



MYSTERIES OF MUSSELS

By Margaret Gillespie

As we were embarking on a Squam Lake nature cruise, a question arose from a passenger peering into the shallow water by the side of the boat, “See those shiny shells? What are they?” Looking down, I spotted the remnants of a feast. Mussel shells had been pried open and the contents eaten, leaving behind their shimmering white interiors tinged with blue. In contrast, shell exteriors are dark like the surrounding rocks, but once opened there is no further need for camouflage. I suspected muskrats had relished this batch of mussels tucked between the rocks.

Predators like muskrats, raccoons, otters, and herons are merely one of a myriad of challenges facing mussels, not the least of which is their natural life cycle. Adult mussels don’t move much. They may be anchored loosely to rocks by strong fibers called byssus threads, move short distances using a muscular foot, or just stay in place. So how do they reproduce? I was asked this question recently and not knowing the answer, I began my investigation into mysteries of mussels.

Reproduction in mussels is a complicated, multistep process. It starts with male mussels releasing sperm into the water. In a brook, sperm are then carried downstream where a female mussel draws them in through her incurrent syphon. From there, her eggs are fertilized and grow into glochidia, miniscule larvae the size of grains of sand. These young are brooded on the gills of the mussel. In a most challenging transition, glochidia must then disperse, be found by a fish, and attach to its gill! In some mussel species, the female may lure fish closer with a body part resembling food before releasing her young. Alternatively, she may simply discharge a cloud of young into the water when a host fish species is nearby. The fish sees free “food” and gulps it down. Understandably, the glochidia don’t cooperate and instead clasp onto the inside of the fish. Ouch! The fish responds by regurgitating its meal and the glochidia snag a spot on the fish’s gill on the way out. Once attached, the glochidia travel with the fish for several weeks. At the end of this journey, the now tiny mussels drop off the fish and settle into their new sedentary lifestyle. What a unique way for sessile mussels to reproduce and, at the same time, populate areas upstream.

In New Hampshire, there are 10 different native species of freshwater mussels. Their common names often reflect their shapes, locations, or attributes. Both the dwarf wedgemussel and the brook floater are endangered while the eastern elliptio is relatively common. What tips the balance toward endangered? Historically across the country, mussels



Eastern elliptio mussel

continued on page 11

IN THIS ISSUE...

- Page 2 What’s Bugging the Science Center?
 - Page 3 Donor Profile: Jill White
 - Page 4 The Cost of Cats
 - Page 5 Kirkwood Gardens Plant Spotlight
 - Pages 6-8 ... Programs, Events, and Cruises
 - Page 10 Giving Through Donor Advised Funds
 - Page 11 Trail’s End: Strategic Planning
- And much more!



GIANT INSECTS

JULY THROUGH
SEPTEMBER 2020

FORGING TRAILS: WHAT'S BUGGING THE SCIENCE CENTER?



After the record-breaking success of Dinosaurs Alive! last year, I am thrilled to share that 2020 will be the Year of the Insect. We are hosting another spectacular animatronic exhibit from the Billings Company.

Giant Insects will open on July 1 and run through October 1. This year, we'll have five super-sized animated pieces located next to the Gordon Children's Center and Interactive Playscape – Blue Eyed Darner Dragonfly, Bombardier Beetle, Devil's Flower Mantis, Grasshopper, Stag Beetle, plus a huge static photo-op Spicebush Swallowtail Caterpillar, which will be located near the picnic area.

Throughout the summer, we will have insect-themed events and programs to highlight the desperate need to conserve and protect insects locally and throughout the world. A recent report suggests that half of all insects may have been lost since 1970 as a result of the destruction of nature and heavy use of pesticides. The report said 40% of the one million known insect species are facing extinction. We have all heard of the decline of honeybees and other important pollinators, which is causing alarm bells to go off around the world. The loss of insects is causing major declines in insect-eating birds too.

Another exciting new exhibit opening this year is Hidden Stories, which is located in the lobby of the Webster Building. This interactive exhibit highlights all the fascinating wildlife encounters captured on almost 30 trail cameras located across our property. Touchscreens will allow visitors to virtually explore the fields, forests, vernal pools, and ponds through the seasons and see the hidden stories of the wildlife that visits when we are not looking.

When you visit this year, you'll notice we are already preparing for 2021's new exhibit – a complete rebuild of the Raptor Exhibit and additions to the Celebrate Birds Exhibit. Demolition and site work began this winter and construction of the new buildings will begin in late spring. This does mean both those exhibits will be closed this year. We plan to open the brand new, improved exhibits in May 2021. This exciting effort is part of our Education Matters capital campaign - stay tuned to learn more soon!

