



Rice Creek Associates Newsletter

Spring 2018

From the Director

Spring is Here!

Kamal I. Mohamed

We are excited and enthusiastically looking forward to spring season. Although officially spring is here we haven't seen it with the exception of the sprouting of snowdrops but they are yet to blossom.

In most parts we are ready for a season of hard work to maintain the grounds and trails. We will continue with our project on the flowerbeds and lawn repairs which started two years ago. Also, two years ago we aerated and reseeded the lawn. This spring we will evaluate the results and make a decision on whether to aerate and reseed again.

Spring is a busy season for us. A week ago I started growing the plants in our Shineman greenhouse for the Ruth Sachidanandan Herb Garden. This includes plants that were lost from the herb garden for many years and were not replaced because they were hard to germinate and maintain. The herb garden plants will be ready to transplant in mid-May. Unfortunately, I will be in Tanzania for a two week course on Tanzania biodiversity and conservation at that time.

In addition, the beds in the herb garden need preparation. We will need volunteers to work on the herb garden. A group of 3-5 who will come out every 3-4 weeks will keep the garden in good shape. All our herb garden volunteers retired about three years ago. We are looking for a dedicated and committed group of volunteers.

Between now and May we are hoping to maintain our benches in the pavilion on the east side of the building and along most of the trails. The project of sanding and staining/polishing the benches is already progressing. In their present conditions, they are not safe, especially for kids. Our objective is to have them ready at least for the next Exploring Nature children program so we don't have to worry about wood splinters bothering our young children.

This spring we are planning to start a wild flower garden to promote native plants and support wildlife associated with these plants. This will just be a start because the establishment of a full-fledged wild flower garden takes many years. Any constructive ideas are welcome.

We will also continue with our effort to control invasive species. Among these, the garlic mustard is a constant headache for us. It is a fast growing early spring plant that produces a lot of seed. We usually pull out the plants but if they were already

in seed we bring them back to the building for proper disposal.

If you feel that you can help with any of the activities mentioned above give us a call or stop by the Field Station. Please come out and enjoy a walk on the trails when the warm weather sets. Early spring flowers do not last. See them before they wither and fade away.

Ephemeral Vernal Pool Amphibians at Rice Creek

Peter A. Rosenbaum
Professor of Biological Sciences
SUNY Oswego

We all know and can probably define rivers, streams, creeks and brooks, etc., but what do you call those seasonally wet places that fill-up with snowmelt or after a torrid rain event and then are often dry before August or September or the September of the year after? In Central New York and in the Northeast in general, these temporary (ephemeral) or seasonal ponded water bodies are called *vernal pond or pools* (from *vernal* meaning "spring"). These ephemeral wet places are sanctuary to many amphibians and invertebrates that would otherwise likely not exist at Rice Creek Field Station.

Vernal ponds typically survive for only a few months and do not usually support predator fish populations. Vernal ponds are typically found in forested regions although temporarily ponded wet places in open areas are also often referred to as vernal pools by some authorities, depending on their surrounding environments. It seems fair to say that some seasonally wet meadows are improperly called vernal ponds as well. Like so many things in science, the definition of terms is important but not always precise as other terms used in interdisciplinary sciences.

UNIQUE AND DYNAMIC

Each and every vernal pool is *unique* owing its properties gained from the local soils, the regional hydrology, the forest cover and topography, etc.

Dynamic is an equally appropriate characteristic of a vernal pond. In the truest sense of the word, vernal pond/pool changes can be measured on almost any scale. Overall, the biotic (living) and abiotic (nonliving) factors at play in creating and maintaining any given vernal pond are dependent upon the underlying soils, water type and personal chemistry, local hydrology, pond geometry, amount and type of vegetation and fauna, and even fire (which, by the way, tend to create short term increases in nutrients). All combined, they foster the unique and variable conditions found in any given vernal pool in any given season.

Here in the northeastern US, we do everything we can to limit fire and it is almost never seen as a management tool as it is in the mid and far western US.

Pool geometry creates unique depth and shape parameters that couple with hydrologic features (e.g., soils density, water table, etc.) to result in unique hydrologic regimes for each and every vernal pool. Rain events can greatly affect vernal pools as can periods of drought. Very wet years can result in year-round water in these ponds while low winter snow levels, coupled with dry springs and summers, can result in dry years for some vernal pools. Winter tends to re-charge water resources as *evapo-transpiration* (the sum of the movement of water by evaporation from the soils and to transpiration in trees followed by release of water vapor to the air through the tree and other vegetative leaves) is least during winter and highest during the 3 months of summer. Evapo-transpiration during summer leads to drying and eventual desiccation of vernal pools.

