



GOLDENROD: AS GOOD AS GOLD?

By Margaret Gillespie

Our viewing point of goldenrod makes a huge difference! From a car, goldenrod may add color to the roadsides but not much else as we fly by at high speed. In a pasture, goldenrod competes with grasses that feed livestock or horses. To allergy sufferers, the blame for our discomfort falls easily, but questionably, on these pollen-laden plants. In this negative atmosphere, what are some well-kept secrets that transform goldenrod from a maligned weed into a mecca for small creatures and a beneficial part of its surroundings?

Goldenrod is in the Aster family and is one of the few late fall bloomers to provide essential nectar and energy for migrating insects. Goldenrod includes a wide variety of species, from seaside goldenrod on beaches and dunes, to field varieties as well as a compact alpine goldenrod. One of our most common field goldenrod species is Canada goldenrod (*Solidago canadensis*). Goldenrod pollen is dense and travels on insect bodies rather than the wind. Ragweed flowers at the same time and seems to target our sinuses. Yet not all is tranquil and benign in this pastoral setting. Predators and prey are vying for survival in intriguing ways. On the predatory front are creatures such as crab spiders and ambush bugs, waiting craftily on goldenrod flowers to snag insects innocently visiting for nectar and pollen.

Goldenrod crab spiders lurk amidst the flowers, their camouflaged yellow bodies an excellent match. They have the ability to change from white to yellow depending upon the color of the flower where they are hunting, although this change takes time. The yellow version is sometimes nicknamed banana spider, but both colors include a characteristic red slash of color along each side. When you see this spider's menu choices, including grasshoppers, dragonflies, and bumblebees, insects much larger and seemingly more powerful than they are, you might wonder how they succeed. Venom from their fangs is the key to subduing their unwieldy food items.

Ambush bugs, on the other hand, look like miniature weight lifters of the natural world with their powerful forelegs. To match their hunting style of "wait for it," they also exhibit camouflage with dark bands on yellow. Once an unwary insect ventures too close, even one up to 10 times larger, the ambush bug extends those huge forelegs, clenching the prey, and drawing it toward its jaws.

A different array of wild opportunists takes advantage of goldenrod's hospitality by stimulating the growth of galls on stems and amidst leaves. One such creature, the goldenrod gall fly, is at the center of the formation of the goldenrod ball gall. It lays its eggs on stems of Canada goldenrod and one other species. Once hatched, the larva chews and burrows into the stem. During this journey, its saliva appears to stimulate the plant's defensive reaction by growing a gall around the larva. To youngsters, I have explained this destination as "living in a house of pizza." Its shelter doubles as its food. Before pupating in the fall, the larva chews an escape tunnel running to the thin outer wall of the gall so, as a winged adult, it will be able to break through. Come spring, if the pupa survives hazards like woodpeckers or chickadees pecking into the galls for tasty rewards, it emerges and flies weakly in the area of its natal home in search of a mate, ready to continue the cycle.

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NATURALLY WILD HALLOWEEN

SUNDAY, OCTOBER 31 | FOR ALL AGES



Creatures of the Night Pop Up Animal Encounters, exhibit animals receiving pumpkin treats, and treats to take home after you walk the trail. Come in your favorite costume. See more on page 7



Reserve your live animal exhibit trail and lake cruise tickets at nhnature.org.

FORGING TRAILS: OPEN FOR BUSINESS



It is safe to say the Science Center has been a popular place so far this year. We actually had the busiest June we have ever had on the trails and May was close behind. There is clearly a pent up desire to get outdoors and be with family and friends after a year of isolation and restrictions. We still have some common sense protocols in place, but much of our business feels close to normal.

One delightful return to “normal” was the arrival in June of six interns. All were scheduled to be here last year but . . . well you know why they weren’t. Our intern program has been running for decades and brings outstanding young adults to share their skills and learn about interpretation, programs, animal care, volunteers, and marketing. Most interns live on campus in our intern cottage which allows for an immersive “Squam camp” experience. Several interns over the years have later joined our staff and become outstanding employees.

This year’s group of interns has been a particularly strong cohort; all making an impact and playing a vital role in the success of the season. Thanks to Caitlyn, Danny, Hanna, Jo, Kayla, and Stephen. You all have very bright futures.

Another welcome return this year has been our wonderful docents, volunteers, and First Guides who are back on the trail with ambassador animals and props, adding greatly to the visitor experience. We really missed you. Thank you to every one of our volunteers for all they do every day.

Then of course, there is the return of Guided Discoveries . . . and the new Blue Heron Summer program . . . and camp groups . . . and . . . I’m just happy to see people again, getting Nearer to Nature.

Iain MacLeod, Executive Director
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603-968-7194 x 123



From Left to Right: Education Program Intern Hanna Hauck; Education Program Intern Caitlyn Irish; Guided Discoveries Intern Kayla Bulthuis; Volunteer Program Intern Stephen Mellen; Marketing Intern Danny Holman; Animal Care Intern Jo Samarjian.