So, there is plenty to look forward to this year and next when you visit the Science Center.


Iain MacLeod, Executive Director
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BUSINESS SUPPORT

Join Meredith Village Savings Bank to sponsor Giant Insects. Many sponsorship opportunities are available. Contact Development Officer Kim Beardwood Smith at kim.bsmith@nhnature.org or 603-968-7194 for more information.



SQUAM LAKES NATURAL SCIENCE CENTER

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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.

Tracks & Trails is a regular publication of Squam Lakes Natural Science Center distributed to members and contributors. Comments are welcomed by newsletter editors Janet Robertson and Amanda Gillen.

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DONOR PROFILE

JILL WHITE

What is your first memory of the Science Center?

My earliest memory comes from a first grade field trip with Mrs. Elizabeth Nielsen of Ashland Elementary School. I was fascinated by the sharp, pointy quills of a porcupine from one of the many natural exhibits. It's one of my earliest memories of being tuned in with nature and seeing a world bigger than what I was used to.

Why does Meredith Village Savings Bank support the Science Center?

Squam Lakes Natural Science Center has been a vital community resource since 1966 and Meredith Village Savings Bank (MVSB) has proudly supported them over several decades. They advance the understanding of ecology, bringing people nearer to nature through the exploration of New Hampshire's natural world. Live animal exhibits, natural science education programs, an informal public garden, and lake cruises attract thousands of individuals, families, and children of all ages in the community and beyond, year after year. MVSB will always promote environmental curiosity and the preservation of our natural habitat.

What is your favorite animal or exhibit or program?

I'm partial to the river otters. Not only cute, the otters are fun to watch because they are playful and clever. As they thrive on clean water, their very existence indicates a healthy waterway, which is both fascinating and comforting.

What surprises you most about the Science Center?

I continue to be amazed by the diverse programming offered. It's their creativity and ability to think outside the box for new and exciting exhibits that attract and inspire repeat visitors.



Events, exhibits, and happenings are never stagnant, but rather constantly changing and evolving. It's a wonderful and exciting place that brings people together.

What do you wish other people knew about the Science Center?

There are a vast array of opportunities that exist within the Science Center. Families and children can visit to learn a great deal about New Hampshire's natural habitat and our ecological world. It's also a fun place to donate time to as a volunteer - not only do you get to see and learn

about beautiful animals, but you get to share in a person's education and experience of our ecological environment. By supporting them, we are directly supporting where we live, play, and work.

What would you tell someone who is thinking about donating or volunteering?

My suggestion would be stop thinking about it and just do it! Volunteering or contributing to the Science Center goes a long way to both sustain and improve the wonderful programs beloved by so many. Accredited by the Association of Zoos and Aquariums (AZA), they're the only AZA-accredited institution in Northern New England. A local destination and attraction, we're very fortunate to have such a rich center for learning located in our own backyard.

Jill White is the Regional Vice President of Meredith Village Savings Bank, overseeing the Bank's Plymouth and Ashland offices. She is based out of MVSB's Ashland branch located on 5 Riverside Drive. A local to the area, Jill grew up in Ashland and currently resides in Holderness. She has served as a Select Board Member for the town of Holderness over the last nine years.

NEWSBRIEFS

- Annual Fund contributions totaled more than \$384,617 in 2019! Thank you to all our wonderful donors!
- In 2019, 302 volunteers donated more than 7,936 hours. Thank you!
- Blue Heron School received an Inspirational Business Award for 2019 from the Lakes Region Chamber. Blue Heron School Director Laura Mammarelli accepted the award at the Chamber's annual meeting on January 30 in Laconia.
- The Madelaine G. von Weber Trust made a \$7,775 grant to buy and install a new phone system, matching a gift from former trustee Pete Richards. It was installed in February 2020, replacing a 25-year-old system. Be aware that staff extension numbers changed.
- In January, Animal Care Training and Enrichment Coordinator Aubrey Voelker and Naturalist Josh Flagg attended a weeklong training in Florida. Natural Encounters taught the intensive Professional Contemporary Animal Training and Management workshop for professional zookeepers, trainers, and wildlife educators.
- Television travel host Samantha Brown's new show, *Places to Love*, features an episode called *Lakes and Mountains of New Hampshire*. Watch it on NHPBS on March 29 at noon to see her visit to Squam Lake.
- To keep our visitors safe during construction, there will be a detour on the live animal exhibit trail this year. The Raptor Exhibit, built in 1992, was demolished this winter to make way for a new Raptor Exhibit. The birds were moved to temporary quarters. The Celebrate Birds building is also closed for renovations; both will reopen in May 2021.
- The new Hidden Stories Exhibit will open in May in the Mead Discovery Place, located in the Webster Building lobby. The exhibit highlights red fox, white-tailed deer, coyote, and black bear and explores natural communities using maps, still images, video clips, and graphs collected over the past three years. Special thanks to Science Center volunteers, the Davis Conservation Foundation, the Dorr Foundation, Greentek Mapping Services, and John Egolf for their help. Learn more at nhnature.org/hiddenstories.
- Mark your calendars for Saturday, July 25 for the annual Summer Splash. "Winged Wonders" will be at the Science Center under a tent, featuring live animals, a live auction, and a raffle. Tickets will go on sale in June.