Other factors, like *dissolved oxygen*, also vary depending on the amount of photosynthesis taking place, the level of water mixing generated by the wind, water temperature (e.g., water can hold more oxygen at lower temperature) and the number and kind of fauna occupying the pond at any given time.

Nutrients tend to be rich in vernal pool environments. Because they are (usually) devoid of fish, vernal pools are sanctuary to many amphibians and invertebrates that would not survive with predator fish present. In some regions, but not ours, tropical fish species have adapted to the vernal pool conditions and can survive. When conditions are very wet, some vernal pools may remain underwater for a year or two, but by definition, they eventually dry up.

Undoubtedly the best known of Rice Creek Field Station's vernal ponds or pools is just north of the main road on the red trail. Typically formed in the spring as snows melt, depressions like this one fill up with melt-water creating a water body of transient majesty. Depending on weather, these springtime breeding and rearing pools are dry by July or August. Completion of their life cycle is a race for most vernal pool amphibians and only those who make it through their metamorphosis survive.

COMMON VERNAL POND AMPHIBIANS

Where would our wood frogs, spotted salamanders, the very occasional blue spotted salamander, American toad and others come from were it not for these ephemeral places? In many instances, the answer is they would vanish from the landscape were it not for vernal pools and ponds.

For some, like the black masked wood frog (*Rana* = *Lithobates sylvatica*), completion of its life cycle is dependent on vernal pools. We call this kind of relationship an *obligate*. Wood frogs are developmental sprinters and each year are challenged in a race with the inevitable drying out

of their natal homes. Wood frogs complete metamorphosis from tadpole to froglet extremely quickly, even for a frog, usually completing its egg and tadpole stages by mid-July or sooner in most of Central New York, making it the winner in the speed it takes to sprint from fertilized egg to jumping froglet.

When present (as they depend and only call at vernal ponds), wood frogs are also typically our first amphibian to call in the "spring." These tan-bodied black masked beasts have two distinct evolutionary advantages over many others competing for limited resources in the vernal pool environment: It comes out to breed early and develops the quickest in its class.

Wood frogs are not very picky with what they try to mate. They have often been seen trying to mate with this observer's boots.

Wood frogs' choruses are soon drowned out by the ruckus of Spring peepers (*Hyla* = *Pseudacris crucifer*), another vernal pool inhabitant, but not an obligate vernal pool amphibian like the wood frog is. Wood frogs first appear on a cold damp day or night. By the time you get to read this, the wood frogs' choruses will be gone for 2018—despite global climate change. Their barking and quacking, reminiscent of the mallard, is one I associate with cold and icy conditions at our field station. More than once, snowflakes startled me while listening to the first night or two that wood frogs bellow each "spring." Our Marsh Monitoring volunteers monitor the calling amphibians at Rice Creek and elsewhere around the Great Lakes. The Marsh Monitors' job is to identify and quantify the voices of calling amphibians. (SEE <http://www.bsc-eoc.org/volunteer/glmmmp/index.jsp> for info on the Great Lakes Marsh Monitoring Program--which is focused on keeping tabs on the marsh birds and calling amphibians of the Great Lakes Ecoregion wetlands, including those associated with RCFS). Observers occasionally miss the wood frog because this species sings on such blustery wet

nights and for only a few days. Interestingly, they make their spring emergences after they awakened and thaw from their winter *brumation*.

Brumation is best known in reptiles such as turtles but also occurs in amphibian species as well. During brumation, a wood frog or a young snapping turtle will experience a slowing of its movements with increasingly cold temperatures just like we would expect from a cold blooded (*ectothermic*) creature, that is, being incapable of generating warmth on its own via its circulatory and metabolic systems. But unlike mammalian hibernation metabolically, brumating reptiles and amphibians are amazingly active when temperature change allows for even the most sluggish of movements. Turtles are known to move significant distances under the ice during winter.

Wood frogs, by contrast are also one of the constellation of native creatures, e.g., Spring peepers (*Pseudacris = Hyla crucifer*), hatchling Midland Painted (*Chrysemys picta marginata*) and Snapping turtles (*Chelydra serpentina*) that are adapted to be freeze-tolerant, with cryoprotectants in their blood. During winter, glucose sugars increase and act as an anti-freeze in their blood that prevents freezing of vital organs like the heart and lungs. The wood frog's heart will actually stop when temperatures go below freezing and many body parts actually freeze. The near frozen stopped frog heart will start beating again once temperatures climb and other frozen parts thaw.