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Squam Lakes Natural Science Center is a non-profit educational institution incorporated in 1966 as a charitable organization under statutes of the State of New Hampshire with its principal place of business in Holderness. Its mission is to advance understanding of ecology by exploring New Hampshire’s natural world.

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VOLUNTEER PROFILE

ALEX MARKARIAN



Hello! My name is Alex Markarian and I have been a volunteer for the past three years. My connection to the area goes back to the early 1990s, when my family and I started spending summers on both Big and Little Squam Lakes. The

Science Center was always my favorite part of the trips. When I permanently relocated here several years ago, I knew I wanted to be involved with the Science Center in some capacity, contributing to the place that gave me such joy and wonder in my earlier years.

Since then I have worked in the parking lot, on the trail, in the gardens, in the woods, in animal care, and in the office! There truly is something for everyone. I have come in to do work by myself (ripping out invasive bittersweet vines), work with staff on big projects (building the new Raptor Exhibit), and group efforts with other volunteers (helping out on Kirkwood Gardens Day). Currently, I clean the

animal exhibit windows and maintain some cameras for the Hidden Stories Exhibit. These two projects fit my busy schedule and allow for me to plan a couple hours here and there when I can squeeze them in.

I knew it would be fun working with the animals, but I did not anticipate how amazing working with the staff would be. We have so much fun, even when we were building the Raptor Exhibit on single digit days, knee deep in snow! Although I am just starting out here, the highlight of my volunteer service will always be my days spent working on the Raptor Exhibit with the legendary Dave Erler and hearing his stories about the history of the Science Center.

The Science Center is iconic! I appreciate its ability to connect anyone and everyone to nature. Getting kids (and adults!) unplugged and outside is the only way we will get people to pay attention and sincerely appreciate the great outdoors and work towards securing its future. We must be proactive in protecting the natural beauty and charm of this place from various threats - climate change, pollution, development, and invasive species to name a few. It will be work, but it's all we've got, and the payout will be worth it!

NEWSBRIEFS



• Facilities Assistant Adam Donnelly joined the staff in May, bringing many useful skills from his varied employment experiences. He previously worked mostly in safety and law enforcement, but also as a glazier, a locksmith, and a plumber's apprentice. He also found time to start his own furniture making business in 2016, called The Donnelly Table.



• We welcomed new Blue Heron School Associate Teacher Jennifer Byam in July. Jennifer holds a B.S. and an M.A. in Teaching in Early Childhood Education from Gordon College in Massachusetts. She earned her Lower Elementary Montessori Certification from the Seacoast Center Montessori Program in New Hampshire. When not teaching, she enjoys spending time outside or reading a good mystery.

• Ten new docents and six new First Guides completed volunteer training this year. Two First Guides transitioned to become docents. Docents and First Guides participated in this year's Community Action Program, New Hampshire Fish and Game's Bat Survey, by tracking the Science Center's bat populations that live in the five bat houses on site. In 2011, volunteers recorded the lowest bat tally of 25, most likely due to white-nose syndrome. This year, volunteers counted over 500 bats.

• The Winged Wonders Virtual Summer Splash on July 24 featured a behind-the-scenes video tour of the new raptor exhibits, videos of animal enrichment and training, and video visits to Kirkwood Gardens and the Lake Cruise Headquarters. Participants also met two live winged ambassadors. You may view the entire event on YouTube at

<https://youtu.be/IPQZlftL7Sc>. Thank you to our Underwriters - Grossman Family Charitable Foundation, Anne R. Lovett and Stephen G. Woodsum, Meredith Village Savings Bank, and Pam and Larry Tarica; Sponsors - Sarah and Win Brown, Dunkin' Plymouth, Ashland, Campton, and Lincoln, Malone, Dirubbo & Company, Tashia and John Morgridge, Squam Boat Livery, Squam Lakes Financial Advisors, Squam Lakes Plumbing and Heating, and Lea A. Stewart; and Donors - Marc Bard, Cormack Construction Management, and Rob and Carol Stewart. Special thanks to the volunteer committee for encouragement, inspiration, and assistance: Nancy Barrett, Nancy Beck, Lisa Bennett, Cathy Crane, Cathy Denious, Andrea Eaton, Liz Hager, Joan Martin, Lea A. Stewart, Kathy Weymouth, and Marcia Zahr.

- We are pleased to share our new interactive trail map on our website at nhnature.org/visit/trail.php. It was created by Marketing Intern Danny Holman.
- We often receive phone calls from people looking for help with wildlife. Due to staffing and space constraints, we only work with NH Fish and Game for animal intake. Animal Care staff will return phone calls to answer questions and give advice, but if an animal needs assistance, please contact NH Fish and Game to find a licensed wildlife rehabilitator. Please do not bring injured or orphaned animals here.
- The Veterans Transitions Assistance program is designed to help military veterans transition out of the military and provides veterans with opportunities to pursue their interests in civilian life. Three members of this program interested in working with wildlife received a behind-the-scenes tour and question and answer session with our Animal Care team in August. They were excited for the opportunity to see what a career working in animal care is like and were impressed with the Science Center.

