



TRACKS & TRAILS

Winter 2016-2017 | Vol. 45, No. 4

SUBMERGED IN THE SUBNIVEAN

By Margaret Gillespie, Illustrations by Carolyn Murah

Exploring “Down Under” doesn’t necessarily mean a trip to Australia. There is drama taking place right here in New England in the subnivean – the space under the snowpack, just above the ground. It may comprise only a few inches but becomes a refuge for small creatures as well as their predators. Translated from Latin, “sub” means under, while “nivean” refers to snow.

What is it like in the subnivean? I wouldn’t go as far as to say temperatures are toasty but they can be greatly different from air temperatures and wind chill above the snow’s surface. With the warmth from the Earth radiating upwards but trapped by a blanket of snow, the subnivean can maintain a relatively constant 32 degrees. A snow depth of eight inches or more keeps temperatures relatively stable. The snow in the subnivean can be transformed into loose ice crystals by the warmth, creating a medium that can be penetrated by tunneling animals. Some snow, resting on top of frozen grass and small understory forest plants, leaves spaces for extensive passageways.

Let’s find out more about the creatures that inhabit this underworld. The primary characters are mice, voles, and the occasional shrew. Meadow voles create an elaborate world of tunnels, punctuated with warm nests of dry grasses and storage spots for seeds. Voles also forage unseen on tree bark, roots, and bulbs. In the forest, red-backed voles take over the territory. White-footed mice show us the most visible evidence of their presence in midwinter. Their tiny four-footed tracks leave stories in the snow overnight when they emerge from a hole in the snow, scamper under a fallen branch, and plunge under the snow again. These

openings in the snow serve another purpose besides exits for above snow forays. Carbon dioxide from the breath of little creatures, along with the activity of microorganisms, can accumulate in the underworld. Holes provide vents for air to be refreshed with oxygen.

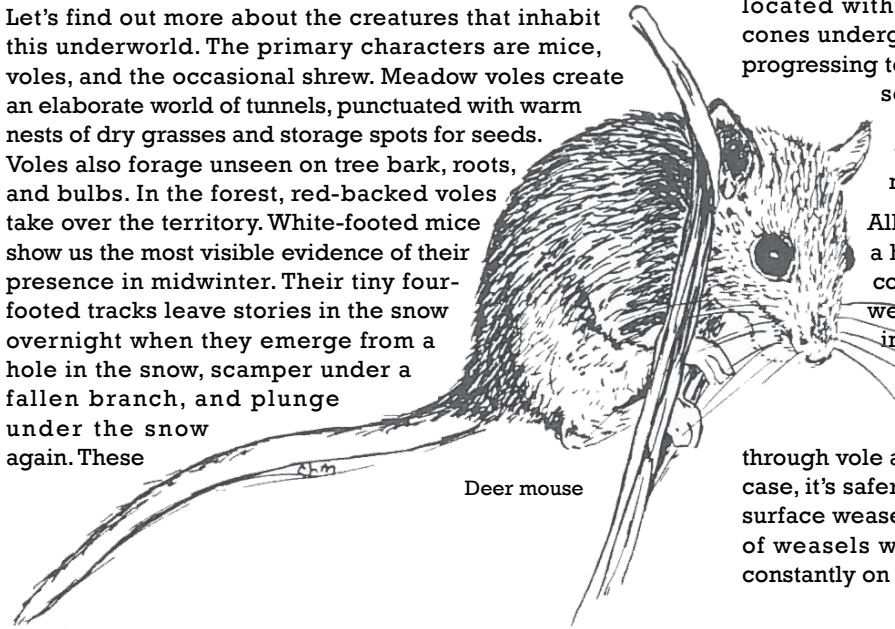


Meadow vole

One of the larger dwellers, red squirrels, use the subnivean as a pantry. While pine and spruce cones are still green with their seeds locked inside, red squirrels harvest and hoard them in underground middens. Middens are spots centrally located within their forest territory where squirrels pack cones underground. Cool, moist conditions keep cones from progressing to the next step – drying, opening, and dispersing seeds. Middens are easy to spot because when squirrels dig up cones for a feast, bracts from the cones are discarded and accumulate in ever mounting piles.

All is not secure in the subnivean. This haven is also a hotspot for predators, at least for those that have conquered the underworld challenges. Short-tailed weasels, or ermine as they are sometimes known in winter, are predators that pursue the subnivean crowd on their own turf. With long, slender bodies, they travel in any space their heads will pass through. That means they race swiftly through vole and mice tunnels in search of the residents. In any case, it’s safer for weasels to be under the snow. On the snow’s surface weasels are targets for owls. The white fur camouflage of weasels works best if they remain still but weasels are constantly on the move while hunting. A handy trick – the black

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Deer mouse

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Happy Holidays from
everyone at

**SQUAM LAKES
NATURAL SCIENCE CENTER**

FORGING TRAILS

A YEAR OF MILESTONES



The Science Center's 50th anniversary has certainly been a time of reflection and celebration. It has been enlightening and entertaining to look back at all that's happened in the last five decades. It's reminded us of all the people and all the events that helped shape and guide this wonderful place.