Some wood frog tadpoles disperse from their natal ponds but others return to their birth ponds repeatedly, called *philpatry*. Depending on the temperature wood frog eggs take about 20 days to develop and metamorphose into tadpoles, which take another 75-120 days (both intervals depends on the temperature) to metamorphose into froglets. By this time, it is usually mid-July or early August.

Sometimes, the vernal pool dries up before the tadpoles transform into frogs. Frequently, as vernal pools dry up, wood frog and other vernal pool obligates crowd into the last remaining pockets of water in the vernal pool where they are subject to both predation and an intense struggle for existence among its other vernal pool ***conspecifics (related species)***.

The Spotted salamander (*Ambystoma maculatum*) is another amphibian that is reliant upon vernal pools to survive. These poke-a-dot colored marvels of nature are rarely seen except in during early spring rains when they mate, lay eggs and forage on rainy summer nights. For most of the rest of the year, these *fossorial* (burrowing) adult salamanders lie deeply buried under and inside of decaying logs or in underground burrows. Seven and up to nine inches (18-23 cms) in length, spotted salamanders are also one of the first amphibians to emerge as winter gives way to spring. Spotted salamanders are relatively common despite their being rarely seen except during their vulnerable mating and breeding periods, but are subject to exploitation in the pet trade and are sensitive to changes in the environment, such as acidity. To defend against predators, adults secrete a noxious milky toxin from their tail and back.

The exquisitely melodic trill of the American toad (*Anaxyrus = Bufo americanus*) punctuates wet spring evenings at Rice Creek, although less so today than when I arrived here over 30 year ago. While not uncommon, for some reason, American toads have not been seen as often in recent years than I recall from my early years listening and looking about at RCFS. Unlike the other amphibians that use vernal pool for breeding and egg laying, the American toad is a ***facultative*** vernal pool user, not obligates. This means that American toads use other wetlands besides vernal pools to complete their life cycle. Known for their warty dry skin and large bean shaped parotid glands on their heads, these occasional vernal pool denizens are tough for some predators to

swallow, due to cardiac toxins in their skin secretions. Other predators, such as skunks, raccoons and garter and water snakes, have adapted to the toads toxins and make them an integral part of their diet. During the breeding season, males toads have enlarged thumbs or *nuptial pads* which help males better grasp females during **amplexus**, when male frogs squeeze eggs out of their female reproductive partners and simultaneously deposit sperm to fertilize them.

The story of the invertebrate inhabitants of our local vernal pools is another story perhaps for a different storyteller. I spoke with Dr. Richard Back, Associate Professor of Biological Sciences today, inquiring about some of the invertebrates that might inhabit native vernal pools and it quickly became clear to me that I need to leave that subject to aquatic invertebrate experts, of which I am not one. So I'm stickin' to the script and signing off for now.

(Dr. Rosenbaum is Vice President and a former President of the Rice Creek Associates' Board of Directors, and a Charter and Honorary Life Member of Rice Creek Associates.)

Rice Creek Environmental Education Programs

Rice Creek Field Station offers and hosts opportunities for children, adults and families to interact with and learn about nature. From Nature Education Programs for all ages to educating youngsters through the Exploring Nature summer programs, Rice Creek brings plenty of life to our campus and community. Upcoming events are listed at www.oswego.edu/rice-creek or call 315-312-6677.

Join us most Saturdays for naturalist led walks through the woods, fields and along the wetlands during **Rice Creek Rambles**. An adult must

accompany children under 17 to these family friendly free programs.

Information about this year's **Exploring Nature** summer program for children can be found at www.oswego.edu/exploringnature. Registration deadline is June 1.

The building hours are **Monday to Friday 9:00 am to 4:30 pm and Saturday 9:00 am to 3:00 pm**. Trails are open during daylight hours. Before and after visiting the grounds, gardens and trails take precautions against Lyme Disease. Information about Lyme Disease can be found at <https://www.oswego.edu/rice-creek/sites/www.oswego.edu/rice-creek/files/lymediseasebrochure.pdf>.

Come see what's changing with the season.

Book review

Inheritors of the Earth How Nature is Thriving in an Age of Extinction

By Chris D. Thomas

It isn't often that a book comes along that challenges my long-held thoughts on topics like invasive species, global climate change, ecology and evolution. This particular one challenges all four at once!

I almost put the book down, thinking the author was a complete wacko. But, being initially intrigued by the title, and trying to keep an open mind, I plugged ahead. I am so glad I did.

Many studies and publications have been alerting us to the doom and gloom of the ecological disasters that climate change, invasive species, extinction and human exploitation of our planet

are causing. Now, imagine, in the light of all this information, someone says, “Not to worry, all these phenomena are actually speeding up the rate of evolution and increasing the diversity of living things in any given area on the planet.” No wonder I was about to abort reading this apparent nonsense!