NATURALIST'S CORNER

UNKNOWN BIRD ILLNESS - VIRUS OR CICADAS AND DEATH ZOMBIE FUNGUS?

By Audrey Eisenhauer

Recent warnings from scientists about an unknown but lethal illness spreading among birds in the Mid-Atlantic States were all too familiar. Especially when the recommendation to help reduce the spread of this unknown illness was essentially to promote social distancing among birds by removing feeders. Scientists have not previously seen this combination of signs and symptoms, making it difficult to identify. Birds had swollen and crusty eyes, similar to bacterial infections in finches known as mycoplasma, but the infected birds also exhibited neurological symptoms, such as disorientation, twitching, and loss of the use of their legs.

Early analysis led researchers to rule out familiar bird pathogens, such as West Nile virus and avian influenza, both of which can occasionally infect humans. Other possibilities, including Newcastle disease, herpesviruses, poxviruses, salmonella, chlamydia, and trichomonas parasites were also eliminated. While it is helpful to know what the illness is not, it still left scientists in the dark as to its cause. As scientists studied the disease, several hypotheses emerged. No conclusive cause has been identified yet, but one theory seems to be dominant, which is the connection between this illness and the emergence of the Brood X cicadas.

Brood X is the largest emergence of periodical cicadas that appear as adults once every 17 years. They are found in Virginia, West Virginia, Maryland, Delaware, New Jersey, Pennsylvania, Tennessee, Kentucky, Ohio, and Indiana. Periodical cicadas emerge in huge numbers, ensuring that their predators can eat their fill while still leaving sufficient individuals to reproduce successfully. They begin to emerge in early May and are gone by late June. These are different from the annual cicadas, which are green in color and come out every year from June to August.

Comparing the geographic occurrence and the timing of the unknown bird illness with the appearance and locations of the Brood X cicadas shows considerable overlap, leading scientists to speculate on the correlation. One possible and simple explanation is that people sprayed pesticides in an attempt to kill the cicadas. When birds consumed high quantities of cicadas, the pesticide sickened them. The neurological symptoms seen in affected birds lends support to this hypothesis.

Another more fantastical but just as plausible explanation is what one researcher referred to as the death zombie fungus. This seemingly fictitious explanation sounds like something out of a horror movie but is instead the result of the real and fascinating life cycle of the parasitic *Massospora* fungus. The fungus contains compounds similar to those found in hallucinogenic mushrooms and acts on the cicadas' behavior as well as their body. The fungus first affects the cicada larvae as they develop underground. Once they emerge as adults, the fungus causes their abdomen and genitals to wear away, replaced with a mass of spores. Despite missing a third of their body, including their genitals, the fungus drives the cicadas to still fly and attempt to mate. As they fly, they spread the spores everywhere. The fungus also causes male cicadas to mimic the wing movements of receptive females, effectively luring healthy males to attempt to mate with them,

which infects additional cicadas with fungal spores. The fungus can produce toxins when ingested by birds, thus the connection to the unknown bird illness.



A healthy Common Grackle

Scientists will continue to study the connections, but the good news is that the occurrence of the disease and the mortality rate in birds began to decrease as the Brood X cicadas began to disappear. We have not seen any cases of the mysterious bird illness in New Hampshire nor do we have periodical cicadas. For now, the recommendation is to stop feeding birds until scientists have definitive conclusions about the source of the illness. Clean your feeders and birdbaths with a 10% bleach solution (one part bleach to nine parts water) and allow them to air dry. There are plenty of natural food sources available for birds, especially at this time of year. We will likely be back feeding birds again soon, but in the meantime, marvel at the science that leads to these discoveries and at the diversity of life and strategies for survival found in the natural world.

NEW HAMPSHIRE MUSIC FESTIVAL

We were pleased to provide a pontoon boat as a floating platform for New Hampshire Music Festival's program of "Water Music" in Livermore Cove on Squam Lake on July 16, which was enjoyed by more than 200 people on the shore, on motor boats, in canoes, and kayaks.



KIRKWOOD GARDENS PLANT SPOTLIGHT

By Brenda Erler

Bicolor Monkshood

Aconitum x cammarum 'Bicolor'

Culture: Prefers sun to part shade and moist, well-drained, organically rich soil.

Bloom: July and August

Height: 4 feet

This beautiful perennial is a good addition to the back of the border or a cutting garden. It mixes nicely with Echinacea and Helenium. It is slow to establish but will form healthy clumps if it likes its location. It is not bothered by rabbits or deer. All parts are poisonous, so it shouldn't

be grown where children are likely to come in contact with it. The common name Monkshood refers to the shape of the flowers that resemble the hood worn by medieval monks. The other common name, wolfsbane, refers to the fact that the plant was once used as an arrow poison and a poison bait for killing wolves.

