



WINTER TRANSFORMATION

By Margaret Gillespie, Illustration by Cheryl Johnson

Imagine a retreat at the Appalachian Mountain Club's Joe Dodge Lodge in Pinkham Notch, nestled into the mountainside. Our staff gathered there quite a number of years ago in late fall. The setting is, of course, spectacular. Thrashing through thorny issues, we found ourselves mostly indoors. Eyes periodically glanced through windows, scanning the forest's rocky landscape, as yet snowless. Out of the blue, one of us spotted a tiny white acrobat with a black-tipped tail, zig-zagging around boulders, streaking across an open spot, then gone. Everyone leapt up and crowded to the window to see it. I'm certain we resolved some weighty matters at this retreat, but what do we remember best? Yes, that short-tailed weasel which brought us gracefully back to the core of the Science Center – experiencing the natural world first-hand.

You might wonder why this weasel was winter white, in tune with the date but not the lack of snow. In summer, weasels are brown along heads and backs, with brown tails tipped in black, contrasting with white underparts. They start the transformation process from brown to winter white early in the fall, through no choice of their own. As day length decreases in autumn, an extraordinary gland in their brain, the pineal gland, registers this progression and increases its chemical output of melatonin. In a chain reaction, the pituitary gland at the brain's base ultimately stops producing melanin. Without this color-producing hormone, the winter coat grows in with white fur. The result is that the weasel sports excellent camouflage in the snow. At least that's the way it works most years.



Taking a closer look at a weasel, there are two aberrations in its camouflage. Note the beady black eyes and the black-tipped tail. At first glance, the weasel's black tail marking seems to broadcast its presence. Let's backtrack to briefly explore a weasel's lifestyle. This extremely energetic predator has a slender body and short legs – ideal for tunneling under snow after vole and mice prey. Camouflage works best when its owner stays still and blends into its surroundings. Enter the “on-the-go” weasel with high metabolism, low fat reserves, and the need to search for food. While hunting, and despite its quick evasive moves, weasels are targets for avian predators like owls. Without the distraction of that black-tipped tail, the owl would undoubtedly focus on the head, as highlighted by the small dark nose and eyes. The weasel is infinitely safer with the tip of its tail being the target.

How else do weasels fit into the fabric of New Hampshire's wildlife? They are in the family Mustelidae, which is appropriately called the “weasel family.” Other familiar New Hampshire animals also belong in that family – mink, pine martens, fisher, and otters. The striped skunk was recently moved from this family into its own family, Mephitidae. All mustelids have musk glands, but weasels are the only ones that change color seasonally. Within the weasels themselves, there are two species in the state. The short-tailed weasel, also called the ermine, *Mustela ermine*, is approximately a foot long with a tail roughly 3 to 4 inches in length (males). In contrast the larger long-tailed weasel, *Mustela frenata*, can be almost 1.5 feet long, with a tail 4.5 to 6 inches

continued on page 4

IN THIS ISSUE...

- Page 1 Winter Transformation
 - Page 2 Forging Trails: Caring for our Animal Collection
 - Page 3 Staff Profile: Amanda Gillen
 - Page 4 Kirkwood Gardens Spotlight
 - Page 5 Naturalist's Corner: Springtails
 - Page 6–7 ... Programs
 - Page 9 Businesses Invest
 - Page 11 Trail's End: Endowment
- and much more!

❄️ **Wild Winter Walks** ❄️
Guided Tours of the Live Animal Trail

See the animals at the Science Center during winter

See page 6 for details

FORGING TRAILS

CARING FOR OUR ANIMAL COLLECTION



One of the things that makes the Science Center a unique New Hampshire attraction and resource is our collection of animals. More than 60 animals live with us, either in exhibits or “behind the scenes” for use in programs. Three full time staff members care for the collection and all of the education staff also spend time caring for and training the animals. We are

all very proud of our AZA-accreditation (Association of Zoos and Aquariums). The stringent guidelines required by AZA ensure that we are at the top of our game when it comes to the care of our animals.

One issue that we deal with is the age of some of our animals. They live much longer in captivity than they do in the wild. We have one Great Horned Owl which is 40 years old. She is in retirement (not on exhibit or used in programs) and has arthritis in her talons and cataracts in her eyes but continues to eat and otherwise function. Every time we think she might be near the end, she seems to get a new lease on life. Three of our deer are 14 years old (twice as old as a typical deer might live in the wild) and one in particular – the buck – is so thin that we get complaints about his condition. We have consulted with our veterinarian and other deer experts around the state and have been monitoring him closely for the last three years. We added an extra high-nutrient supplement to their diet, but he continues to look like a skeleton in a skin. We have strict protocols for euthanasia. Other than his look, he does not meet those criteria – yet. He eats, his other bodily functions work, and he doesn’t show any signs of pain or weakness. So we try to educate visitors about his condition and reassure them that... he’s just very, very old.

We also get several concerned emails every year about the size of the Mountain Lion enclosure. Before we built that enclosure our staff visited a dozen other facilities that house Mountain Lions and learned from them. Here, the cats have 3,000 square feet of outdoor space, plus 400 square feet of indoor sleeping and feeding space. Like all our exhibits, we balance the space needed by the animals with the view-ability – visitors get very disappointed if an enclosure is so large that the animals cannot be seen. Because of these cats’ agility and climbing skills, the exhibit was designed with a mesh roof, which required structural beams to support it. Snow loads dictated the maximum beam spans, which also provided practical limits to the size of the enclosure.