There is no way I can competently articulate to readers of this review even a small degree of what this author discusses. The evidence he presents to support his thesis is bountiful. It might be better to abandon my desire to get into a teaching mode and present to you a sample of the out of the box statements for which he ultimately provides well-reasoned thought and evidence.

The book is divided into four sections: Opportunity, New Pangea, Genesis Six, and Anthropocene Park. Among his ideas within them are:

- Any attempt by humans to keep things as they are (or were) is utterly pointless.
- We should not eradicate successful (invasive) species so that the losers (his term) might live a bit longer.
- Species are evolving right before our eyes, more so than Gould and Eldridge, proponents of punctuated equilibrium, ever could have imagined.
- Since the days of early man, our selective breeding of organisms has been a source of evolution. The rate of present hybrid plant speciation, both naturally and human induced, is on track to generate a thousand or more new plant species per century.
- Man, through his world commerce and travel, has introduced species throughout the world at a quicker rate than natural forces would have, and have thus quickened the pace of evolution. In other

words, we ourselves are forcing evolution into overdrive.

These “radical” ideas are tempered with the common sense and reality of many noble efforts to preserve species and habitats to a degree.

Thomas shows how mountain tops, ponds and land masses can act as archipelagos, inducing animals and other organisms to feed on plants to which they are not accustomed, in order to adapt to their new locations.

While Thomas professes not halting biological change, e.g. invasive species, human alteration of the landscape, etc., he does advocate that we should address the underlying causes of change: human population increases and levels of harmful consumption, to name a few, and to put emphasis upon reducing our footprint through minimizing and recycling waste.

Biological change is how life on earth has survived in the past and will continue to survive in the future. Fighting this change on all fronts is counterproductive. Life on the planet WILL adapt and even thrive regardless of how we act or react.

We must all realize that we are part of nature. Therefore, whatever we do on this planet is natural. If “we can think of the world as a biological park, Anthropocene Park, with ourselves both as custodians and inmates, for better or ill, this is the world we inhabit.”

One aspect of biodiversity I wish the author had discussed was the effect of present extinction in terms of overall genetic diversity, especially with regard to tropical areas of the planet. We are losing tremendous amounts of genetic information that could hold secrets to cures for diseases, structural engineering, and other benefits. But, as he clearly shows from the beginning, his charge was more along the lines of “Don’t worry, be happy.” Would that we all could.

This much I do know: I will look at Multiflora Rose, Purple Loosestrife, Garlic Mustard and various Honeysuckles, all presently invasive at Rice Creek, from a different perspective from now on. Should you decide to read this book, it will fascinate you in ways that you could scarcely imagine.

Reviewed by **Mike Holy**

Rice Creek Reflections

Save the date!

Peeps in Pools – Sat., April 14, 2018

The clacking of Wood frogs and clear one-note calls of Spring Peepers are an invitation to explore the magical woodland nurseries of spring – vernal pools. Mole salamanders and frogs emerge from winter hibernation (actually brumation, as you now know) in early spring, and migrate to these ephemeral, critical breeding pools. Come enjoy a slide presentation with naturalist Pat Carney, on the characteristics of vernal pools, their obligate species, and other interesting vernal pool inhabitants and visitors.

The program starts promptly at 2 p.m. and is free to all. Arrive early to enjoy light refreshments and conversation.

Winter Survival

Winter survival was the latest topic in our Rice Creek Reflection Lecture series. Jeff DeVine, a local wilderness instructor made the presentation.

The program began with a video demonstrating how quickly body heat loss can occur. Whereas about 2500 calories is needed for stable body

energy, arctic environs require approximately 6000 calories.

Jeff characterized cotton as the worst fiber for cold weather. An experiment wrapping jugs of 114-degree water with various materials, wool was the best to keep in heat, polyester pile second, a naked jug was third, and cotton was fourth. Cotton fiber, Jeff explained, acts as a sponge. Water is positively charged, cotton is negatively charged, so they attract each other, causing the jug to lose heat. As British adventurer Ranulph Fiennes aptly explained, “There is no bad weather, only inappropriate clothing.”

A highlight of the walk was taking a view from an eye shield as used by the Eskimos. It was fascinating to discover how much could be seen through it while it adds protection to the eyes from sunlight reflection off snow.



Jeff then briefly talked about debris shelters, using leaves, sticks, or marsh grasses, if available. Plastic sheeting and mylar blankets, if carried by hikers, were excellent shelter materials.