Kirkwood location: To the right of the pergola in the lower garden.



flickr/Florence Ivy, CC BY-NC-SA 2.0

Carolina Allspice

Calycanthus floridus

Culture: Easily grown in average, medium moisture, well-drained soil in full sun to part shade. Prune immediately after flowering to shape it or to maintain its compactness. Remove suckers unless you want it to form a natural colony.

Bloom: April to July

Height: 6 to 8 feet tall with an 8 to 10 foot spread

This U.S. native shrub has shiny leaves and very fragrant reddish-brown flowers. The flowers produce interesting urn-shaped fruits that last through winter. Use it as a specimen, foundation plant, or native garden shrub. Flowers are good for cut flower arrangements. Trouble-free and seldom bothered by deer.

Kirkwood Location: Upper garden next to pipe fountain.



flickr/nhq9801CC BY-SA 2.0



Plant Spotlight and Kirkwood Gardens are sponsored by Belknap Landscape Company, Inc. belknaplandscape.com



FROM THE HERON'S NEST

By Laura Mammarelli

Blue Heron School offered its first summer program in the new Early Childhood Education Center in 2021. Children were outdoors almost all of the time, in the pine grove or exploring across the Science Center. The new Migration Flyway zip line and Kirkwood Gardens were favorites. Children used journals, colored pencils, and watercolors to record their observations. They created their own scavenger hunt to find features and flowers in Kirkwood Gardens.



Blue Heron School is a nature-based Montessori school for children ages three to six. For more information please visit nhnature.org/programs or contact Laura Mammarelli, Blue Heron School Director, at 603-968-7036 or blueheron@nhnature.org.

CALENDAR OF PROGRAMS & EVENTS

SEPTEMBER

SEPTEMBER 11 SATURDAY 10:00 a.m. to 4:30 p.m. For all ages	Raptor Migration Celebration Fall is a season of transition and many animals are on the move to wintering grounds. See migratory raptors at trailside Pop Up Animal Encounters throughout the day. Learn where our raptor species go each winter, how long it takes them to get there, and when and why they return. <i>Cost: Included with trail admission. Last entry at 3:30 p.m.</i>
SEPTEMBER 12 SUNDAY 10:00 to 11:30 a.m. For ages 5+	From Leafhoppers to Lacewings: Field Exploration Head into a field armed with a sweep net to discover the many shapes, sizes, and types of insects that call this natural community home. From leafhoppers that eat plant sap with their sucking-piercing mouthparts to the carnivorous lacewing with its delicate lace-like wings, be astounded by the diversity we find. <i>Cost: \$9/member; \$11/non-member</i>
SEPTEMBER 24 FRIDAY 3:00 to 4:30 p.m. For adults	Loons and Leaves: Squam Lake Fall Naturalist Cruise Against the backdrop of colored foliage, enjoy the sheltered coves and mountain views of Squam Lake. Look in on loon activities as young loons grow up and all prepare to migrate to the ocean for the winter. Find out why loons pick Squam Lake as their summer home. <i>Cost: \$23/member; \$27/non-member</i>
SEPTEMBER 30 THURSDAY 5:00 to 7:00 p.m. For adults	Science Pub Outdoors: Local Impacts of Climate Change 5:00 to 6:00 p.m. food and beer; 6:00 to 7:00 p.m. lecture Food trucks, beer, and science – need we say more? Join us at our outdoor classroom pavilion to hear from local scientists about climate change impacts we can see right here in New Hampshire. Come early to purchase the Uncommon Woman Conservation Ale brewed by Smuttynose Brewing Company for The Common Man in support of Squam Lakes Conservation Society and food from a local food truck. Must be 21+ and show ID to purchase beer. Bring warm layers and blankets. The Science Pub series is a collaboration between Squam Lakes Association, Squam Lakes Conservation Society, and Squam Lakes Natural Science Center. <i>Cost: No charge to attend but reservations are required. Reserve online at nhnature.org or call 603-968-7194 x 7.</i>