Like most cats, the Mountain Lions spend 90 to 95% of their time sleeping and resting. Because our cats don’t have to hunt for their food, they tend to spend most of their time each day loafing in a small portion of the space available to them. Our enclosure has flat areas to allow them to sprint short distances, boulders to climb on, moving water to play in, and a covered shelter area to rest in. The enclosure size exceeds minimum standards by a factor of five.

continued on page 3

SQUAM LAKES NATURAL SCIENCE CENTER

PO Box 173, 23 Science Center Road | Holderness, NH 03245

P: 603-968-7194 | F: 603-968-2229

info@nhnature.org | www.nhnature.org

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. Our 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 all members. Comments are welcomed by newsletter editor Janet Robertson at 603-968-7194 x 12 or janet.robertson@nhnature.org.

BOARD OF TRUSTEES

David F. Martin, Chair
Nancy G. Beck, Vice Chair
Kenneth H. Evans, Jr., Treasurer
Lea A. Stewart, Secretary

Lawrence E. Beeson

Kenneth Colburn

Margaret Conner

Andrea Eaton

Mark Goldstone

Elizabeth Hager

Harriet R. Harris

William F. Lee, Jr.

Carl Lehner

Arthur McGinnes

Susan McKimmes

Emily Preston

Patricia Sava

Richard L. Starbuck

Carol Thompson

Bryant F. Tolles, Jr., Ph.D.

Tony Wagner, Ed.D.

Bruce G. Whitmore

HONORARY TRUSTEES

George Carr, Ed.D.

David W. Cote, D.V.M.

Bertha H. Fauver

Maurice Lafreniere

Paul F. Miller, Jr.

Russell C. Orton

Stephen G. Woodsum

STAFF

Thomas Blay, Facilities Assistant

Dennis Capodestria, Facilities Assistant

Tim Curry, Facilities Director

Eric D’Aleo, Naturalist

Brian Eaton, Finance Director

Clare Eckert, Facilities Assistant

Audrey Eisenhauer, Education Director

Brenda Erler, Gardens and Exhibits Assistant

Dave Erler, Senior Naturalist

Amanda Gillen, Marketing and Visitor Services Manager

Margaret Gillespie, Naturalist

Keith Hosking, Animal Care Associate

Nancy Kitchen, Animal Care Manager

Iain MacLeod, Executive Director

Laura Mammarelli, Blue Heron School Director

Jordan McDaniel, Associate Teacher

Lauren Moulis, Animal Care Associate

Mary Noyes, Administrative Assistant

Jeremy Phillips, Naturalist

Carol Raymond, Volunteer Coordinator

Janet Robertson,

Development and Communications Director

Liz Rowe, Operations Director

Dean Smith, Facilities Supervisor

Susan Stepp, Development Assistant

Sharon Warga, Operations Manager

Amy Weston, Assistant Teacher

STAFF PROFILE

AMANDA GILLEN



Growing up in New Hampshire, nature was always a part of my childhood. My family hiked, visited state parks, and my sister and I spent hours in the woods behind our house creating forts.

Nature became a bigger part of my life during college. I worked for a 4-H Camp and spent the summer living in the woods and working with children. It had a huge impact on my life and made me realize how important it was to be in touch with nature every day.

After college, I traveled a little bit and then got into marketing. I spent over 10 years working for fast-growing, for-profit companies. The jobs were satisfying, challenging, and provided me with some great experiences traveling and in professional development; but I was in search of something more. I wanted to have the same feeling I did while working for 4-H Camps in my everyday job. I was looking for a big change when I came upon the ad for the Science Center. It

was a giant leap of faith to join the Science Center staff, but it was the best decision I have made for me and my family.

The best part about the job is that I'm marketing this amazing place and making sure people have a great time while they are here. Lucky for me, the Science Center sells itself with everything we have to offer. I just have to make sure more people who don't know about us learn that we are here. The challenge is to do that on a non-profit budget (a bit smaller than the for-profit companies), which requires me to get creative. The people, the animals, the environment – these are all things that make this place so special. I'm lucky to be a part of it.

Marketing and Visitor Services Manager Amanda Gillen received her B.A. in Studio Art with a minor in Sociology from the University of New Hampshire and M.B.A. in General Management, Strategic Marketing Management Certificate from Plymouth State University. Amanda lives in Orford with her husband, two sons, Penny the Wonder Dog, and various fowl.

NEWSBRIEFS

- Amy Weston joined the staff as a part time Assistant Teacher at Blue Heron School. Amy is excited to share her background



in music and education with the Blue Heron School students. Amy has a B.A. in Communications from the

University of New Hampshire and a M.Ed. in Elementary Education from Plymouth State University. She lives in Moultonborough.