2016 has certainly been a milestone. We had a banner year with record breaking trail attendance in every month of the season and a total which topped the 60,000 mark for the first time. The Water Matters Pavilion and the Gordon Interactive Playscape have exceeded all our expectations and are proving to be very popular additions to the trail experience.

In September, we achieved accreditation through the Association of Zoos and Aquariums (AZA) for our third consecutive five-year term. In July, the Board accepted our new Strategic Plan (www.nhnature.org/who), which lays out an exciting and challenging vision for the next five years. One important commitment we made in the plan is to double the capacity of the Blue Heron School, which is full and has been turning away families for the past three years. A task force is busy exploring options for a new school building and will make a recommendation to the Board in November. Those discussions quickly evolved into a long-range expansion plan for the whole campus with exciting new attractions and enhancements to keep us busy for at least the next decade. Stay tuned.

Another exciting new development is related to our Lake Education programs and tours. In July, we closed on the purchase of a small property on Route 113 across from the Science Center on the Squam channel. Over the winter we will completely refurbish the property and create a permanent welcome center for our Lake Education programs. If all goes to plan, all our lake programs and tours will start and end there beginning next May... again, stay tuned.

This year was also a milestone for me. I can't believe it, but I marked my tenth year as your Executive Director. I am so proud of all that this organization has achieved in the last decade (and the previous four). I can't wait to see what the next years have in store.

Iain MacLeod, Executive Director
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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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STAFF PROFILE

BRENDA ERLER



What's your first memory of the natural world?

My youngest years were spent in the "sticks" of southern Ohio. Both of my parents were farm kids who couldn't wait to get off the farm, while my fondest wish was to be a farmer. Our house sat on a piece of land carved out of my grandparents' old farm.

The farm's new owner, Mr. Pence,

gave me free rein of the barns, outbuildings, cornfields, pastures, and woods that led down to Wolf Creek. I was rarely inside. I was constantly exploring, tree climbing, vine-swinging, wading, and searching for wildlife.

How did you decide to go into a career involving nature?

When my parents moved our family into suburbia, I underwent some pretty serious outdoor withdrawal. My salvation was the Aullwood Audubon Nature Center (one of the nation's first nature centers) that was about two miles from my new home. I spent every moment I could over there, first as an Audubon Explorer and then as part of the Audubon Teenage Action Council. I think I knew from fourth grade on that I wanted to work at a nature center.

What positions have you held at the Center?

Dave started at the Science Center six months before I moved to New Hampshire. I was finishing an internship at Glen Helen Outdoor Education Center in Yellow

Springs, Ohio. Once I got to Holderness in 1980, I began volunteering doing occasional school field trip programs and organizing education supplies. Soon I was hired as a naturalist for school programs and summer natural adventures, including the Future Naturalist program. Because the Science Center was a fledgling and somewhat struggling organization at the time, everyone had to wear many hats. Besides doing programming, I served as the office manager and volunteer coordinator for several years. I worked maintenance for a time, mowing, and cleaning classrooms and bathrooms. Eventually I settled into a position doing exhibit work – writing interpretation, brainstorming, sign-making, and contracting with part-time staff to manufacture exhibits. However, my favorite hat (by far) is that of Kirkwood Gardens coordinator. Mr. Pence (the farmer next door) got me off to an early love of gardening by letting me "help" him plant his vegetable garden every year. I was hooked! I love the gardens, love my volunteer crew, and am very proud of the tremendous community resource the garden has become.

What do you like the most about working here?

The fun, hard-working, and committed staff and volunteers make this a great place to be. Every day is a new adventure!

Gardens and Exhibits Assistant Brenda Erler is married to Senior Naturalist Dave Erler. Brenda received a B.A. in Biology with an Education minor at Anderson University in Anderson, Indiana. Brenda and Dave live in New Hampton and have two grown daughters.

NEWSBRIEFS

- Halloween Hoot 'N Howl was held on Saturday, October 16 when the weather was clear and cold with a beautiful full moon to enjoy too. More than 380 people attended thanks to help from many volunteers and staff. Volunteers from Hypertherm put up decorations and carved pumpkins donated by Moulton Farm and staff members. Guests enjoyed snacks and candy provided by Dunkin Donuts, Plymouth; E.M. Heath, Holderness; Hannaford Supermarket, Meredith; Shaw's, Gilford; Tootsie Roll Industries; and many talented volunteer bakers.
- The readers of *Parenting New Hampshire* magazine again voted for the Science Center as Family Favorite Environmental and Educational Center in their annual Family Favorite Awards. The Science Center also won this award in 2011, 2013, 2014, and 2015.
- Artist Cheryl Johnson began donating her lovely pen and ink illustrations for *Tracks & Trails* ten years ago. She has now put away her pen and taken up a water color brush at her business, Cheryl Johnson Art. We will miss seeing her distinctive artwork and appreciate her years of support. The cover story drawings for this issue are by former intern and current volunteer Carolyn Murah, made when she was an intern in 1986.
- Education Director Audrey Eisenhauer and Naturalist Jeremy Phillips attended the NH Science Teachers Association fall conference in November and presented a field trip introducing teachers to the Science Center's various school programs.
- Senior Naturalist Dave Erler presented "The Truth About Bats" at Outreach Live: New England in September in Framingham, Massachusetts. Outreach Live: New England is an event where outreach educators from around New England flock to a school and present their outreach programs for all to see. It's a chance for educators to prototype new programs, seek feedback or advice, and just check out what's happening in our science outreach community. Also presenting were The Caterpillar Lab, The Museum of Science, Mystic Aquarium, Science on the Street, New England Aquarium, Springfield Museums, and Kiting USA.
- Naturalist Eric D'Aleo attended the Northern Woodlands Writers Conference in Fairlee, Vermont in September. Organized by *Northern Woodlands* magazine, the conference provided an opportunity for people interested in education, writing, or natural history to meet and learn. Presentations covered natural history topics such as golden eagles in the northern woodlands and scent marking by wildlife, as well as writing techniques on story pitches and sense of place.

KIRKWOOD GARDENS PLANT SPOTLIGHT

By Brenda Erler

Holly

Ilex meserveae 'Blue Princess'

Culture: Prefers loose, slightly acidic, well-drained soil in a protected location, full sun to part shade.

Bloom: early summer, inconspicuous blossoms.

Height: 7 feet tall and wide, but may be pruned each winter to control its size.

This beautiful evergreen shrub can be used for hedges, screens, or as a specimen plant. The bright red berries are attractive to birds, other wildlife, and to humans for use in Christmas decorations. However, if you want berries, you must plant one male shrub (*Ilex meserveae 'Blue Prince'*) for every 2 to 3 female plants.

Kirkwood location: upper garden next to pipe fountain, beside Inn porch on the driveway side, and on both sides of the stone steps.



Wikimedia - famartin

Witch Hazel

Hamamelis x intermedia 'Arnold Promise'

Culture: Prefers organically rich, acidic, well-drained soil in full sun to part shade. Prune after bloom to control shape and size.

Bloom: February to March.

Height: 12 to 15 feet tall and wide, vase-shaped.

This beautiful witch hazel variety has spidery, sweetly fragrant flowers in mid-winter that bring a bit of joy to anxious gardeners. Use this native shrub in borders, hedges, or woodland gardens. Tolerates deer. Lovely fall foliage.

Kirkwood location: lower garden on bank to the left of the pergola.



Credit Gary Robertson



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

A LOOK BACK...

CELEBRATING 50 Years 1966-2016



Naturalist Margaret Gillespie shows off a snake to young visitors in the 1980s.



LEFT: Construction of the Celebrate Birds Exhibit in 1996.



ABOVE: 1995 - Volunteers helped install plantings at Kirkwood Gardens under the direction of Sunny Kirkwood (center).

NATURALIST'S CORNER

EVERGREENS - KINGS OF WINTER

By Jeremy Phillips



Spruce and fir at the top of Mount Chocorua.

Winter is the time of the great conifer trees. In our holiday traditions we use fir and pine to decorate our homes. Holiday wreaths show up on our doors and the scent of these trees can take us back to times of cozy homes and wood fires.

When deciduous trees are brown and bare the green of the conifers noticeably stands out against the background of white snow. We can track the bounding prints of red squirrels from tree to tree as they hop to the bases of these fortified trees.

Deciduous trees shut down for the winter. Their abscission cells close off energy flow and leaves are pushed away. This saves the trees energy during the low light winter season and freezing temperatures. The broad deciduous leaf is far too vulnerable to survive winter conditions. If

deciduous trees kept their leaves they would face damage from snowfall and icy temperatures repeatedly. They would have to make new leaves continuously, which would cost too much energy. Instead, they produce hardy buds that will become new leaves in the spring. Each bud is unique and is a great way to identify trees in winter.

The evergreens are the true kings of winter. Many areas in New Hampshire have places where the large eastern hemlock (*Tsuga canadensis*) and enormous white pines (*Pinus strobes*) dominate. They, and other evergreens, have small leaves able to shed snow easily. Imagine the complications a deciduous tree would have with those large leaves catching all that snow. Look closely at evergreen needles and notice the waxy coating over them, which protects the tree against many harsh conditions the tree may face like drought, cold, and wind. Holding those needles through winter may also help evergreen trees take advantage of winter thaws.

These adaptations allow the spectacular conifer trees to grow in many of the harshest areas on our planet. From the oceans to the mountains, and in some of the driest and windiest places we can find conifers. In our area there are many types of conifers including spruce, fir, and pine. Red spruce (*Picea rubens*) dominates our spruce fir forests. White cedar (*Juniperus virginiana*) is found around old home sites. White pine is one of our more adaptable trees and lives in many different places.

So, as you are looking out your window on a cold snowy day noticing the evergreens through all the brown and gray trees, be sure to enjoy the finer details. These evergreen trees would not be around in such a prominent manner if it were not for their amazing adaptations. 'Tis the season to be juniper, fir, pine, and holly!



The contrast of deciduous and coniferous trees in winter.

FROM THE HERON'S NEST

By Laura Mammarelli



Children in the kindergarten group at Blue Heron School stay every day until 3:30 p.m., enjoying a wide variety of activities, usually outdoors. On this autumn day they hiked up Mount Fayal for a snack and a view from the top.

Blue Heron School, a nature-based Montessori school for children ages three to six, operates Monday through Friday, 8:30 a.m. to 1:00 p.m., or 8:30 a.m. to 3:30 p.m., September to June. For more information please visit www.nhnature.org/programs/blue_heron_school.php or contact Laura Mammarelli, Blue Heron School Director, at 603-968-7194 x 40 or blueheron@nhnature.org.



UPCOMING 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 may be accommodated if space is available.

Winter Bird Banding Open House

Saturday, January 7, 9:00 a.m. to 12:00 p.m.

For all ages

For over 30 years we have started the New Year off with a bird banding open house. For tracking purposes, the US Fish & Wildlife Service officially designates that all birds become a year older on January 1. Come celebrate their new age status and the New Year with us. Find out all about banding, and, with luck, help band and release some hardy feathered creatures. Children must be accompanied by an adult.

No charge to attend. Reservations are required.



New Hampshire Young Birders Club
www.nhyoungbirders.org

NATURAL ADVENTURES SERIES

Nature Play Time

Wednesdays: January 11, February 8, March 8
10:00 to 11:00 a.m.

Ages 2 and 3

Join us to explore the natural world in winter with your little one! We will investigate ice and snow and experience winter with our five senses. Come once or every session. Program will be held outdoors; please dress in warm layers with snow pants, hats, gloves, jackets, and snow boots. An adult must participate with children at no additional cost.

Cost per session: \$5/member child; \$7/non-member child

SAVE THE DATE

Summer Splash

Saturday, July 22, 2017

Dinner and dancing

WILD WINTER WEEKENDS

WILD WINTER WALKS: GUIDED TOURS OF THE LIVE ANIMAL TRAIL

For adults and families with children ages 6 and up

Have you ever wondered what happens to the animals at the Science Center during the winter? Most of them stay in the same place, just as they would in the wild. Join a staff naturalist for a guided walk on the live animal exhibit trail to see our animal ambassadors dressed in their winter coats and discuss how these native animals are well-adapted for winter in New Hampshire. If needed, snowshoes are available at no extra cost or bring your own. Children must be accompanied by an adult. Dress to be outdoors with snow boots, hats, gloves, and warm layers.

*Cost: \$8/member, \$10/non-member**

Saturday, January 7
1:00 to 3:00 p.m.

Sunday, January 29
1:00 to 3:00 p.m.

Sunday, February 26
1:00 to 3:00 p.m.

Saturday, January 14
10:00 a.m. to 12:00 p.m.

Saturday, February 4*
1:00 to 3:00 p.m.

Saturday, March 4*
1:00 to 3:00 p.m.

Saturday, January 21*
1:00 to 3:00 p.m.

Saturday, February 18*
1:00 to 3:00 p.m.

Saturday, March 11
1:00 to 3:00 p.m.

Saturday, January 28
10:00 a.m. to 12:00 p.m.

Saturday, February 25
10:00 a.m. to 12:00 p.m.

WINTER BIRD BANDING

For all ages

Looking for a chance to see wild birds up close? Join us to find out why and how we capture, band, and release birds that gather at our winter feeding station. Children must be accompanied by an adult. Time will be spent indoors and outdoors; bring warm layers, hats, and gloves.

*Cost: \$8/member, \$10/non-member**

Saturday, January 21
10:00 a.m. to 12:00 p.m.

Saturday, February 4
10:00 a.m. to 12:00 p.m.

Saturday, February 18
10:00 a.m. to 12:00 p.m.

Saturday, March 4
10:00 a.m. to 12:00 p.m.

***MAKE A DAY OF IT!** Choose one of four dates and attend both a Wild Winter Walk and a Winter Bird Banding program. Bring your brown bag lunch for the time in between.
Advance Package Discount: \$11/member, \$15/non-member for both programs on the same day.

UPCOMING 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 may be accommodated if space is available.

WINTER SCHOOL VACATION WEEK

Animals in Winter

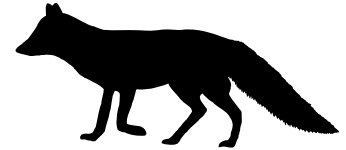
Wednesday, February 22, 10:00 to 11:00 a.m.

Wednesday, March 1, 1:00 to 2:00 p.m.

For families with children ages 4 and up

Winter means cold, ice, snow, and shorter days. How do New Hampshire animals survive these conditions? See three live animals up-close and find out about various adaptations they use to successfully cope with the stresses of winter. Children must be accompanied by an adult.

Cost: \$8/member; \$10/non-member



Winter Bird Banding

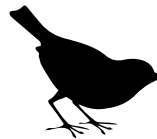
Thursday, February 23, 10:00 a.m. to 12:00 p.m.

Wednesday, March 1, 10:00 a.m. to 12:00 p.m.

For all ages

Looking for a chance to see wild birds up close? Join us to find out why and how we capture, band, and release birds that gather at our winter feeding station. Time will be spent indoors and outdoors; bring warm layers, hats, and gloves. Children must be accompanied by an adult.

Cost: \$8/member; \$10/non-member



Wild Winter Walks: Guided Tour of the Live Animal Trail

Friday, February 24, 10:00 a.m. to 12:00 p.m.

Friday, March 3, 10:00 a.m. to 12:00 p.m.

For adults and families with children ages 6 and up

Have you ever wondered what happens to the animals at the Science Center during the winter? Join us for these special school vacation week tours to find out! A staff naturalist will guide your walk on the live animal exhibit trail and discuss how native animals are well-adapted for winter in New Hampshire. After our tour we will warm up indoors with some hot chocolate and meet another of the Science Center's animal ambassadors. Be ready to snowshoe and see beautiful wild animals in their winter fur coats. If needed, snowshoes are available at no extra cost or bring your own. Children must be accompanied by an adult. Dress to be outdoors with snow boots, hats, gloves, and warm layers.

Cost: \$8/member; \$10/non-member



HOMESCHOOL SERIES

Get HAPI!

Ages 7 to 10

10:00 to 11:30 a.m.

Thursdays: December 1: Nocturnal Animals and their Adaptations;

January 5: Interrelationships; February 2: Populations; March 2: Habitats; April 6: 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.

All About Series

Ages 4 to 6

10:00 to 11:30 a.m.

Thursdays: December 1: Hawks; January 5: Skunks; February 2: Groundhogs; March 2: Owls; April 6: Turtles

Join us with your homeschooled 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.

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

An adult must participate with children at no additional cost. Each additional adult pays child fee. Program offerings are aligned with the New Hampshire Science Framework.



SCIENCE CENTER RECEIVES ASSOCIATION OF ZOOS AND AQUARIUMS ACCREDITATION

To be accredited, the Science Center underwent a thorough review to assure it has and will continue to meet rising standards, which include animal care and welfare, veterinary programs, conservation, education, and safety. AZA requires zoos and aquariums to successfully complete the rigorous accreditation process every five years in order to be members of the Association.

The accreditation process includes a detailed application and a meticulous on-site inspection by a team of trained zoo and aquariums professionals. The Science Center's on-site inspection took place in May. The inspecting team observed all aspects of operations, including animal care and welfare; keeper training; safety for visitors, staff, and animals; educational programs; conservation efforts; veterinary programs; financial stability; risk management; visitor services; and other areas. Science Center Executive Director Iain MacLeod attended a formal hearing of AZA's independent Accreditation Commission on September 8 in San Diego, where he found out the Science Center was granted accreditation for a third five-year period.

Squam Lakes Natural Science Center first received accreditation in 2006 and applied for and was granted accreditation again in 2011. We continue to be the only institution in northern New England to be accredited by the Association of Zoos and Aquariums.



GREEN TIP: LITTLE THINGS

Here are some easy ways you can go green at home. Little things do add up to make a difference.

- Turn off lights when you leave a room. Turn off the television if no one is watching it. Unplug electronic devices too since they consume energy when turned off but plugged in.
 - Check water taps for drips and fix them to stop wasting water. Turn off the water when brushing your teeth. Reduce shower time to conserve water and energy. Collect rainwater by putting a pail outside and use it to water garden and household plants.
 - Recycle clothes, toys, and other household goods you don't use and donate them to local organizations instead of throwing them in the trash.
 - Pack lunches to reduce trash. Use cloth napkins instead of paper, reusable containers instead of plastic bags or single-serving throwaways.
- What other ways can you think of to go green?

BUSINESSES INVEST IN EDUCATION: COMMUNITY SUPPORT IS STRONG

We are grateful to these businesses that provided support through memberships, sponsorships, and in-kind contributions of goods and services this year. These strong corporate investments help to make the Science Center's education programs possible.

2016 Business Members: Belknap Landscape Company, David M. Dolan Associates, Donovan Tree Experts, Foreco, Grappone Automotive, Holderness Harbor/Asquam Marina, Loon Mountain Resort, Malone, Dirubbo & Company, Meredith Village Savings Bank, Pike Industries, Rockywold-Deephaven Camps, and Van Berkum Nursery

2016 Business Sponsors: Bank of New Hampshire (formerly Community Guaranty Savings Bank), Belknap Landscape Company, Common Man Restaurant, Cross Insurance Agency, Dead River Company, Meredith Village Savings Bank, New Hampshire Electric Co-op Foundation, and Rockywold-Deephaven Camps

2016 Business In-kind Donors: Ambrose Brothers, Asquam Marina at Holderness Harbor, Aubuchon Hardware, Moultonboro, Belknap Landscape Company, Biederman's Deli/Chase Street Market, Bob's Shurfine Market, Bridgewater Power Company, Cackleberries Garden Center, Canterbury Plantation, Charles River Laboratories, Coca-Cola Bottling Co., Common Man Restaurant, Country Lady Bug Greenhouse, Dirty Worm Greenhouse, Donovan Tree Experts, Dunkin Donuts, Plymouth, Emma's Perennials, Eversource, Hannaford Supermarket, Meredith, E.M. Heath Supermarket, Holderness School, J. Jill, Cheryl Johnson Art, Keiver-Willard Lumber Corporation, Lakes Region Tent & Event, Little Church Theater, Marie's Catering, Megaprint, Meredith Village Savings Bank, Millican Nurseries, Moulton Farm, Mountain Laurel Flower & Gift Shop, Mount Washington Cog Railway, Owens Truck Farm, Petal Pushers Farm, Plymouth Animal Hospital, Precision Lumber, Shaw's Supermarket, Gilford, Spider Web Gardens, Squam Boat Livery, Squam Lakes Association, Squam Lake Marketplace, Stephen's Landscaping Professionals, TFG Aquarium Services, Tootsie Roll Industries, True Colors Print & Design, Van Berkum Nursery, Venture Print Unlimited, Wayside Farm and Great Northern Berries, and Wildlife Technologies.

2016 Business Volunteer Groups: AFL Global, Franklin Savings Bank, Genesis Behavioral Center, Hypertherm, J. Jill, Laconia Area Community Land Trust, Meredith Village Savings Bank, National Conservation Resource Center, New Hampton School, Parker Academy, Patrick Wolk Senior Project group, Pike Industries, Plymouth State University Volunteer Club, Stonyfield Farms, Tau Omega: PSU chapter, and Taylor Community.

Many more businesses generously supported the Golden Anniversary Gala on July 23. For a complete listing of those donors, please see page 9 of the fall 2016 *Tracks & Trails*, <http://www.nhnature.org/membership/newsletter.php>.

We gratefully acknowledge all business supporters. Please notify Development and Communications Director Janet Robertson if any listings are inaccurate or missing.

VOLUNTEER UPDATE

THANK YOU VOLUNTEERS!

The Science Center is proud of its amazing volunteer team! In 2015, 396 volunteers donated almost 9,600 hours of service. Volunteers help in many ways; sometimes as the public face of the Science Center and sometimes providing support behind the scenes. Volunteers greet guests, docents engage visitors in discussions about native wildlife, others assist with mailings and office tasks, several help educators with school programs as Volunteer Instructors and Education Assistants, some clean cages and prep food along with Animal Care staff, others help to maintain trails and exhibits, and many more help to take care of Kirkwood Gardens. In addition, volunteers spend time attending training sessions, assisting with special events, and taking part in social gatherings.

The annual Parsons Volunteer Recognition Dinner is one way the Science Center honors and celebrates its volunteers. This year the dinner was held at the Squam Lakes Association Fisher Family Barn in Holderness. Following a complimentary dinner catered by the Common Man, volunteers enjoyed dancing to traditional square dance music with caller Byron Ricker. Many thanks to the Common Man Family, Cross Insurance Agency, Meredith Village Savings Bank, and Squam Lakes Association for sponsoring this special occasion.

At the dinner, the Science Center Board of Trustees recognized a group of volunteers who donate their time to a specific area. Board Chair Ken Evans introduced Naturalist Jeremy Phillips to recognize Lake Education Assistants for their time and commitment assisting with lake education programs. Twenty-two volunteers were Lake Education Assistants in 2016: Janet Cocchiaro, Cathy Crane, Eileen Gosselin, Steve Hackett, Liz Hager, Susan Jayne, Dave Katz, Raianna Krahn-Burke, Don Margeson, Peggy Martin, Susan McKimens, Mary Ann McRae, Joe Oustucky, Diane Potter, Ken Ruhm, Nance Ruhm, Ed Rushbrook, Bob Snelling, Judy Sniffen, Lea Stewart, Juliana Twomey, and Betsy Whitmore. Thank you!

The President's Volunteer Service Awards is a national program honoring Americans who inspire others to volunteer through their example. Executive Director Iain MacLeod awarded pins and certificates to those volunteers eligible for the President's Volunteer Service Award for service in 2015. Jim Barry received the Silver Award for donating over 250 hours. Bronze Award recipients who donated between 100 and 250 hours were: Andy Eaton, Dennis Hager, Liz Hager, John McRae, Elaine Melquist, Denise Moulis, Andie Robinson, Ken Ruhm, Nance Ruhm, Lea Stewart, and Sydney Stewart.

"Volunteers Complete the Picture" in the Trailhead Gallery is updated annually to show cumulative hours of volunteer service. Volunteers who achieved 200 hours in 2015 were: Chelsea Divers, Amber Gordon, Ken Ruhm, and Bob Tuveson. Susan Kemp, David Martin, Elaine Melquist, and Marc White advanced to 500 hours. Andy Eaton, Joyce Hackett, Jan Welch, and Bruce Whitmore reached 1,000 or more hours.

This has been a banner year with record-breaking attendance and many events throughout the year. Our volunteer team, including our regular volunteers and group volunteers from schools and businesses, continue to be an important part of our success. Thank you for all you do!



Art Harriman, Bebe Wood, and Alex Ray at the September Potluck Lunch at Bebe's home.

VOLUNTEER GROUPS TACKLE INVASIVE PLANT SPECIES

Invasive plant species have taken strangleholds in some areas of the Science Center campus. This year, in an effort to slow the invasion and save trees several Invasive Species Workshops and group sessions were led by Master Gardener Liz Stevens. At least eleven pick-up truck loads of Asian Bittersweet were removed, freeing the Tamarack trees along the bus parking lot, a densely overgrown section near the Celebrating Songbirds Exhibit, and another area along the trail. Many volunteers from the community, nonprofit organizations, businesses, school groups, and Science Center volunteers energetically helped with this effort. The Science Center partnered with the Granite United Way Day of Caring on September 16 for one session. We plan to continue offering invasive species removal sessions in the future and hope you will join us.



OPENING A WINDOW TO THE NATURAL WORLD

Please Donate to the Annual Fund



The trails, classrooms, and exhibits were often busy with families, children, and school groups this year when more than 60,000 people visited the live animal exhibit trail from May 1 to November 1. No matter your age or when you visit, you can always have fun and learn something new at Squam Lakes Natural Science Center.

To maintain the excellence and educational joy of the hands-on visitor experience we ask you to make a donation to the Annual Fund. Your contributions help us to care for and feed our live animals, to maintain our buildings, trails, and exhibits, to provide support to our volunteers and staff, and to offer high quality natural science programs for all ages.

Your gift – no matter its size or how you choose to give it – will help us fulfill our mission to advance understanding of ecology by exploring New Hampshire’s natural world. And if your employer matches contributions, you might even double your gift. Your donation, large or small, is much needed and will be much appreciated.

If you have already made a gift this year, thank you. If not, please consider doing so now – or donate online at http://www.nhnature.org/support/annual_fund.php. Thank you for your support!

Opening a Window to the Natural World is written by Janet Robertson, Development and Communications Director. You may contact Janet at 603-968-7194 x 12 or janet.robertson@nhnature.org

WISH LIST

For Blue Heron School:

- shade screen
- Adirondack chairs

For Education program:

- 100 bricks

For Howling Coyote Gift Shop:

- 2 rugged child-sized chairs
- working umbrellas

For animal care:

- mini freezer
- golf cart

For Kirkwood Gardens Day sale:

anything from used tools to garden art

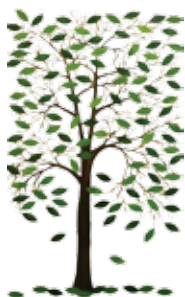
For Facilities:

- ladders
- leaf blower
- welder
- shop tools
- air compressor
- snow blower
- string trimmer
- water tank
- trailer

Naturalist’s Legacy Society

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

Learn more at http://www.nhnature.org/support/planned_giving.php



These generous donors made tribute gifts, which were received between July 1 and September 30, 2016:

In honor of Laurie and Susan Beeson
Peggy Heinisch and Mira Sheth

In memory of Betty Main Cannon
Linda Benham

In memory of Clara Fowler
George Carr

In memory of Donald Parsons
Natalie Parsons

In memory of Barbara Ridgely
Virginia Ridgely Howe

In honor of David and Joan Martin
Robert and Sally Schwabe

Planning on purchasing holiday gifts online? Support the Science Center while you shop at AmazonSmile. Amazon will donate 0.5% of the price of eligible AmazonSmile purchases to Squam Lakes Natural Science Center whenever you shop on AmazonSmile.