OCTOBER

OCTOBER 1 FRIDAY	Loons and Leaves: Squam Lake Fall Naturalist Cruise 3:00 to 4:30 p.m. For adults <i>Cost: \$23/member; \$27/non-member</i> See description for September 24.
OCTOBER 3 SUNDAY 9:30 am. to 12:30 p.m. For ages 6+	Mt. Fayal Family Hike Enjoy the views of Squam Lake from Mt. Fayal on this family friendly hike. We will make our way up the Mt. Fayal Trail at a leisurely pace, while engaging in some fun activities along the way to help us explore and discover the natural world around us. <i>Participants should be prepared to hike approximately 1.25 miles with 500 feet of elevation gain, including some steep sections. Families should bring a backpack with water and snacks, wear layers appropriate for the weather, and wear sturdy shoes with good traction.</i> <i>Cost: \$9/member; \$11/non-member</i>
OCTOBER 5 TUESDAY 4:30 to 7:30 p.m. For adults	Environmental Board Games Calling all board game fans (and soon to be fans)! Join us to play board games with nature themes. We will play <i>Wingspan</i> , where you try to collect a beautiful and diverse collection of birds for your wildlife reserve; <i>Photosynthesis</i> , where you are a tree competing for sunlight to grow taller as the sun moves around the board; and <i>CO2</i> , a game where you travel back to the 1970s to invest in green power plants and stop global warming! All instruction provided. Stay for one game or the duration to play a few more. Advance registration required. Snacks and beverages provided. <i>Cost: \$5/member; \$8/non-member</i>
OCTOBER 7 THURSDAY	Science Pub Outdoors: Local Impacts of Climate Change 5:00 to 6:00 p.m. food and beer; 6:00 to 7:00 p.m. lecture For adults <i>Cost: No charge to attend but reservations are required. Reserve online at nhnature.org or call 603-968-7194 x 7.</i> See description for September 28.
OCTOBER 8 FRIDAY	Loons and Leaves: Squam Lake Fall Naturalist Cruise 3:00 to 4:30 p.m. For adults <i>Cost: \$23/member; \$27/non-member</i> See description for September 24.

OCTOBER CONTINUED

<p>OCTOBER 17 SUNDAY 10:00 a.m. to 12:00 p.m. For adults</p>	<p>Stone Walls and Cellar Holes Stone walls and cellar holes built during the 1800s are found throughout the forests of New Hampshire. Some of these structures were built in unlikely places, making people today question the judgment of their builders. But, what do these stone remains tell us about the past and do they serve any purpose today? The stone structures located on Science Center property provide some clues of how they were built and what purpose they served. We'll look at how the surrounding forest was affected by the disturbance associated with these stone formations, how they are being utilized today by new homesteaders, and how the plants in the area provide clues to previous uses of the land. Please wear sturdy walking shoes as we will be hiking on and off trail on uneven terrain. <i>Cost: \$9/member; \$11/non-member</i></p>
<p>OCTOBER 17 SUNDAY 9:30 a.m. to 12:30 p.m. For ages 14+</p>	<p>Environmental Board Games Calling all board game fans (and soon to be fans)! Join us to play board games with nature themes. We will play <i>Wingspan</i>, where you try to collect a beautiful and diverse collection of birds for your wildlife reserve; <i>Photosynthesis</i>, where you are a tree competing for sunlight to grow taller as the sun moves around the board; and <i>CO2</i>, a game where you travel back to the 1970s to invest in green power plants and stop global warming! All instruction provided. Stay for one game or the duration to play a few more. Advance registration required. Snacks and beverages provided. Minors must be accompanied by a participating adult. <i>Cost: \$5/member; \$8/non-member</i></p>
<p>OCTOBER 31 SUNDAY 9:30 a.m. to 4:00 p.m. For all ages</p>	<p>Naturally Wild Halloween Join us on Halloween for Creatures of the Night Pop Up Animal Encounters along the trail throughout the day. See the animals along the trail enjoying a variety of pumpkin treats. Come in your favorite costume. Children will receive a bag of Halloween treats at the end of their visit to take home. <i>Included with trail admission. Last trail admission is 3:30 p.m.</i></p>

NOVEMBER

<p>NOVEMBER 9 TUESDAY</p>	<p>Environmental Board Games 4:30 to 7:30 p.m. For adults <i>Cost: \$5/member; \$8/non-member</i> <i>See description for October 5.</i></p>
<p>NOVEMBER 14 SUNDAY</p>	<p>Environmental Board Games 9:30 a.m. to 12:30 p.m. For ages 14+ (Minors must be accompanied by a participating adult.) <i>Cost: \$5/member; \$8/non-member</i> <i>See description for October 17.</i></p>

HOMESCHOOL SERIES: NOVEMBER THROUGH APRIL

This year our monthly homeschool series is a series of a one-hour, in-person programs held outdoors, followed by a 30-minute virtual wrap-up the following week featuring a live animal.

10:00 to 11:00 a.m. - In-person Outdoor Program: First Thursday of the month

10:00 to 10:30 a.m. - Virtual Wrap-up: Second Thursday of the month

Cost \$9/member child; \$11/non-member child

An adult must participate with children at no additional cost. Each additional adult pays child fee.

All About Series (Ages 4 to 6)

November 4 and 11: Hawks

January 6 and 13: Skunks

March 3 and 10: Owls

December 2 and 9: Porcupines

February 3 and 10: Groundhogs

April 7 and 14: Turtles

Join us with your child to learn all about New Hampshire wildlife. Each month considers a different group of living things through activities, hands-on experiences, and a meeting with a live animal.

Get HAPI! (Ages 7 to 10)

November 4 and 11: Adaptations

January 6 and 13: Interrelationships

March 3 and 10: Habitats

December 2 and 9: Nocturnal Animals and their Adaptations

February 3 and 10: Populations

April 7 and 14: Ecosystems

Join us to increase your understanding of these four concepts of community ecology: Habitats, Adaptations, Populations, and Interrelationships (HAPI). Through activities and investigations, we will explore these topics in-depth.

To help keep everyone healthy, programs have limited capacity and other restrictions. Visit nhnature.org/reopen for Know Before You Go information.

Program tickets must be reserved and paid for online in advance for all events.

SQUAM LAKE CRUISES

Discover Squam

Daily at 11:00 a.m. and 1:00 p.m. through October 11

Learn about the natural history of Squam Lake, look for majestic Bald Eagles, and listen for the haunting call of Common Loons. Hear about the people who have lived on its rocky shores surrounded by scenic mountains for over 5,000 years. Cruise on this beautiful lake where *On Golden Pond* was filmed 40 years ago.

Cruise with a Naturalist

Tuesdays and Thursdays at 3:00 p.m. through October 7

Learn about the rich natural history of Squam Lake with an experienced naturalist. See Common Loons and Bald Eagles and view their nesting sites. Watch for other wildlife too - you never know what you might see amid Squam's scenic mountain ranges, charming islands, and quiet spots. The route is chosen to maximize wildlife observations; see something different on every memorable trip.



Squam Lake Cruise Rates:

Adult: \$27
Senior (65+): \$25
Youth (up to age 15): \$23

Members receive a \$4 discount per person.
Not recommended for children under age 3.
Tickets at nhnature.org

GREEN TIP: LOCAL FOOD SOURCING: A WIN-WIN!

By Marketing Intern Danny Holman

Our food systems once fueled a fast-growing population, leading to exponential economic and urban growth. This progress eventually rendered our food systems unsustainable for our health and environment. To obtain higher yields for a rapidly growing population, many industrial farms began to use pesticides and fertilizers harmful to human health and the environment. It is now time for businesses, restaurants, food brands, and individuals like you and me to lend our support to local and organic farmers and steer away from the consequences of unsustainable agriculture.

A large-scale shift towards local organic farms presents some great benefits to our physical and mental health. Through the use of organic fertilizers and crop rotations, soils actually strengthen, resulting in food with improved taste and micronutrient content. Wow! More nutrients also improves general physical and mental performance as the brain receives the nutrients it needs to optimally function.

The current linear food system produces more waste than necessary as finite resources are extracted and ecosystems

are inevitably harmed. Aside from polluting water, soil, and air, the agri-food industry is responsible for nearly one quarter of global greenhouse gas emissions. But we can mitigate our environmental impact. One way to go about this is by making the most of food: meaning food by-products can be transformed into productive products such as organic fertilizers, biomaterials, bioenergy, and medicines. A home compost system is a great example of this! Also, shifting to consuming more local organic farm products reduces the amount of packaging and mitigates pollution associated with long distance distributions.



Image by Ville Mononen Pixabay

SCHOOL PROGRAMS - MAKE LEARNING COME ALIVE!

Give your students the opportunity to connect to the natural world. All programs align to Next Generation Science Standards and New Hampshire Career and College-Ready Science Standards.

Virtually Wild Programs:

These interactive 45 minute live animal programs engage your students with two live animals. Students can join from the classroom or elsewhere. Programs are limited to one classroom per program to facilitate interactivity. All programs include a post-visit activity that students can do at home.

In-person Outdoor Programs at the Science Center or at your school:

These unique and up close encounters give your students the opportunity to discover and connect with nature. Physical distancing and face masks will be enforced. All programs at the Science Center from May through October include admission on the live animal exhibit trail.



Learn more at nhnature.org/teachers

2021 ANNUAL MEETING FOR MEMBERS

We hoped to gather in person for the Annual Meeting this year outside at the Lake Cruise Headquarters, but the late summer Covid surge forced us to change to a virtual meeting.

Chair Justin Van Etten asked the quorum of members present to approve the 2021 Annual Meeting minutes, which were accepted unanimously. Executive Director Iain MacLeod and Finance Director Brian Eaton presented the 2020 Financial Report.

Chair Justin Van Etten thanked outgoing trustee Tony Wagner, Ed.D. for his nine years of dedicated board service.

Governance Committee Chair Sarah Brown presented three slates of candidates. Trustees Martha Grant, Susan Lynch, and Justin Van Etten were re-elected for three-year terms. Officers were elected for one-year terms: Chair Justin Van Etten, Vice Chair Sarah Brown, Treasurer Anne R. Lovett, and Secretary Susan Lynch. New trustees Cathy Denious, Diane Garfield, Barbara Nan Grossman, and David Murphy were elected for three-year terms.

Justin thanked Executive Director Iain MacLeod for 15 years on staff before Iain in turn recognized other staff for their milestones: Aubrey Voelker, Animal Care Training Coordinator (five years); Amanda Gillen, Marketing Manager (10 years); Jeremy Phillips, Naturalist (10 years); Dennis Capodestria, Exhibits Assistant (15 years); and Margaret Gillespie, Naturalist (35 years). Iain next presented the Horizon Award to Margaret, noting she has taught thousands of students and families about the natural world through educational programs and the natural history column for the *Tracks & Trails* newsletter.

In conclusion, Iain reviewed the events of 2020 and Justin thanked attendees, donors, volunteers, board, and staff.

The biographies of the new trustees and the Annual Report, Annual Meeting Minutes, Audited Financial Statements, and 990 Tax Return for 2020 are available for review at www.nhnature.org/programs/annual_meeting.php. Request paper copies by contacting Development and Communications Director Janet Robertson at 603-968-7194 x 112 or janet.robertson@nhnature.org.

WITH GRATITUDE

By Campaign Chair Ken Evans



I am pleased to report the successful conclusion to the Education Matters Capital Campaign. Although delayed by the Covid pandemic and the financial needs associated with it, our donors once again come through with flying colors. The support and enthusiasm demonstrated by the generosity of our supporters is heartwarming to say the least. Education is our core mission and through this campaign, we have ensured that our focus is and always will be on informing people of all ages about the natural world.

Whether on the lake, in the classroom, or on the trail, we reach thousands of people who might not be exposed to nature otherwise. That is our strategic mission and the Science Center is driven to deliver on that mission. The resources from Education Matters adds significantly to this strategy. Think about this. When 40 young students spend the better part of four years in the Blue Heron School environment, we create life-long advocates for environmental awareness. When visitors take a 90-minute trip on one of our cruise ships, they experience the beauty of nature that can only be seen from the water. And when our trail visitors view the majesty of raptors, they come away with a renewed respect for the winged wonders of our planet.

This success of the Education Matters Campaign is a testament to the leadership and commitment of you, our dear supporters and friends. I hope you are as proud of the results as I am in leading this effort.



**Early Childhood
Education Center**



Scholarship Fund



Raptor Exhibit



**Lake Cruise
Headquarters**

HOWLING COYOTE GIFT SHOP:

Thank you for your support of the outdoor Howling Coyote Gift Shop. You can continue to shop at the outdoor gift kiosk (weather permitting) through November 1.

OPENING A WINDOW TO THE NATURAL WORLD

Here are some ways to open a window!



The Science Center relies on financial support from you and other donors to support its mission. Your contributions help to care for and feed our live animals, to maintain buildings, trails, and exhibits, and to offer a variety of quality natural science programs for all ages. Here are a few ways to give.

- Simple Gifts - Give by check, credit card, or cash.
- Online - Donate through our website at www.nhnature.org/support/annual_fund.php
- Gifts of Securities - Give stock directly. Learn more regarding gifts of securities at www.nhnature.org/support/stock_gift.php
- Gifts of Membership - When you renew your own, consider giving a gift membership to a family member or friend.
- Honorary Gifts - Instead of a traditional birthday or wedding present, make a contribution in honor of a special occasion. Or ask your family and friends to donate to the

- Science Center in honor of your own birthday.
- Memorial Gifts - Honor a special person with a memorial contribution.
- Matching Gifts - Check your employer's matching gift policies. Many corporations match employee donations to charitable organizations.
- Gifts of Time, Energy, and Expertise - Get involved by joining our active volunteer corps. Contact Volunteer Manager Carol Raymond at 603-968-7194 x 122 or carol_raymond@nhnature.org for information.

Your gift - no matter the size or how it's given - will help to support our education programs and operations year round. Thank you!

Opening a Window to the Natural World is written by Development and Communications Director Janet Robertson. You may contact Janet at 603-968-7194 x 112 or janet_robertson@nhnature.org.

WISH LIST

For Animal Care - newspapers; Little Tykes or Playskool jungle gym; heavy-duty storage tubs; limb cutters; gift cards to local hardware and grocery stores

For Blue Heron School - children's shovels/rakes/any sort of tool; metal poles with hook for hanging bird feeders; bird feeders; milk crates; 10x10-foot tarp

For Education - large (size 11) waders

For Facilities - chainsaw vice; loppers and pruners for invasive species removal

For Kirkwood Gardens - 1-quart, 2-quart, and gallon pots



SPONSOR A SPECIES!

Your sponsorship helps provide food, health care, and housing for the animals. It's a unique way to learn about a particular species and help us to care for our live animals.

Visit nhnature.org/support/sponsor_species.php.

Our Wish List is at <https://amzn.to/3qhZDBN> or shop with Amazon Smile to support the Science Center with every purchase. <http://smile.amazon.com>.

amazon smile
You shop. Amazon gives.



What will your legacy be?

Your legacy gift will help Squam Lakes Natural Science Center to continue to achieve its mission to teach about the natural world for generations to come.

Become a member of the Naturalist's Legacy Society.

Visit nhnature.org/support

These generous donors made tribute gifts, which were received between April 1 and June 30, 2021:

In honor of Laurie and Susan Beeson for Blue Heron School
Peggy Heinisch

In honor of Blue Heron School staff
Susan and Tom Stepp

In memory of Jane Timberlake Helwig, MD
John Bender and Marcia Bates

In memory of Nancy W. Grady
Michael and Samantha Elberg
Pollyanna Fisher-Pool

In honor of Dave Katz's birthday
Irving and Gloria Fox
Stu and Sue Needleman

In honor of Lauren Moulis
Jim and Marsha Wilmerding

In honor of Emily Preston's birthday
Pamela Riel
Christine Davenport
Jessie Tichko
Terry Tilley
Jane and Dennis Vachon
Marilyn Wyzga

In memory of Gregory Smith
Gail Smith and Frances Chalmers

In memory of Charles Zaroulis
Suzanne Gamache

TRAIL'S END

SUMMING UP SUMMER



Our new raptor exhibits are proving to be incredibly popular with both our human visitors and our avian guests. I love seeing our raptors in their expansive new homes. It is wonderful to do something that simultaneously improves our visitors' experience and our animals' welfare.

We have started having some smaller in-person meetings, which are always a heck of a lot more enjoyable than Zoom. (Unfortunately, our Annual Meeting on August 21 was recently changed from in-person to virtual, due to the recent surge in Covid in the area.) But we recently hosted our annual gathering for past Trustees. As we chatted over sandwiches, it became apparent that the luncheon represented *centuries* of experience and dedication to the Science Center's mission! We also recently invited members of our Legacy Society for coffee and donuts, followed by a sneak peek at the visiting Caterpillar Lab.

Speaking of The Caterpillar Lab, I hope many of you were able to see it while they were here. It's amazing how much this group out of Marlborough, New Hampshire has accomplished. They do a particularly impressive job of being both educational and entertaining. If you missed them, they also host open house days in Marlborough, but

I wouldn't be surprised to see them visiting again in future years. (thecaterpillarlab.org)

June was the busiest June the Science Center has ever had. One of the good things to come out of COVID may end up being the reservation system. Although we have been able to accommodate the folks who just show up, the reservation system has allowed us to spread visitors out a little better over the course of the whole day. We think doing this is making for a much better visitor experience for everyone.

We continue to work on our solar array project and are currently looking for grants and donations to make this project happen. When completed, it will ensure that we've not just met, but also far exceeded our goal of using 50% renewable energy by 2030.

I think part of the reason we have been successful this year is because we have such a wonderful team working at the Science Center. Many businesses in New Hampshire are currently quite short staffed. Because of the generosity of our donors and government stimulus funds like the PPP, our Board made the decision to keep everyone at the Science Center fully employed even when we were shut down. We never had to resort to layoffs and that left us in a strong position to reopen and accommodate record numbers of visitors.

Finally, we are resuming our strategic planning process which was paused at the start of the pandemic. We've learned a lot in the last 18 months and it should be interesting to think about what all this means for our next five years. If there is anything you think the Science Center should be doing, doing better, or should change, please share your thoughts with me at justin.vanetten@gmail.com.

Trail's End is written by Justin Van Etten, Chair of Squam Lakes Natural Science Center's Board of Trustees.
You may contact him at justin.vanetten@gmail.com.

GOLDENROD *continued from page 1*



Another goldenrod connoisseur, a small fly called a midge, stimulates the formation of goldenrod bunch galls when the adult female lays its eggs on the uppermost leaf bud of, you guessed it, Canada goldenrod. Upward growth of the stem halts, but the leaves keep forming, resulting in a bunching of leaves resembling an odd green rosette. Flowers proceed to bloom

above the gall. Then there is the elliptical gall, an elongated gall, similar in placement on the goldenrod to the ball gall but caused by the goldenrod gall moth.

There are so many reasons to stop and take a closer look at these golden harbingers of fall. If you miss this viewing opportunity, winter awaits, with galls advertising themselves to the observant explorer without the trappings of greenery. A treat for all seasons.

GOLDENROD QUIZ

1. Name two predatory creatures which thrive on goldenrod.
2. True or False? Goldenrod is a nuisance for allergy sufferers because its pollen travels on the wind.
3. What are two kinds of insects which stimulate goldenrod to produce galls?
4. Goldenrod gall inhabitants are not safe from the pecking of hungry _____.
5. Why is goldenrod so important to insects migrating in the fall?

Answers:

1. Crab spiders and ambush bugs
2. False
3. Goldenrod gall flies and midges
4. Chickadees or woodpeckers
5. Provides essential nectar and energy



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