- Executive Director Iain MacLeod attended the Association of Nature Center Administrators Summit in August held at the Kalamazoo Nature Center in Michigan. He also attended a Forest Connections Roundtable at Hubbard Brook Research Foundation in October.
- Education Director Audrey Eisenhauer attended the New England Environmental Education Alliance's Better Together Summit annual conference in New Gloucester, Maine in October. She is also part of a team of New Hampshire educators developing an Environmental Literacy Professional Development Collaborative, a need identified in New Hampshire's Environmental Literacy Plan. Project planning is coordinated by New Hampshire

Environmental Educators and funded by the New Hampshire Charitable Foundation.

- Naturalist Jeremy Phillips attended the New Hampshire Science Teachers Association annual fall conference in Meredith.
- Volunteer Coordinator Carol Raymond attended the New Hampshire Association of Volunteer Administrators (NHAVA) annual meeting in October. She serves on NHAVA's Awards Committee and chairs its Legislative Committee. Carol is also on the review committee for Volunteer NH's 2014 Spirit of New Hampshire Award.
- Volunteer docents enjoyed a field trip to Franklin Park Zoo on September 30 where they enjoyed a behind-the-scenes tour given by zoo staff.
- The rain held off and over 340 children and adults enjoyed creative live skits about nature along a special trail lit by jack-o-lanterns at the annual Halloween Hoot 'N Howl on October 18. Moultonborough Girl Scout Troops 10062, 12269, 10093, 10896, and 10592 carved the pumpkins donated by Moulton Farm. After the tour, guests enjoyed games, snacks, candy, and hot drinks donated by: Dunkin Donuts, Plymouth; E.M. Heath, Holderness; Hannaford Supermarket, Meredith; Shaw's, Gilford; and Tootsie Roll Industries. Thank you also to our wonderful volunteers for their help.

FORGING TRAILS

continued from page 2

Even though the trail closed on November 1, all our animals receive daily care throughout the winter. Thankfully, because they are native to our region, they are adapted to our cold winter climate, and most of our exhibit collection remain in their enclosures and don't – contrary to some suggestions – head for Florida for the winter. . . and our dedicated animal care staff provide excellent care regardless of snow, sleet, cold, or whatever winter brings.

Iain MacLeod, Executive Director
iain.macleod@nhnature.org
603-968-7194 x 23

**CLEAN UP
DAY**

April 18



**KIRKWOOD
GARDENS
DAY**

May 30

KIRKWOOD GARDENS

PLANT SPOTLIGHT

By Brenda Erler

Purple Coneflower

Echinacea purpurea

Culture: Enjoys average, dry to medium, well-drained soil in full sun. Once established, will tolerate drought, heat, humidity, and poor soil.

Bloom: June – September

Height: 24-36”

This prairie wildflower is great in meadows, wildflower gardens, or in masses in your perennial border. The flowers are large, showy, and attract butterflies. The cone-shaped seedheads provide winter interest as well as a tasty snack for many birds. The Latin name *Echinacea* comes from the Greek work echinos, meaning hedgehog, referring to the spiny seedhead cone.



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

WINTER TRANSFORMATION

continued from page 1

in length (males). Adding somewhat to the identity confusion is sexual dimorphism – males are close to twice as large as females. Thus a male short-tailed weasel is similar in size to a female long-tailed weasel but distinguished by its smaller head and more delicate proportions.

Weasels, for their size, are formidable predators. They hunt primarily small rodents; but by clamping their strong jaws and sharp canine teeth into the neck of prey, they can subdue animals as large as cottontail rabbits. Sometimes weasels, seeking a rodent meal, find their way into human territory. That alert white face that unexpectedly pops into view around a cracked-open door in your home could be your natural mouse pest control agent – free of charge. As a caution, sturdy chicken wire helps weasels be safe neighbors for your egg-layers.

You may or may not see a weasel this winter. In any event, it's a benefit to be open for that "weasel moment" similar to the one at our staff retreat – a wildlife encounter that lifts you out of routine and banks a memory you can call on for a smile or a renewed moment of wonder far into the future.

WEASEL QUIZ

1. What triggers the weasel's change to winter white?
A. Day Length B. Temperature C. Snowfall
2. True or False? Weasels and skunks are in the same family.
3. What New Hampshire weasel is also called the ermine?
4. Which part of short-tailed and long-tailed weasels' anatomy distracts its winter predators?
5. What smelly defensive mechanism do all mustelids possess?

ANSWERS

1. A
2. False. Skunks are now in their own family.
3. Short-tailed weasel
4. Black-tipped tail
5. Musk glands

NATURALIST'S CORNER

MOVING SNOW SPECS

By Dave Erler

If you are out and about in the forest on a winter day, the kind of day when you open your overcoat and take off your wool stocking hat, you may notice tiny dark specs on the snow's surface. Looking closer you may think your eyes are deceiving you as the specs seem to be popping around. What you're observing are snow fleas or, more correctly, springtails. If it weren't for their dark blue-black color contrasting with the snow, you would probably never spot them. But snow fleas, at about 1/16 inch, are one of the most numerous although barely visible animals in the forest. Not related to the fleas that are a bane to pets and other animals, snow fleas get their name for their ability to be more active in colder temperatures than most other invertebrates and for their ability to spring incredible distances. The latter feature stems from a specialized forked appendage (fucula) that is attached to the underside of their rear ends. This "spring" is held in place on the free end by tiny hooks that, when released, catapult the little critter into the air. There are several thousand species within this group of primitive insect relatives, and they can be found in almost any damp environment. Snow fleas, like many of their related species, inhabit the decaying leaf litter on the forest floor for most of the year. Their remarkable ability to be active in winter is because of a protein called glycine. The glycine acts like an antifreeze, keeping ice crystals from forming inside their bodies.

So what are they doing in the snow? Snow fleas migrate from the decaying leaf litter on the forest floor through spaces in the snow column where they scavenge tiny bits of dead vegetation, fungi, and algae that have

settled in the snowpack. When winter temperatures rise above the freezing point, you may find countless numbers of them near the base of tree trunks exposed to the sun. As temperatures drop, they migrate back down through the snow column to the forest litter. Since they have no control of where they land when they fling themselves into the air, thousands can sometimes be found floating on pools of melted snow.

Aside from being an interesting winter side show, you may wonder why they are important. As a group, springtails make up one of nature's cleanup crew by shredding the forest's layer of fallen leaves, helping to recycle the nutrients that trees and other forest plants utilize. There is evidence that they may also be important in this process by spreading fungal spores and beneficial bacteria in the soil. During the warmer months their sheer numbers provide a protein source for predators in the form of larger invertebrates and forest salamanders, including the bright orange red efts that are found in the forest after a summer rain. Even the antifreeze in their bodies has prompted interest as a subject of research. The antifreeze that is produced in their bodies in the winter has been found to break down quickly in warmer temperatures. This rather unique characteristic has led to a possible use in storing transplant organs for human use.

Next time you're out on a "warm" winter day, I hope you take the time to look for and observe these little specs in the snow. They may make you wonder at how truly amazing nature can be.



FROM THE HERON'S NEST

By Laura Mammarelli



Collecting and pressing fall leaves with their beautiful colors is a fun activity at Blue Heron School every autumn. We read stories about leaves and arrange the dried leaves into all kinds of animals. We appreciated the help of volunteer Pam Stearns, who helped teachers and children turn leaves into art.

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

WONDERFUL WINTER WEEKENDS

WILD WINTER WALKS

GUIDED TOURS OF THE LIVE ANIMAL TRAIL

Adults and families with children ages 6+

Have you ever wondered what happens to the animals at the Science Center during winter? Most of them stay in the same place, just as they would in the wild. You can see them led by a staff naturalist who will guide your walk on the live animal exhibit trail and discuss how native animals are well-adapted for winter in New Hampshire. Be ready to snowshoe and see beautiful wild animals in their winter fur coats. Snowshoes are available at no extra cost or bring your own. Children must be accompanied by an adult.

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

Saturday • January 3
1:00 to 3:00 p.m.

Sunday • January 11
1:00 to 3:00 p.m.

Saturday • January 17*
10:00 a.m. to 12:00 p.m.

Sunday • January 25
1:00 to 3:00 p.m.

Saturday • January 31*
1:00 to 3:00 p.m.

Sunday • February 8
1:00 to 3:00 p.m.

Saturday • February 14*
10:00 a.m. to 12:00 p.m.

Sunday • February 22
1:00 to 3:00 p.m.

Saturday • February 28*
1:00 to 3:00 p.m.

Sunday • March 8
1:00 to 3:00 p.m.

Saturday • March 14*
1:00 to 3:00 p.m.

Sunday • March 22
1:00 to 3:00 p.m.

WINTER BIRD BANDING

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 the birds that gather at our winter feeding station. Children must be accompanied by an adult.

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

Saturday • January 17
1:00 to 3:00 p.m.

Saturday • January 31
10:00 a.m. to 12:00 p.m.

Saturday • February 14
1:00 to 3:00 p.m.

Saturday • February 28
10:00 a.m. to 12:00 p.m.

Saturday • March 14
10:00 a.m. to 12:00 p.m.

** MAKE A DAY OF IT! Choose one of five 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.

SAVE THE DATE!

APRIL VACATION WEEK PROGRAM

Junior Wild Animal Keepers

April 27–30 | 9:00 a.m. to 3:00 p.m. | Ages 8 to 12

HOME SCHOOL SERIES

Earth Cycles

**December 4, January 8,
February 5, March 5, April 2**
10:00 to 11:30 a.m.

Ages 4 to 6 or Ages 7 to 10

This educational series for two age groups is specifically for home schooled students. Programs focus on the cycles you can observe in the natural world such as rock cycle, water cycle, life cycles, and more!

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



WINTER BIRD BANDING

— OPEN HOUSE —

Saturday • January 3
9:00 a.m. to 12:00 p.m.

All ages

For over 30 years we've welcomed the New Year with a bird banding open house. For tracking purposes the U.S. 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 to band and release some hardy feathered creatures.

No charge to attend. Children must be accompanied by an adult.

NEW HAMPSHIRE YOUNG BIRDERS CLUB EVENTS

HARVARD MUSEUM OF NATURAL HISTORY
Sunday • December 7
10:00 a.m. to 2:00 p.m.
Cambridge

CHRISTMAS BIRD COUNT (AND A PARTY!)
Saturday • December 20
3:00 p.m. to 4:30 p.m.
Harris Center for Conservation Education

CONDUCT AN EAGLE SURVEY
Saturday • January 10
8:30 a.m. to 2:00 p.m.
Connecticut River Valley

SUPERBOWL OF BIRDING
Saturday • January 24
8:00 a.m. to 6:00 p.m.
NH Coast - Plum Island

SOUTH MAINE HARLEQUIN HUNT
Sunday • February 8
8:30 a.m. 2:00 p.m.
Kittery, Maine

*Programs are free with New Hampshire Young Birders Club membership (\$25/year).
See all programs or learn more at:
www.nhyoungbirders.org*

WINTER SCHOOL VACATION WEEK

WHERE ARE OUR OSPREYS?