Save the Date: Annual Meeting, Saturday, August 8

NATURALIST'S CORNER

THE COST OF CATS

By Josh Flagg

Like forests, plains, or marshlands, neighborhoods are home to natural communities rich with life. We might not think of our backyards as natural areas, but they can be places where animals and plants interact with each other in complicated and wonderful ways. As with all types of natural communities, our actions can have tremendous impacts in ways we might not even consider. One factor shown to have a strong impact on life in our yards is the presence of domestic cats.

About five years ago, my cat lived a hidden life outside at night, exploring the woods behind my family's small house. When I moved to college, I took my cat with me. When I returned home, I noticed a small pack of coyotes had moved into the neighborhood. I theorized that my pet was occupying the niche of night predator to an alarming degree of effectiveness. This one "little" cat was able to perform the ecological function of a group of large coyotes. To this day, he never goes outside without a leash for the sake of maintaining the ecological balance in the neighborhood.

There are an estimated 50 to 70 million stray cats in the United States, living outside and hunting for their meals. However, studies show that even if cats have owners who feed them well every day, they will still hunt for fun if allowed outside. While hunting may be a great source of enrichment for household cats, they are alarmingly good at it. It's estimated that domestic cats kill between 2.4 and 3.7 billion birds and over ten billion small mammals each year in the United States alone. Hunting efficiency and high population density of cats are a dangerous combination for the small mammals and birds that make up our backyard ecosystems. To help protect the natural communities in our neighborhoods, let's all keep our cats indoors.



Blue Jay



Red Squirrel



Northern Cardinal



FROM THE HERON'S NEST

By Laura Mammarelli



The outdoor classroom is an important part of the environment in the new Blue Heron School home. During the morning children can choose to go outside and experiment with the snow in a variety of ways—painting it, melting it, freezing it, examining it, and of course, it is always fun to shovel a path through it.

Blue Heron School is a nature-based Montessori school for children ages three to six. For more information please visit www.nhnature.org/programs or contact Laura Mammarelli, Blue Heron School Director, at 603-968-7194 or blueheron@nhnature.org.

KIRKWOOD GARDENS PLANT SPOTLIGHT

By Brenda Erler

Great White Trillium

Trillium grandiflorum

Culture: Easily grown in rich, moist, well-drained soils in partial to full shade

Bloom: late April to May. The white, three-petaled blossoms develop a pink tinge as they age.

Height: 8 to 18 inches

This beautiful native wildflower is a great addition to wild shade gardens and naturalized areas. Spreads slowly by rhizomes. Seeds are distributed by ants, so new plants will pop up in lovely and surprising spots. Does not transplant well, so do not collect from the wild! Always choose nursery-grown plants.

Kirkwood location: miscellaneous spots in upper garden, driveway side



Bugleweed

Ajuga reptans 'Chocolate Chip'

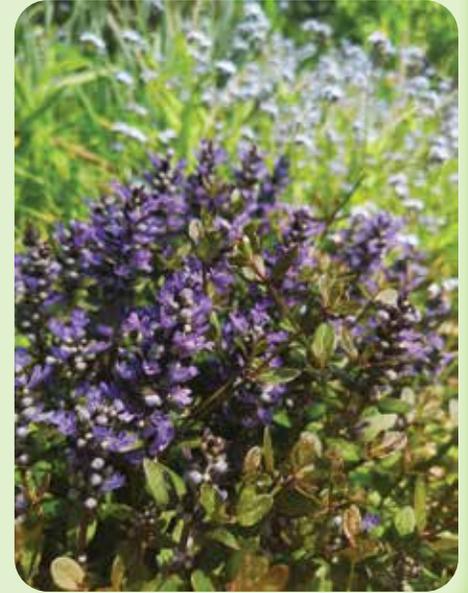
Culture: Prefers moist, rich, well-drained soil in sun or shade but tolerates most conditions except dry sunny locations

Bloom: May and June

Height: 2 inches

A compact, mat-forming groundcover with narrow, shiny chocolate-purple leaves and spikes of violet-blue flowers. Spreads to fill large areas, but not as aggressive as other Ajugas.

Kirkwood location: new groundcover garden on side of Inn next to entrance driveway



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

BONUS MEMBER BENEFITS

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MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER

Reciprocal admission is generally good for up to two adults and two youth per visit. Be sure to take your membership card with you when you go. Visit the Membership section at nhnature.org for full details and website links where you may check organization hours and directions.

Remember as a Science Center member, you also receive discounted admission all year at participating AZA and ANCA organizations. Visit the Membership section of nhnature.org for details.

HANNAFORD REUSABLE BAG PROGRAM

The Science Center has been selected as the featured non-profit at the Hannaford store located at Route 25, Hatch Shopping Plaza, Plymouth NH for the month of March. For every \$2.50 reusable Community Bag sold at this Hannaford location, the Science Center will receive \$1 donation.



CALENDAR OF PROGRAMS & EVENTS

Advance registration is required by noon the day before the program. If minimum enrollment is not met, programs may be cancelled. Walk-ins accommodated if space is available.

MARCH See the calendar at nhnature.org/programs/calendar.php for March programs.

APRIL

<p>APRIL 2 THURSDAY 10:00 to 11:30 a.m. For children ages 4 to 6</p>	<p>Homeschool Series: All About Series - Turtles Join us with your child to learn all about New Hampshire wildlife. Each session considers a different group of living things through activities, hands-on experiences, and a meeting with a live animal. An adult must participate with children at no additional cost. Each additional adult pays child fee. <i>Cost \$9/member child; \$11/non-member child</i></p>
<p>APRIL 2 THURSDAY 10:00 to 11:30 a.m. For children ages 7 to 10</p>	<p>Homeschool Series: Get HAPI! - Ecosystems The primary interpretive focus of the Science Center's programs and exhibits is community ecology, which has four major concepts: Habitats, Adaptations, Populations, and Interrelationships (HAPI). Join us with your child to investigate these topics in depth. <i>Cost \$9/member child; \$11/non-member child</i></p>
<p>APRIL 7 TUESDAY 5:00 to 8:00 p.m. For adults and teens</p>	<p>Nature Board Games at Walter's Basin Nature nerds unite! Meet in the lounge at Walter's Basin Restaurant in Holderness for a fun evening playing nature-themed board games. Drop in for a quick game or honor your inner nerd and stay longer. We will play games such as Wingspan, CO2, and Photosynthesis. All instruction provided. Order and pay for food and drinks on your own. <i>Cost per program: \$5 per person suggested donation</i></p>
<p>APRIL 8 WEDNESDAY 7:00 p.m. For adults</p>	<p>Wild & Scenic Film Festival Squam Lakes Natural Science Center and the Office of Environmental Sustainability at Plymouth State University (PSU) are hosting the Wild & Scenic Film Festival again in a new venue, at Smith Recital Hall in Silver Center at PSU. See independent award winning environmental and adventure films about nature, adventure, climate change, wildlife, and more. Tickets available at plymouth.edu. <i>Cost: \$10/person</i></p>
<p>APRIL 14 TUESDAY 6:00 to 8:00 p.m. For adults</p>	<p>Science Pub: Community Conversations on Climate Change Businesses and Towns Take Action on Climate Change by Jennifer Andrews Join us in the lounge at Walter's Basin for engaging evenings discussing climate change solutions over drinks and appetizers. Climate change is affecting our natural world and the animals (including us) that inhabit our planet in many ways. We will focus on solutions to this global problem. Different scientists and organizations will speak for about 30 minutes with a lively discussion to follow. Bring your questions and plan to contribute to this community conversation on climate change. Sponsored by Squam Lakes Natural Science Center, Squam Lakes Association, and Squam Lakes Conservation Society. <i>Cost: No charge to attend. Order and pay for food and drinks individually. Seating is lounge style. For dining with traditional seating, arrive early to eat in the dining room prior to the 6:30 p.m. presentation start time in the lounge. Advance registration requested.</i></p>
<p>APRIL 21 TUESDAY</p>	<p>Nature Board Games 5:00 to 8:00 p.m. For adults and teens <i>See description for April 7.</i></p>
<p>APRIL 25 SATURDAY 10:00 a.m. to 3:00 p.m. For all ages</p>	<p>Holderness Celebrates Earth Day This year is the 50th Anniversary of Earth Day. Holderness Free Library, Holderness Recreation Department, Squam Lakes Association, Squam Lakes Conservation Society, and Squam Lakes Natural Science Center teamed up to host a town wide celebration and give back to the planet that sustains us. Events include a roadside trash pickup, a plant-based, zero-waste cookout, upcycled craft stations, climate action info tables, and Earth Heroes – a live animal program by the Science Center. Bike, walk, or rideshare to the Town Gazebo (behind the Holderness Post Office) to join in the festivities. <i>Cost: No charge to attend. Advance registration required. Register online at squamlakes.org or call Squam Lakes Association at 603-968-7336.</i></p>