At this point, the attending group took a walk in the woods. Jeff demonstrated various ways and materials for starting fires. Wooden sticks, ferronium, flint and pocket lighters are choice spark or flame making materials. Bird nests, hemlock bark, grapevine, aspen, cattail, and honeysuckle were some of the field and woods materials he demonstrated as ideal to ignite from sparks to initially sustain a flame.



He noted that ground wood is often damp, so that using wood above ground, such as dead branches attached to trees or leaning ones tend to be drier and thus easier to catch fire.

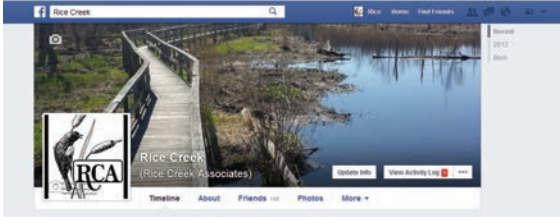


All photos by Mike Holy

Rice Creek Associates (RCA) is on Facebook

To connect with RCA on Facebook, sign up for Facebook by visiting www.facebook.com/ or sign in using your existing account. When linking to RCA as an added friend, search for Rice Creek like you would search for a new friend. You will know you have the right link to add RCA when you see this RCA logo as a profile picture along with a field station photo as its cover page, like so:





March is now membership renewal month

As discussed in our winter newsletter, yearly membership renewals are now due every March. If you haven't already done so, please renew today. Our Board of Directors thanks you for your support and looks forward to bringing you the best that Rice Creek has to offer.

Current RCA Board Members

Robert Foster, President
 Peter Rosenbaum, Vice President
 Don Artz, Secretary/Treasurer
 Michael Schummer, Small Grants Chair
 Cayla Taylor, SUNY Oswego student rep
 Alan Harris
 Michael Holy
 Pat Jones
 Andrew McElwain
 Sheri Morey

Rice Creek Field Station Staff

Kamal Mohamed, Director
 Diann Jackson, Assistant Director
 Wendy Fragale, Secretary
 Alan Harris, Groundskeeper

We consider all member information confidential and will not share it with any other groups or businesses.

Join/renew RCA membership

Name _____

Address _____

City _____

State _____ Zip _____

Email _____

Phone _____

All memberships are now Mar. 1 – Feb. 28

____ New Membership

____ Membership renewal

Level:

____ Student	5.00
____ Individual	10.00
____ Family/Couple	15.00
____ Contributing	25.00
____ Sustaining	50.00
____ Life	250.00
____ Corporate	500.00

I/We would like to make a tax-deductible contribution to the

- ____ General Fund
- ____ Trail improvement
- ____ Exploring Nature Program for Children

in the amount of \$ _____.

Total enclosed (membership + contribution)

\$ _____ Date _____

Please make checks payable to:

Oswego College Foundation/RCA

Return to:

Rice Creek Field Station #23

SUNY Oswego

Oswego, New York 13126

Rice Creek Associates

(RCA) is a support group that was formed in 1986 for the purpose of furthering the goals of Rice Creek Field Station (RCFS). It is the intent of RCA to expand the scientific, educational, and recreational opportunities at the station through community involvement. Over the years, RCA has continued to increase its membership making it possible to fund improvement projects that benefit the station and the community at large.

Rice Creek Field Station

Rice Creek Field Station is a part of the State University of New York at Oswego. While its primary function is to provide facilities for field-oriented research and courses in the natural sciences taught at the college, facilities are also available for public education and recreation.

The field station houses superb collections, field equipment, and laboratories. It is surrounded by several hundred acres of forest, fields, trails and wetlands, including Rice Pond. School children visit the field station and many individuals and groups use the area for hiking and cross-country skiing.

Rice Creek welcomes dogs. However, to protect sensitive natural features and as a courtesy to other visitors, dogs should be on a six foot leash. Also, please be kind and clean up after your pet. Thank you.

Directions: To get to Rice Creek Field Station take Route 104, turn south on Thompson Rd., located 100 yards west of the College's main entrance. The field station is 1.4 miles on the right.

Hours:

Monday to Friday 9:00 am -- 4:30 pm

Saturday 9:00 am -- 3:00 pm

Trails are open dawn to dusk daily.

When visiting Rice Creek, please sign in and out at one of the brown registration boxes.

Memorable moments at Rice Creek

Please share with us a special experience you've had at Rice Creek. It will appear in a future newsletter. Send it to **Mike** at fordlep@yahoo.com.

Rice Creek Associates
RCFS #23
SUNY Oswego
Oswego, NY 13126

TO: