old Masonic Lodge on Main Street Saturday, June 22 for set up. Take a look at the space for performances and do a sound check. Or if you're a last minute kind of person who would like suggestions, drop by and talk with Marcy about where to go or to brainstorm a fun project.

The lodge will be open from 10 AM on. For more information, call Marcy Tripp at 547-2548 or email marcytripp@hotmail.com.

Join the ranks of artists who have been inspired by nature since the earliest cave drawings: Think Ansel Adams's photographs, the Hudson River Valley painters, Vivaldi's Four Seasons, Wordsworth's daffodils. Have fun!

Part 2—Celebrate

Join us on Saturday, June 22nd at 4PM at the FIHS lodge (formerly Masonic Lodge) on Main Street Franeestown when FLT will facilitate a presentation of nature inspired art by area residents. Poems will be read, dances danced, songs sung, paintings, sculptures, crafts and photos shown and perhaps sold. You can look forward to work such as a riddle poem written by a then 6 year old Annie Connor after a walk in Rand Brook Forest:

Look to the right
It will be slight
It's sort of round
And no animal we found

(answer: a spider web)

Martine Bohnsack returned to paint this venerable birch after coming across it on Bullard Hill while on a FLT/FCC hike.

So - come share some light refreshments, meet some friends and be surprised and delighted by what happens.



(Continued from page 5)

Many of the students are from Nepal, some from Ivory Coast, others from Kenya --- for most English is a second language. After classes in GPS technology and mapping, students were bused to the Avery Brook Watershed where they observed and marked GPS points of exemplary natural communities, moose tracks, stream salamanders, birds and other wildlife and plants as well as a bearmarked trees (students were thrilled to trace bear claw marks with their fingers and see where the bear had bitten into the tree --- we even found bear hair from where the bear had rubbed its back against the trunk). Upon their return to campus, students downloaded and merged data then created a Google map of the site. Thank you to the Miller Family for allowing us to explore their forest.

The Pond

By Meredeth Allen

Photos by Len Allen, Ben Haubrich, Barry Wickow and Joel Stave

April 15th, 2013. My husband and I look quizzically at each other over the rims of our coffee mugs. Could this be the day we've been waiting for, we wonder. Yesterday there was still a thin, fragile rim of ice bobbing about in the shadiest part of our pond, small pieces breaking loose in response to the pressure of the snow melt pouring in from the woods. It's been a cold April so far. Still, the sunlight feels a bit warmer this morning. Feigning indifference we stroll to the edge of our ¼ acre pond and...we break into whoops of delight. Ice Out! And another year of life in our pond is beginning. "Quick!" I demand. "When I say the words *our pond*, what words come to mind?" Because he loves it as much as I do, he poured out a veritable stream of words and three of them—life,



pleasure, beauty—became lodged in my mind.

Sometime during the 1930's, a former owner created this pond. Perhaps he was annoyed by the brook running across his property, a shallow brook that flooded easily during periods of heavy or prolonged rain. Perhaps he had a nostalgic desire for his own "ole swimmin' hole", most likely a large farm pond for his working farm. At any rate, its creator knew what he was doing. The pond is mostly eleven feet deep with

its eastern side shallow enough for wading in slowly. The source, in springtime, comes down Bible Hill, meanders in S curves through our woods and picks up speed as it enters the pond. On the opposite side, the south side, there is a well-constructed spillway. From there, the stream travels through a culvert, under our field, coming out through a boggy area where the stream is only briefly visible. Quickly it enters another culvert which carries it under Bible Hill Ext. and dumps it into the field across the road. And then it travels on down the hillside until it eventually joins Whiting Brook on its way to Scobie Pond. Len likes to say that this is the highest source for the Middle Branch of the Piscataquog River. Despite the clever engineering, we have seen water pouring over the spillway, rushing in foot-deep sheets across our field, flooding our bog garden, threatening to break up the already

(Continued on page 5)

(Continued from page 10) Cameron Wake

conomic sectors? Dr. Wake's group recently developed climate change assessments for coastal watersheds in Maine and New Hampshire that serve as the foundation for developing local adaptation planning to a changing climate. Can state based climate action plans and watershed based climate assessments combined with collaborative efforts on local to regional levels across New England hold promise for dealing with the challenges presented by our changing climate?

Wake is the Josephine A. Lamprey Fellow in Climate Sustainability at the UNH Sustainability Institute. He leads a research program investigating regional climate and environmental change through the analysis of ice cores, instrumental data, and phenological records. Cameron also directs Carbon Solutions New England, a public-private partnership promoting collective action to achieve a clean, secure energy future while sustaining our unique cultural and natural resources, and helps lead the New Hampshire Energy and Climate Collaborative, established to track and facilitate the implementation of New Hampshire's 2009 Climate Action Plan.

Conservation Lands Provide Important Teaching Tool



Professor of Biology, Barry Wicklow has long waded through cold stream headwaters and scouted our woods in order to document what's there. His graduate students have contributed to the study of native trout. Now Barry is involved a new program for refugee, immigrant and underrepresented high school freshmen — STEM. STEM stands for Science, Technology, Engineering and Math. Work includes GPS, mapping, and the importance of biodiversity. The program was developed by professors at Saint Anselm College with the aim of developing academic skills in STEM disciplines, promoting academic success, and preparing students for college. Students earn high school credits in a college setting.



(Continued on page 3)

(Continued from page 4) The Pond

cracked macadam of our road.

Our pond with its clear, cool water, its cat-tails signifying a healthy ecosystem, is a stewpot of life, life in many forms, all of them wonderful. (Perhaps the leeches that dwelt in its waters were not especially wonderful—they reminded me of water-born slugs—but we soon got rid of them.) Each year, as soon as the ice has disappeared, I begin to pace the pond's circumference, peering into the clear water, wondering what I'll see first. I never tire of this. It's always as exciting as it was the first time, fourteen years ago.

And what do I notice first? Insect life, of course. A healthy pond supports many forms of insects. Look! See those expanding circles? It's as if someone has tossed a pebble into the water. Look again, however, and you'll see the wonderful Water Boatman, industriously sculling over the water. This interesting ½" long gray-brown insect has two scoop-like forelegs and four longer ones. Strictly vegetarian, he rows himself along in search of bits of algae. The Common Water Strider is his exact opposite. This small, black, slender-bodied bug is an elegant long-legged beastie. He glides over the water as gracefully as a skater, searching for mosquito larvae and any other insect unlucky enough to find himself in the water.

It is June now. The sun is stronger, the water warmer. It's time for the appearance of the creatures that Mary Holland, in her wonderful book, *Naturally Curious*, calls "one of nature's most impressive predators." Dragonflies and the dainty but deadly Damselflies belong to an order that is three hundred million years old. One hundred and seventy species live here in New England. They are not only fascinating to study but dazzling in their beauty. The nymph form, called, appropriately naiads, live in the muck and vegetation of ponds, devouring mosquito larvae, other insects, tadpoles, even small fish. This aquatic stage lasts anywhere from a few months to as long as five years, depending on the species.

At last, after shedding many skins as they grow, it is time to climb upon a convenient piece of pond-side vegetation...and wait. Final-

(Continued on page 6)

(Continued from page 5) The Pond

ly their old skin slits and they emerge as vulnerable winged insects. Like butterflies, they must pump air into their bodies and fluid into their wing veins. And then they wait again until their new body has hardened and become functional. These insects have two sets of powerful wings located at the top of the thorax behind the head. These pairs can move independent of each other, thus allowing our killer to move not only backward or forward and always with great speed. The Damsel Flies, slender bits of neon-bright metallic life, have names that describe their beauty: Ebony Jewelwing, Violet Dancer, Northern Bluet. Their counterparts, chunkier but far more powerful, bear more prosaic names: Common Green Darner, Common Baskettail, Eastern Pondhawk, Twelve Spotted Skimmer. Sadly, most of these prehistoric masterpieces are lords of the sky for only a few months. A few live to migrate south with the birds.



Our most interesting pond dweller is the Eastern or Red Spotted Newt. When these eggs hatch, the tiny ½" long creature, sporting external gills resembling Elizabethan ruffs, immediately drops to the pond's bottom, resting and hiding there for several months. Meanwhile, it is undergoing a strange metamorphosis. Including its tail, it is now about three or four inches long, its gills have been replaced by lungs, and it is bright orange. One night, under cover of darkness, it leaves the relative safety of its watery home and heads for the nearest woodlot. It

now has a new name. It is called a Red Eft, and, like the Monarch Butterfly, its orange color screams Poison! Do not eat me! If its luck holds, the woods wanderer may go a-journeying for several years. Gradually it turns olive green with small red spots. Now its ancestral home is calling. Like the salmon, this small creature must return, fully adult, to its own pond. Home at last, the little newt leads an idyllic life, hanging motionless, all four limbs outstretched or moving away quickly with a thrust of its powerful tail. It does have one duty, poor thing. But in the spring willing females are readily available.

For several years, our pond sported its very own Northern Water Snake. It was fun to watch it swim rapidly across the water, head and neck stuck out, looking just like a periscope. Sometimes we'd see it in the spring, coiled up on a sun-warmed rock. Water snakes are not harmful. However, if cornered, they will bite defensively, so we admired it always from a safe distance. For some reason, it disappeared and we still miss it.

In 2010 when New Hampshire suffered a severe drought, our sadly shrunken pond acquired a new inhabitant. The little floating raft, tied to the shore by long ropes, was now grounded. One day someone noticed that a large snapping turtle had taken up residence beneath the raft. We gave the creature the respect it deserved, doing nothing to provoke its legendary ire. The turtle remained there for at least a month, minding its own business, subsisting, we assumed, on our frogs and perch. Nobody saw it arrive and nobody saw it depart.

Tadpoles! Our pond teems with tadpoles in the spring. We have tiny ones, medium-sized ones, some with limb buds beginning to sprout. And we have REALLY large ones. These mini monsters are, of course, bullfrogs-to-be, and it takes them two to three years to become such large amphibians.

Five species of frogs live in and around our pond. Wood Frogs, dark brown and dark masked, are the earliest frogs to breed in New Hampshire. They gather around vernal ponds as early as March, and the sound of a group of lustful Wood Frogs is exactly like the quacking of

(Continued on page 7)



numerous ducks. This year, for the first time, I heard a few of them quacking in our woods.

The Pickerel Frog, pale buff colored with

dark brown spots, is quite rare here, but his long, snoring mating call is distinctive. The aptly named Green Frog is everyone's idea of what "frog" means—a medium sized animal, vivid green with a bright yellow throat on the male. This is the most common frog in our pond. If one is casually ambling around the pond's perimeter, every few yards you will hear a loud 'EEK!!', followed immediately by a splash. Look at the site of the splash and you will see a small green face with big, curious frog eyes staring back at you.

The Gray Tree Frog is an exquisite little creature. Although he can, chameleon-like, rapidly change colors from brown



to green to gray, he is most commonly seen (if you're lucky) perched high on a shrub or low on a pond-side tree, small, marble-patterned and gray. I first saw one, perched on a ladder rung and the sunlight turned him into something from a fairy tale, a princely silver frog. He begins his mating call, a long, beautiful trill, when the nights are consistently warm.

And so we come to the largest frog, the aforementioned king of 'jug-o' rum', and the smallest, the beloved Spring Peeper. The shrill, incredibly loud chorus of peepers graces northern nights from the first hesitant call in late April until the last unsatisfied male becomes a solo voice on a June night. After years of fruitless attempts to see this diminutive frog peeping, I finally succeeded

last spring. The night was pulsing with their ardent peeps. I grabbed a flashlight, shielding its glow in my bathrobe, and crept stealthily toward the edge of the pond. The noise grew almost unbearably loud as I zeroed in on my target. Suddenly I swung the light around and, there, caught in its beam, was a Spring Peeper, hard at work. He was at the top of a six inch blade of grass and I was shocked at his size. He was barely an inch long. Beneath his chin, his throat was a pulsing, transparent bubble. When fully inflated, it was larger than his head. I felt humbled in the presence of so much urgent life in such a tiny package.

Our pond attracts a variety of avian life. First to arrive back are the gorgeous Tree Swallows. How I love to watch the sun glinting off their iridescent blue-green backs as they swoop over the water. Sometimes they belly



flop into the water as they snatch a passing insect. Since 2010, Red-Winged Blackbirds have become my New-Best-Friends. They used to nest in the marshy area across the road from us, but three years ago, one male decided that the real estate on this side of the road was something special. He has nested in the same clump of Summersweet (*Clethra*) for the past three years and his antics, his plethora of screeches, calls, honks, hoots, chuckles and pleading 'songs' are absolutely delightful. This is a bird not only with beauty but with attitude. Last year another couple moved in across the water so now the fun is doubled. In late summer, a family of Phoebe uses a drooping willow from which they practice their newly acquired fly catching skills.

But it's the rarities that delight us. One afternoon, we were treated to an afternoon of watching a Belted Kingfisher diving splashily

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(Continued from page 7) *The Pond*

for small fish. In late August during these now too familiar dry summers, the Great Blue Heron occasionally visits us, standing motionless, often on one leg, in the shadows. How regal this bird is in flight, neck curved in, long legs trailing, great wings slowly beating the air. In that same summer, two Solitary Sandpipers, spying a new beach dropped down to investigate it. They stayed for two days, probably a welcome respite in their long migration. Late in another summer, three immature Mergansers enjoyed our pond for nearly a week. Judging by their size, they were the Common variety. Our most thrilling surprise happened early in the spring of 2012. A pair of beautiful Wood Ducks spent half a morning investigating not only the waters of our pond but the woods behind it. Perhaps the nearby presence of people and barking dogs caused their leap from the water into flight. They never returned.

Of course bears have mauled our suet feeders when we forget to bring them in. We have seen large tracks in the mud at the pond's edge. And twice we have seen a bright, inquisitive mink exploring our property.

So much for the life of our pond. When Len chose *pleasure* as another key word, he was thinking of the enjoyment he gets from swimming in the pond's ever cool water. Our grandchildren, from the time they were little, have loved playing in the water, usually accompanied by our water retrieving poodle, Josie. In the winter, the frozen pond provides a marvelous ending to the long and bumpy ride down our hillside. If the water was low when it froze, the sled ski jumps dramatically unto the ice. And, if the pond has frozen before snow falls, it is wonderful to have one's own glassy private skating rink.

For me, the key word that the pond conjures up is *beauty*. It has a three-season beauty so intense that at times it makes me catch my breath...the ephemeral beauty of early spring when the newly emerging foliage is so delicately tinted; the fiery, flaring beauty of a New Hampshire autumn reflected in the calm water; the black and white and silver beauty of the frozen winter landscape.

Summer, in recent years, is iffy. In years

with normal rainfall, in high summer, I sit on the bench at the far side of the pond and thrill to the beauty of house and gardens reflected on the surface of the pond. However, without adequate rain, our lovely pond shrinks and shrivels. Without any water entering the pond, with nothing to stir the surface, ugly, poisonous-looking green algae can mar the surface. Fortunately, we have learned how to rid ourselves of this horror. We installed a powerful pump that causes the water to circulate, thus destroying the algae.

Our small pond, bursting with aquatic life, gives us so much pleasure. Its serene beauty is a source of constant joy. But, the erratic rainfall we are experiencing, the threat to our state's maple trees posed by warming temperatures, the tragic decline of our beautiful songbirds, the worldwide disappearance of amphibians...the evidence of climate change is there for all to see. When will the world be ready to face this terrible threat?

(Continued from page 1) *Climate Change*

Locally, there are things we can do to reduce the impact of changes in rainfall patterns. Using transportation as an example: we can replace undersized culverts to prevent washouts and maintain a regular culvert maintenance program. The Planning Board can review Floodplain regulations to see if they remain appropriate for today's conditions. If we have to disturb stream banks or steep slopes, we can make sure the soil is stabilized while we are working and afterwards. This list is not intended to be exhaustive but rather to get us all thinking about how to respond locally to conditions we cannot otherwise control in the short term.



High Water in Rand Brook. Photo by Lisa Stewart

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**Forever Changing Climate
FLT Annual Meeting
Thursday, June 13, 2013
7-9 PM**

Thursday evening, June 13, 2013 7-9 pm, FLT proudly welcomes Cameron Wake as its annual meeting keynote speaker. Dr. Wake is a research associate professor at the Institute for the Study of Earth, Oceans and Space at the University of New Hampshire

After a brief annual meeting, Dr. Wake will share his professional perspective and research on one of the most hotly debated, worrisome, challenged and confusing topics -- Climate Change. Climate always has... and always will change. How does human activity drive our changing climate? Will the decisions we make over the next decade regarding how we produce and use energy determine the future climate our grandchildren inherit?

Has the northeast United States been warming over the past four-to-five decades and what

is the impact to a variety of ecosystems and eco-

(Continued on page 4)



Understanding today's climate requires an understanding of past conditions. Research takes Dr. Wake to places like the Arctic and the Tibetan Plateau to take ice core samples that reveal past climate changes.