MAY

<p>MAY 5 TUESDAY</p>	<p>Nature Board Games 5:00 to 8:00 p.m. For adults and teens <i>See description for April 7.</i></p>
<p>MAY 9 SATURDAY 9:30 a.m. to 5:00 p.m. For all ages</p>	<p>New Hampshire Day \$5 admission for New Hampshire residents. Live animals presentations at 11:00 a.m., 1:00 p.m., and 3:00 p.m. <i>Sponsored by:</i> </p>

MAY CONTINUED

<p>MAY 14 THURSDAY 10:00 to 11:30 a.m. For adults and teens</p>	<p>Invasive Species Removal Work Days Learn to how to identify and remove invasive plant species. Begin with a brief introduction to an invasive species and then go onto the Science Center grounds to learn and practice techniques for removing that species from an area. Learn skills you can apply to your own property. Refreshments provided to wrap up our work sessions. Wear long pants and sturdy shoes. Bring work gloves, water, insect repellent, and sunscreen. <i>Cost: No charge but reservations are required.</i></p>
<p>MAY 17 SUNDAY 10:00 to 11:30 a.m. For families</p>	<p>Vernal Pool Exploration Spring is an exciting time to be out and about. It's the time when vernal pools come to life. Venture to two different vernal pools at the Science Center to learn about the animals dependent on these predator-free, ephemeral pools. Waterproof boots are highly recommended. This program requires walking off trail through uneven and rough terrain. <i>Cost: \$9/member; \$11/non-member</i></p>
<p>MAY 19 TUESDAY</p>	<p>Nature Board Games 5:00 to 8:00 p.m. For adults and teens <i>See description for April 7.</i></p>
<p>MAY 28 THURSDAY</p>	<p>Invasive Species Removal Work Day 10:00 to 11:30 a.m. For adults and teens <i>See description for May 14.</i></p>
<p>MAY 30 SATURDAY 9:00 a.m. to 12:00 p.m. For all ages</p>	<p>Kirkwood Gardens Day Gain inspiration from Kirkwood Gardens and find beautiful plants for your own. Purchase fine perennials from a prestigious New England nursery, Kirkwood Gardens, and private gardens. Bid on desirable plants and garden items in the Silent Auction, browse craft vendors, and find treasures at the tag sale. Delicious beverages and baked goods for sale. All proceeds benefit Kirkwood Gardens at Squam Lakes Natural Science Center, est. 1995. Kirkwood Gardens and parking are located on Route 3 in Holderness (north of Route 113). <i>Cost: free and open to the public</i> <i>Sponsored by :</i> </p>