Go directly to <https://smile.amazon.com/ch/02-0271824> or select the Science Center as your charitable organization at <http://smile.amazon.com>



GIFTS OF NATURE

Gift Memberships: Memberships make a great gift! Purchase a gift membership online. Visit www.nhnature.org/membership/gift_membership.php

Sponsor A Species: Support the wildlife at the Science Center with a sponsorship. Visit www.nhnature.org/support/sponsor_species.php

Nearer to Nature: This book is a compilation of nature writing and photographs by Science Center Naturalist Margaret Gillespie. Available online at www.nhnature.org/50

50 Nature Activities for Kids: This book by Senior Naturalist Dave Erler includes 50 nature activities to enjoy with step-by-step instructions to get outside and explore the natural world together! Available online at www.nhnature.org/50



TRAIL'S END

REFLECTIONS



Wow! You know, I was just minding my own business, doing moderately respectable work as a Trustee and your Treasurer when I was asked to step up my game. My immediate reaction was to say yes, which as many of you know, has often led me to experience a mild case of over-commitmentitis. To say the least I am flattered and moved by our members' confidence in my abilities.

Later, as I reflected on the accomplishments of our last several Board Chairs and the much larger leadership task of this dynamic and growing organization, the responsibility began to feel overwhelming. To be sure, we have the best staff and Executive Director of any nonprofit in New England. We have a strong and committed Board of Trustees. You, our members and donors and volunteers, have never faltered in providing moral and financial support.

Still, my insecurity was only lessened when I realized that this task is not only supported by those of us here today. We all draw upon the collective work of each of those great people that came before us. I know and you know that they are still here, cheering us on, chewing on our ears, and providing all that past accumulated wisdom that whispers down the trail and through each of our exhibits and buildings. We won't do things exactly as they would have done. But we will do things with exactly the same spirit and commitment that was the foundation for all of their actions.

Let me end with a quote which gives me comfort that we can accomplish great things together in the future. I think it is particularly appropriate as we celebrate our 50th milestone and also as we challenge ourselves to write the next chapters in our history. My apologies to the author, Laurence Overmire who wrote a biographical record of Revolutionary War Captain John George Overmire. But I hope he will understand if I change a few words to fit within the context of this moment. I think you will recognize the changes. He said,

“Over the course of time, all these multitudes of ancestors, generations upon generations, have come down to this moment in time – to give birth to us! There has never been, nor will there ever be, another group like us. We carry the hopes and dreams of all those who have gone before. Hopes and dreams for a better Science Center. What will we do with our time here? How will we contribute to the ongoing story of Squam Lakes Natural Science Center?”

Our history created this place. And because of that history, our future is secure. It is with this knowledge that I totally accept the position of Board Chair. Thank you.

Trail's End is written by Ken Evans, Chair of Squam Lakes Natural Science Center's Board of Trustees. You may contact Ken at evanmead139@gmail.com.

SUBMERGED IN THE SUBNIVEAN *continued from page 1*

tip on weasels' tails often distracts hungry owls from focusing on their heads. With their exceptional hearing, owls, foxes, and coyotes can locate subnivean dwellers even from above the snowpack.

What if there is little or no snow over winter, which takes place along with exceptionally snowy winters, in the climate changes we are now experiencing? Clearly predators are at an advantage if prey is exposed but the challenges go beyond the obvious. Creatures like woolly bear caterpillars and wood frogs, adapted to survive winter by freezing, are stressed by multiple freeze and thaw cycles if they are not protected by a blanket of snow.

Ready for a good story? Spring is the perfect time to interpret underworld adventures. As snow begins to melt, visit a meadow or hayfield with a healthy grass cover. You may spot twisting vole tunnels still holding onto their icy roofs. With additional sunny days, you'll be able to part the grass and get a bird's eye view of a winter full of activities. More than wildlife can be captivated by this hidden haven.

SUBNIVEAN QUIZ

1. The word "subnivean" comes from Latin. When translated, what does it mean?
2. True or False? Red squirrels use the subnivean primarily for protection from weather.
3. What predator can chase prey along subnivean tunnels?
4. What are two creatures stressed by freezing and thawing during winters with minimal snow?
5. Name one predator that can hear animals in the subnivean from above the snowpack.

Answers:

1. Under snow 2. False. Red squirrels use the subnivean primarily for food storage. 3. Short-tailed weasel 4. Woolly bear caterpillar and wood frog 5. Owl, fox, or coyote

BLUE HERON SCHOOL



New Hampshire's first nature-based Montessori early learning center. Blue Heron School operates September to June, Monday through Friday, 8:30 a.m. to 1:00 p.m. or 8:30 a.m. to 3:30 p.m.

Contact us about enrollment opportunities for the 2017-2018 school year at blueheron@nhnature.org or 603-968-7194 x40.



WHERE, OH WHERE?

Do you know the location shown in the photo below? Send us your answer by emailing amanda.gillen@nhnature.org and you could win a Science Center hat!



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