JUNE

<p>JUNE 2 TUESDAY 7:00 p.m. For adults</p>	<p>New Hampshire's Rare Butterflies Heidi Holman of New Hampshire Fish and Game will introduce us to some of New Hampshire's butterfly species, a few of which are found only in the Granite State. These unique butterflies inhabit places as diverse as the White Mountain's alpine zone to Concord's pine barrens. Find out what you can do to help protect butterflies in your own backyard. <i>Cost: No charge but reservations are required.</i></p>
<p>JUNE 5 FRIDAY 7:00 to 10:00 a.m. For adults</p>	<p>Spring Birding Join Squam Lakes Natural Science Center in partnership with Squam Lakes Conservation Society for these beginning bird ID programs. Under the guidance of Iain MacLeod, participants will seek out the huge variety of birds that fill our woods, meadows, and wetlands each spring. Explore a variety of habitats in the Lakes Region looking for birds as you learn identification by sight and sound. <i>Cost per program: \$12/SLNSC or SLCS member; \$15/non-member</i></p>
<p>JUNE 5 FRIDAY</p>	<p>Invasive Species Removal Work Day 10:00 to 11:30 a.m. For adults and teens <i>See description for May 14.</i></p>
<p>JUNE 6 SATURDAY 5:30 to 9:30 a.m. For adults and teens</p>	<p>Annual Breeding Bird Census Session 1 - 5:30 to 8:00 a.m. Session 2 - 8:00 to 9:30 a.m. For over three decades, we've surveyed bird species nesting on the Science Center campus in early June. This census is done primarily by ear, listening for the territorial songs of male birds, indicating probable nesting. This is a great opportunity to hone your bird song identification skills. The early session (5:30 a.m.) involves canvassing two forested zones, including Mt. Fayal. The later session (8:00 a.m.) covers fields, exhibit areas, and Kirkwood Gardens. Binoculars are available or bring your own. <i>Cost: No charge but reservations are required.</i></p>
<p>JUNE 12 FRIDAY</p>	<p>Spring Birding 7:00 to 10:00 a.m. For adults <i>See description for June 5.</i></p>
<p>JUNE 12 FRIDAY</p>	<p>Invasive Species Removal Work Day 10:00 to 11:30 a.m. For adults and teens <i>See description for May 14.</i></p>
<p>JUNE 19 FRIDAY</p>	<p>Spring Birding 7:00 to 10:00 a.m. For adults <i>See description for June 5.</i></p>
<p>JUNE 26 FRIDAY</p>	<p>Spring Birding 7:00 to 10:00 a.m. For adults <i>See description for June 5.</i></p>

SQUAM LAKE CRUISES

Bald Eagle Adventure

May 12 to June 16 - Tuesdays at 3:00 p.m.

A naturalist discusses the recovery of Bald Eagles in the state and the route focuses on viewing the Bald Eagles that nest on Squam Lake.

Discover Squam

May 16 to June 30 - Daily at 1:00 p.m.

July 1 to August 30 - Daily at 11:00 a.m., 1:00 p.m., 3:00 p.m.

A general overview of Squam Lake from natural history and wildlife to culture and people.

Loon Cruise

June 5, 12, 19 - Fridays at 3:00 p.m. | June 22 to August 31 - Mondays and Fridays at 3:00 p.m.

See Common Loons as a Science Center naturalist and Loon Preservation Committee biologist discuss loon conservation, biology, and monitoring. The cruise route maximizes loon observations and changes weekly.

Cruise with a Naturalist

July 1 to August 27 - Tuesdays, Wednesdays, Thursdays at 3:30 p.m.

See wildlife on every memorable trip with a Science Center naturalist. Cruise route changes to maximize wildlife observations.

Lake Explorers Family Cruise

July 21 - August 11 - Tuesdays at 10:00 a.m. | For ages 5+ | The Family Cruise is 2 hours long.

Great for kids! Use binoculars, search for loons, collect microscopic life, watch live fish, participate in a scavenger hunt, and test navigational skills.



"A must see experience."



Squam Lake Cruise Rates:

Adult: \$27; Senior (65+): \$25; Youth (up to age 15): \$23
Discounts available for combination trail and cruise tickets.

Members receive a \$4 discount per person.

Not recommended for children under age 3.

Dinner and Sunset Cruise

Thursdays, July 23 and 30 | Dinner at 4:30 p.m. | Cruise departs at 6:30 p.m.

Enjoy a delicious, fixed-price dinner at Walter's Basin Restaurant, followed by a sunset cruise. Learn about the natural history, wildlife, and people of Squam Lake as dusk falls.

Cost: \$55.00 per person; not recommended for children

Squam Lake Charters

Host your own cocktail party or other unique gathering on Squam Lake.

Transport wedding guests to Church Island. Charter a private cruise customized to fit your occasion. Five canopied pontoon boats and experienced tour guides are ready to help with your special outing.

Contact Sharon Warga at 603-968-7194 or sharon.warga@nhnature.org for reservations. \$225 per hour per boat

"We LOVED the boat tour and would do it again...and again."

"Nice relaxing way to spend an afternoon, it is a beautiful lake. The boat drivers are always very friendly and knowledgeable."



24

EAGLES FLEDGED ON SQUAM SINCE 2003

12

LOON PAIRS ON SQUAM IN 2019

OCCASIONAL OTHER WILDLIFE SIGHTINGS

BEAVER
BLACK BEAR
GREAT BLUE HERON

KINGFISHER
MALLARD
MOOSE

MUSKRAT
OSPREY
WHITE-TAILED DEER

Conveniently purchase cruise tickets online at nhnature.org

GREEN TIP: EARTH DAY 2020



This year marks the 50th Anniversary of Earth Day, which will be celebrated around the world to show support for environmental protection. The first Earth Day in 1970 saw 20 million Americans join a new environmental movement. The Environmental Protection Agency was created and the Clean Water Act, Marine Protection Act, Endangered Species Act, and Safe Drinking Water Act became federal law soon after. Concern for the environment and the planet continues to grow, but we all know there are many challenges ahead, including climate change. This year, Earth Day will educate and mobilize more than one billion people.

You can help too! Holderness Free Library, Holderness Recreation Department, Squam Lakes Association, Squam Lakes Conservation Society, and the Science Center are hosting an Earth Day event in Holderness on Saturday, April 25. See details at nhnature.org/programs/calendar.php. Advance registration is required. Register online at squamlakes.org or call 603-968-7336.

If you can't be in Holderness, find other events at the Earth Day Network, <https://www.earthday.org/earth-day-50th-anniversary/>



Save the Date

2020 Summer Splash

Winged Wonders

Saturday, July 25
at the Science Center



SUMMER GUIDED DISCOVERIES DAY CAMPS



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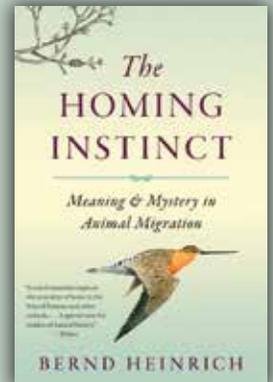
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THE HOWLING COYOTE GIFT SHOP

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Featuring books by Bernd Heinrich. Heinrich is an acclaimed scientist and the author of numerous books about nature and biology. He has also made contributions to the study of insect physiology and behavior and bird behavior. His books include *A Naturalist at Large*, *One Bird at a Time*, *The Homing Instinct*, *Live Everlasting*, and *White Feathers*. He resides in Maine.



2020 VOLUNTEER TRAINING

Docent Training: June 17 to 19, 3:00 to 8:00 p.m.; June 20, 9:00 a.m. to 2:00 p.m.

First Guide Training: June 24 to 26, 10:30 a.m. to 4:00 p.m.; June 29 and July 2, 9:00 a.m. to 1:00 p.m.

Volunteer Instructor Training: April 20, 10:00 a.m. to 3:00 p.m.

Lake Education Assistant Training: April 28, 10:00 a.m. to 12:00 p.m.

School Group Greeter Training: 10:00 to 11:30 a.m.

Check for details at nhnature.org/who/volunteer.php.

Save the date for Celebrate Volunteers Day on July 16!

OPENING A WINDOW TO THE NATURAL WORLD

Giving Through Donor Advised Funds



Increasingly, many donors find giving through Donor Advised Funds (DAF) to be an easy, flexible, method to offer philanthropic support to the Science Center's various programs and campaigns. DAFs are a popular way for an organization, family, or individual to make charitable gifts and manage their philanthropic goals. They are administered by a third party, such as a community foundation or financial institution. The donor makes an irrevocable gift of cash, stock, or other assets to a DAF and receives an immediate tax deduction, in accordance with applicable law.

A DAF allows donors to recommend grants to charities of their choice - such as the Science Center. The DAF sponsor handles all record keeping, disbursements, and tax receipts. Additionally,

DAFs provide donors an easy way to donate long-term appreciated securities, eliminating capital gains taxes.

The Science Center is grateful for all donations received from DAFs. As with a retirement plan or life insurance policy, donors can also choose to have any remaining DAF funds distributed to the Science Center after their lifetime by naming Squam Lakes Natural Science Center as a beneficiary of all or a portion of remaining funds.

The Science Center does not directly manage DAFs or give individual tax advice; please consult your professional tax advisor for detailed information on Donor Advised Funds.

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 12 or janet.robertson@nhnature.org.

DO SOMETHING WILD...SPONSOR A SPECIES!

The animals at Squam Lakes Natural Science Center serve as ambassadors for their species, here for the purpose of teaching about New Hampshire's natural world. The cost of caring for wildlife is considerable. You can help to provide food, health care, and housing for the animals - for your favorite feathered or furry species - through Sponsor A Species. It's a unique way to learn about a particular species and help us to care for our live animals.

See sponsorship levels and make your sponsorship gift online at www.nhnature.org/support/sponsor_species.php.



WISH LIST

- For Staff Professional Development* - airline miles
- For Visitor Services* - small glass front refrigerator
- For Animal Care* - electric utility vehicle, natural sisal rope, large jet sled
- For Office* - large bulletin board
- For Facilities* - loppers and pruners for invasive species removal
- For Blue Heron School* - potted houseplants, baking pans, cookie sheets, cooling racks
- For Kirkwood Gardens* - garden wagons or carts, garden items for treasures sale such as decorative pots, garden art, tools



Become a member of the Naturalist's Legacy Society. Visit nhnature.org/support

These generous donors made tribute gifts, which were received between October 1 and December 31, 2019:

In memory of Anne and James Alvord
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In memory of William Bierlin
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Sally Thebaud

In honor of Betsy and Bruce Whitmore
Anonymous

TRAIL'S END

STRATEGIC PLANNING



The five years since our last strategic plan have certainly been eventful ones here at the Science Center. We've introduced some wonderful new exhibits like the Gordon Children's Playscape and the Water Matters Pavilion. We opened the award winning new Blue Heron School building. We purchased land along the channel and opened our much more accessible Lake Cruise Headquarters. We partnered with a local business to find a sustainable long-term use for the Holderness Inn. And along with all this activity, we've also welcomed record setting numbers of visitors.

The last time we went through the strategic planning process some of the things we prioritized were environmental education, expansion of the Blue Heron program, improving support for staff and volunteers, enhancing the quality of our visitor experience, increasing programming for adults, continuing our commitment to green practices, and improving fiscal sustainability.

All of this then begs the question of what our priorities should be for the next five years. Should we look inward and focus heavily on our trail, our visitors, and their experiences? Or should we look outward with the goal of becoming larger scale advocates for environmental and climate education? As school funding for experiential science learning continues to decline, how do we engage with kids and schools? Should we further expand our engagement of and programming for adults? Are there ways to improve and enhance our lake cruise experience, while still being respectful of our neighbors on the lake? What are the best steps to take to reduce our own carbon footprint? What more can we do to help our visitors leave with ideas for better sustainability in their own lives?

While our volunteers, staff, and board all have opinions, we want to make sure we hear from the broadest audience possible. We would love to hear opinions from our members and donors. What do you think our priorities should be? What are we doing well? Where would you like to see improvements? Are there topics we aren't covering you think should be included?

We've set up a special email address just for your comments, strategicplan@nhnature.org. If you have ideas, please share them. If you'd like to meet in person, just mention it in your email and we will be happy to meet. Thank you in advance for your thoughts and suggestions.

Trail's End is written by Justin Van Etten, Chair of Squam Lakes Natural Science Center's Board of Trustees.

MUSSELS *continued from page 1*

were decimated by massive collections for pearls. Pearls are present only in a minority of individuals so waste was rampant. In addition, during the 1800s into the 1900s there was demand for mussel shells in a unique industry. With their shiny interiors, shells were manufactured into the first fancy buttons. Now buttons are predominately plastic. How about freshwater mussels as a food source? Although Native Americans harvested them to eat, that practice is not a healthy activity today nor is it a particularly tasty one.

Many challenges for today's mussels relate directly to habitat – development along river shorelines, dams which block movement of host fish and change the natural flow of rivers, and of course, water pollution. Mussels take filtering water to an Olympic level. One mussel can filter up to an amazing 10 gallons of water each day as it feeds on the microscopic life. As filter feeders, fresh water mussels also take in pollutants, which accumulate in their tissues. Damaging substances for mussels and mussel consumers include fertilizer from farm fields, oil residues, pesticides, and soil runoff from road construction and development. In New Hampshire, the Connecticut River system is the state's stronghold for mussels.

Chances are, if you spot freshwater mussels, you have found eastern elliptios. These are the common mussels you spot in lakes and rivers. The elliptio was the one highlighted as a wildlife meal by the boat dock at the beginning of this mussel investigation. You can spot adults attached to the rocks in shallow water. Their tiny glochidia hitchhike on common fish like perch, bass, and sunfish. Whether abundant or endangered, freshwater mussels need our attention and *muscles* to help them move toward a safe future.

MUSSEL QUIZ

1. Mussels feed on _____
A. microscopic creatures; B. small fish;
C. aquatic plants
2. How much water can one mussel filter in a day?
A. Two quarts; B. Three gallons; C. Ten gallons
3. Mussel larvae (glochidia) are released into the water and attach to _____
A. fish gills; B. rough rocks; C. aquatic plants
4. What is a challenge to mussel health and reproduction?
A. River shoreline development; B. Soil erosion; C. Use of farm fertilizers near waterways; D. All of the above
5. What is a common type of mussel seen in New Hampshire lakes and rivers?

Answers:

1. A | 2. C | 3. A | 4. D | 5. eastern elliptio



Freshwater mussel feeding.
flickr/Gary Peebles USFWS, CC BY 2.0



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