Saturday • February 21
1:00 to 2:00 p.m.

Adults and children ages 8+

Where are they wintering? Join Iain MacLeod for the latest news on the satellite-tracked Ospreys we are following as part of Project OspreyTrack. Hear the stories of their migrations and view maps to see what they are up to. In addition to the birds tagged in New Hampshire, we can check on more than a dozen other tagged Ospreys. Learn about the amazing technology that allows tracking of these birds. Meet a live Osprey up-close.

Cost: \$5/member; \$7/non-member

SNOWSHOE EXPLORATION

Tuesday • February 24
1:00 to 3:00 p.m.

Families with children ages 6+

Learn how animals survive the winter through a series of outdoor activities and games – all on snowshoes! Following our outdoor activities we'll head inside to meet a live animal and learn how it meets the challenges of winter.

Cost: \$10/member; \$12/non-member

WINTER BIRD BANDING

Wednesday • February 25
10:00 a.m. to 12:00 p.m.

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 the birds that flock to our winter feeding station. Children must be accompanied by an adult.

Cost: \$10/member; \$12/non-member

GO WILD WITH CRAFTS

Thursday • February 26
10:00 to 11:30 a.m.

Children ages 4 to 10

Let's have fun with natural materials and learn about nature through crafts. We'll transform natural treasures like pinecones, milkweed pods, acorns, seeds, and sticks into amazing items you can take home. Meet a wild creature skilled at natural designs. Children must be accompanied by an adult at no charge.

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



SNOWSHOE THROUGH THE SOLAR SYSTEM

Thursday, February 26
6:00 to 8:00 p.m.

Adults and Families with children ages 7+ Venture outside on snowshoes to explore just how BIG our solar system really is. We'll discover the relative size of each planet and the distances between them as we walk from planet to planet on a scale model. After our adventure we will warm up with some hot chocolate. Snowshoes are available at no extra cost or bring your own.

Cost: \$10/member; \$12/non-member

OTTER EXTRAVAGANZA

Friday • February 27
10:00 to 11:30 a.m.

Families with children ages 7+

Otters are known for being highly active predators and for their sense of play. Learn about otter behaviors and what it takes to be an otter in winter. We'll play in the snow and search for food items as the otters would. We'll also include a walk to the Otter Exhibit to observe otter behavior. Snowshoes available at no charge or bring your own. Bring sleds if you have them.

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

EARLY BIRD DISCOUNT: Save \$2 per person by registering before day of program.
Pre-registration is required for all events unless otherwise noted. Please call 603-968-7194 option 7.

SCIENCE CENTER NATURE TOURS

Hebrides and Highlands | June 11-24, 2015



This 13-day trip shows off the very best of Scottish scenery and hospitality. We'll fly from Boston to Glasgow and then go by van to the beautiful Spey Valley nestled next to the Cairngorm Mountains. We'll stay for five nights at the Rowan Tree Hotel near Aviemore. We'll explore lochs and ancient pine forests and the shores of the Moray Firth, including a day trip to the Black Isle and Cromarty. We'll even visit Royal Deeside for a tour of Balmoral Castle. The second part of the trip takes us to Oban and a ferry to the spectacular island of Mull. We'll stay five nights at Tiroran House Hotel (voted best small House Hotel, 2013 and 2014). The spectacular loch-side setting and beautiful gardens

make this a memorable location. Day trips will take us on a boat excursion to the Treshnish Isles for lunch among the Puffins and a chance to explore Fingal's Cave on Staffa. We'll visit the beautiful village of Tobermory and take a day trip to Iona and tour of the ancient Abbey. Wildlife highlights include White-tailed and Golden Eagles, Otters, Seals, and Red Deer. The last leg of the trip takes us to Edinburgh for a free day to explore this wonderful and historic city.

View the full itinerary at:

nhnature.org/files/PDF/2015%20H&H%20Itinerary%20small.pdf

Cost: \$5,750 (assumes double or twin occupancy room*)

All-inclusive cost includes hotel accommodations and all meals, round-trip airfare from Boston to Glasgow, van transportation in Scotland, ferry and boat trips and admission fees to nature reserves and other destinations listed on the itinerary.

*There is an additional \$350 single room supplement.

For a full trip itinerary
or to book your place on the trip, contact:

Iain MacLeod
iain.macleod@nhnature.org
603-968-7194 x 23

3M ECO GRANT WILL EXPAND PROJECT OSPREYTRACK

In October, Squam Lakes Natural Science Center was awarded a \$33,264 3M Eco Grant to enhance Project OspreyTrack, a multi-year project that uses the tracking of Ospreys with GPS satellite backpacks as a teaching tool to foster awareness and understanding of bird migrations. The grant will allow the Science Center to create an eastern flyway network through participating nature centers and schools in 15 states from New Hampshire to Florida through which migrating Ospreys pass on their way from northern New England to South America. Curriculum materials will be created and disseminated and students will share their experiences with Ospreys in their own states as well as network with schools and nature institutions in Europe, Africa, and South America. Other funding partners include Public Service of New Hampshire, which has helped fund the project since its inception in 2011, Jane B. Cook 1983 Charitable Trust, Meredith Bay Colony Club, and the Science Center's own Innovative Project Fund.

Executive Director Iain MacLeod is Project OspreyTrack's leader. "This state-of-the-art technology provides near real-time tracking of these birds as they make their dangerous journeys from New England to South America, and allows exciting teaching opportunities for people of all ages. Expanding what we've done in New Hampshire to all the states along the migration route has always been a goal of the project.

Although the birds we tag nest here in New Hampshire, they rely on waterways (Ospreys are fish eaters) in every state they pass through and end up island hopping through the Caribbean and spend half their lives in South America – many in the Amazonian rainforest. So they are international travelers that know no boundaries."

3M awarded almost \$400,000 to 10 organizations with its 2014 Eco Grants, which are aimed at connecting kids to nature and improving environmental and conservation education for youth. Since 2001, 3M's environmental giving program has invested more than \$25 million in sustainability initiatives as part of the company's vision of improving every life. Grant recipients are nonprofit organizations located in communities near a 3M facility. Recipients were selected based on criteria, which include: connecting science, technology, engineering, and math (STEM) education with outdoor learning opportunities, improving environmental and conservation education, and increasing student visits and teacher preparedness—thereby extending the learning beyond a single visit. "3M is pleased to support innovative ideas that create energy and excitement around learning," said Kim Price, vice president of 3M. "We are committed to supporting initiatives that enhance environmental education through hands-on experiences with nature."

VOLUNTEER UPDATE

VOLUNTEER RECOGNITION DINNER

The annual Parsons Volunteer Recognition Dinner was held at Camp Deerwood in Holderness on September 3. Camp Directors Lorne Thomsen and Peter Thomsen welcomed staff and volunteers and provided an abundant array of delectable dishes. The evening started with hors d'oeuvres and music on the deck of the main lodge overlooking a stunning view of Squam Lake and the mountains beyond followed by dinner served in the dining hall. The dinner was generously sponsored by Biedermans/Chase Street Market, Camp Deerwood, Cross Insurance Agency, Patty Stewart Associates, and Tuckerman's Brewing Company. Board of Trustees Chair Dave Martin announced that the annual dinner will be known in the future as the Parsons Volunteer Recognition Dinner.

Located in the Trailhead Gallery, the Volunteer Appreciation Display, "Volunteers Complete the Picture," is updated annually. Volunteers who achieved the 200-hour level in 2013 were: Ellen Edersheim, Dennis Hager, Barb Laverack, Dom Marocco, Irene Marocco, and Joan Martin. Nancy Beck, Nance Ruhm, and Gary Robertson advanced to the 500-hour category and Jim Barry moved to the 2,000-hour level.

The President's Volunteer Service Award is a national program honoring Americans who inspire others to volunteer through their commitment and example. Iain MacLeod presented the Bronze Service Award to volunteers giving 100 to 249 hours in 2013 to: Nancy Beck, Dot Chekas, Andy Eaton, Dennis Hager, Pat James, David Martin, Susan McKimins, John McRae, Denise Moulis, Nance Ruhm, Judy Sniffen, Carol Stewart, Lea A. Stewart, and Bruce Whitmore. Volunteers Jim Barry and Gary Robertson received the Silver Service Award for donating between 250 to 499 hours in 2013.



VOLUNTEER TRAINING OPPORTUNITIES

Winter Explorations Instructor

Tuesday | January 6 | 10 a.m. to 12 p.m.

Learn to lead classes for school groups this winter. Classes are taught outdoors, often on snowshoes.

Docent and First Guide Training

Become an adult volunteer docent or teen First Guide this summer. Watch for training schedule in the spring issue of Tracks & Trails.

Contact Volunteer Coordinator Carol Raymond at carol.raymond@nhnature.org or 603-968-7194 x 22 for details and to sign up.

**THESE GENEROUS DONORS MADE TRIBUTE GIFTS,
WHICH WERE RECEIVED BETWEEN JULY 1 AND SEPTEMBER 30, 2014:**

IN MEMORY of MARJORY CANBY BARBA
Aaron and Abbe' Zuckerberg

IN MEMORY of CHARLOTTE B. BARNABY
Caroline Tarpley

IN MEMORY of VIRGINIA CHARTIER
Dartmouth Printing Company
Tony Sayess and Shirley Kathan-Sayess

IN HONOR of DUNCAN CLARK'S BIRTHDAY
Stephanie Salinovich

IN MEMORY of CHARLES B. COOK, JR.
Suzanne and Andrew Baker
James and Sheilah Cloud
Barbara W. Cook
Joyce Finch and Pam Rooney
Jan and Pierre Havre
Janney Montgomery Scott LLC
Bill and Mary Kay Kennedy
Christopher Murphy and Kendra Delgaudio
Jason and Heidi Murphy
Gordon Smith
Arlene and Richard Steele
Norman and Beverly Wilde

IN MEMORY of MARY SMITH DENISON
Elizabeth Dewey

IN MEMORY of LOUSIE DESOUSA
David and Sylvia Detscher
McLean Asset Management Corp.

**IN HONOR of AUDREY EISENHAUER, DAVE ERLER,
DAVE MARTIN**
Jan and Don Frisch
Linda and Bill Lee

**IN MEMORY of LOUISE HENNESSY FOR
KIRKWOOD GARDENS**
Linda Baer and Kenneth Gorlin
Daniel and Patricia Kelly
The Robb Family
Nancy von der Linden

IN HONOR of DUANE AND NORMA KEELER
Aaron and Abbe' Zuckerberg

IN MEMORY of ROBERT KUHN
Christine Kuhn

IN MEMORY of DON PARSONS
Donna Parsons and Charlie Drago
Nancy Parsons and Jim McDermott
Natalie Parsons

IN HONOR of HELEN MATHIESON
Pam Fricke

IN HONOR of WARREN AND PAUL MILLER
Shane and Paul Swigert

**IN MEMORY of CLARE READ FOR
KIRKWOOD GARDENS**
Nancy and Bill Dailey
Andy and Mal Eaton
Phyllis Fleming
Jeanne Kostich
Caroline and Spencer Martin
Middleton & Company
Phillips Payson
Sarah Payson
Elsie McTiernan
Thomas and Joan Read
William and Patricia Read

IN HONOR of CAROL AND ROB STEWART'S ANNIVERSARY
Raymond and Elizabeth Beauregard

IN HONOR of SCIENCE CENTER VOLUNTEERS
Natalie Parsons

IN MEMORY of SARA VOGEL
G. Alan and Denise Bailey
Eleanora G. Baird
Alan and Nancy Lawley
Mary Anne Mackin
Warren and Paul Miller
Buck and Mary Scott
James W. Wood

IN MEMORY of DOROTHY WEST
Linda Heminway and Diane Doyon

BUSINESSES INVEST IN EDUCATION

COMMUNITY SUPPORT IS STRONG

Many businesses across the state provide support through memberships, sponsorships, and in-kind contributions of goods and services. These strong corporate investments help to make the Science Center's education programs possible.

2014 Business Members:

Belknap Landscape Company, Boynton Waldron Doleac Woodman & Scott PA, Bridgewater Power Company, Cormack Construction Management, David M. Dolan Associates PC, Donovan Tree Experts, Foreco LLC, HEB Engineers, Holderness Harbor/Asquam Marina, Ironwood Design Group, Loon Mountain, Megaprint, Meredith Village Savings Bank, Nashua Corporation, Pike Industries, Plymouth Family Practice Center, Rockywold-Deephaven Camps, Samyn-D'Elia Architects PA, and Walter's Basin Restaurant

2014 Business Sponsors:

Belknap Landscape Company, Common Man Restaurant, Cockscomb Basin Wildlife Sanctuary, Community Guaranty Savings Bank, Cormack Construction Management, Cross Insurance Agency, Dead River

Company, Donovan Tree Experts, McLane Law, Meredith Bay Colony Club, Meredith Village Savings Bank, New Hampshire Electric Co-op Foundation, Noah Foundation, Owls Landing Campground, Public Service of New Hampshire, Rockywold-Deephaven Camps, Patty Smith & Associates, Pemigewasset Choral Society, Snowy Owl Inn & Resort, Squam River Landing, Christopher P. Williams Architects, PLLC, and Zoo New England

2014 Business In-kind Donors:

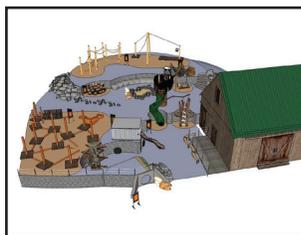
Belknap Landscape Company, Biederman's Deli/ Chase Street Market, Bob's Shurfine Market, Cackleberries Garden Center, Charles River Laboratories, Coca-Cola Bottling Co., Common Man Restaurant, Cottage Place on Squam Lake, Country Lady Bug Greenhouse, Camp Deerwood, Dirty Worm Greenhouse, Donovan Tree Experts, Dunkin Donuts, Emma's Perennials, Hannaford Supermarket, E.M. Heath Supermarket, Holderness Harbor/Asquam Marina, Cheryl Johnson Art, Lakes Region Tent & Event, Little Church Theater, Megaprint, Meredith Village Savings Bank, Millican Nurseries, Moulton Farm, Mountain Laurel Flower & Gift Shop, Owl's Nest Resort & Golf Club, Petal Pushers Farm, Picnic Rock Farms, Plymouth Animal Hospital, Precision Lumber, Public Service of New Hampshire, Resource Management, Shaw's Supermarket, Spider Web Gardens, Stephen's Landscaping, Stonyfield Farm Organics, Tootsie Roll Industries, True Colors Print & Design, True Value Company, Tuckerman Brewing Company, Eric Webster – USSA, Van Berkum Nursery, Venture Print Unlimited, Walter's Basin Restaurant, Wayside Farm, White Mountain Films, and Yikes American Craft Gallery.



YESTERDAY / TODAY / TOMORROW

The Nature Matters Capital Campaign is in its final stages... but not quite yet done. As of October 31, our total in cash and pledges is \$3.93 million; we still have about \$70,000 to go to hit our \$4 million target. What an amazing accomplishment – thank you to everyone who has helped!

Work is forging ahead. The Wood Energy exhibits were completed and popular with visitors all summer. The Water Matters Pavilion building is ready for winter. Timber framing



was finished in August; it's now roofed and sheathed with windows and doors. Inside components like electrical, insulation, sheetrock were installed in October, along with footings for the deck. Work starts on exhibit fabrication (mink first) in January. Exhibits will be installed all through 2015 with the opening planned for 2016.

Construction for the Gordon Interactive Playscape began in November. Naturalist Eric D'Aleo and Facilities Supervisor Dean Smith led its design, which includes many interactive components. Children will be able to act out the life of a red squirrel as they explore climbing rocks and logs, investigate a bird nest, hide in tunnels, and more. Work will continue through the winter and spring with the opening in July 2015. And, this winter we'll also focus on designs for the new Raptor Mews and Winter Bird Quarters.

Help put us over the top with your contribution. You can learn more and make an online donation at: www.nhnature.org/naturematters

Thank you all for your incredible support! Together we are making something really special. For more information about the campaign, contact:

Executive Director Iain MacLeod
iain.macleod@nhnature.org
 603-968-71954 x 23.

OPENING A WINDOW TO THE NATURAL WORLD

PLEASE GIVE TO THE ANNUAL FUND

Please consider making an Annual Fund donation before the end of the year. Your Annual Fund contribution helps make the following possible:

- 15,000 school children and teachers from across the state enhance their classroom curriculum through our natural science programs
- 80 meals are prepared 365 days per year for our live animals – totaling over 10,500 pounds of food
- Expert speakers share the latest in conservation research and natural science
- Kirkwood Gardens showcase beautiful plants for thousands of visitors
- Squam Lake cruises captivate locals and tourists alike with loons, bald eagles, and stunning scenery
- 50,000-plus visitors – families, adults, children – get nearer to nature on the live animal exhibit trail (including the new Coyote Exhibit) and in educational programs taught year round by our expert naturalists
- Blue Heron School, our nature-based Montessori early learning center, inspires the next generation of youngsters with love for the natural world

Of course, all these wonderful things take money...and then there is overhead like electricity, animal care essentials, vehicle upkeep, and other general operating costs that the Annual Fund – and support from people like you – helps to pay for each year.

Please consider making a donation today. To make it easy for you, just use the enclosed envelope or make your donation online at: www.nhnature.org/support/annual_fund.php

And if your employer matches contributions you can even double your gift. Your donation, large or small, is much needed and much appreciated. Thank you on behalf of the board and staff.

QUESTIONS ABOUT HOW YOU CAN SUPPORT THE SCIENCE CENTER?

Contact Janet Robertson, Development and Communications Director, at 603-968-7194 x 12 or janet.robertson@nhnature.org

TRAIL'S END

ENDOWMENT



What is an endowment? Does the Science Center have an endowment? How is an endowment created? Let's take a look at the answers to these questions.

An endowment is comprised of funds that an organization has received that have been permanently restricted by the donor so those funds cannot be spent in the future. Any income and gains from those funds can be spent. Generally there is a limitation on how much of the income and gains can be spent in any given year. As a rough guideline, an endowment of \$500,000 might generate enough income/gains to provide \$10,000 to \$20,000 for spending in any given year.

At the end of 2013 endowed funds for the Science Center totaled \$700,000. Over the last 20 years, the Science Center has grown dramatically and continues to expand. Our endowment has not increased as rapidly.

What are we doing to increase our endowment? We have approached an increase to our endowment in a couple of ways. As you know, our Nature Matters capital campaign had two facets that are designed to increase our permanent funds. The largest component is a reserve of \$1,000,000 that will be used to help fund compensation for our staff. That \$1,000,000 will be used in a manner similar to an endowment. We won't spend the \$1,000,000, but we will spend the income and any gains related to those funds.

The second piece of the capital campaign that will increase our endowed funds is related to setting up a reserve for maintenance of our new buildings. We are setting aside 20% of the cost of each of our new buildings. These reserves will also be treated as an endowment so that income/gains from those funds will be used for the upkeep of our facilities.

There is another initiative underway to provide an increase to our endowment. We are asking our donors to consider adding the Science Center as a beneficiary of their estate – this is called legacy giving. This past summer we unveiled a legacy giving tree in the Trailhead Gallery. Each leaf on the tree lists the name of a donor who has made the Science Center a beneficiary of his or her estate. We have 42 leaves with donor names currently. We hope to increase that number dramatically over the next 18 months. While the endowment won't benefit immediately from this program, it will be greatly enhanced over the long term. If you would like to know more about legacy giving, please contact Development and Communications Director Janet Robertson.

It's difficult to know what size endowment is appropriate for any organization. We certainly know that our current endowment is not sufficient for the size organization we have become. If we could add \$5,000,000 to our endowment, including those funds allocated from the Nature Matters capital campaign, we would be in a much better position to sustain the Science Center for the future.

We will continue to search for ways to increase our endowment so that the Science Center can provide the opportunity for everyone to learn about the natural world for a long time to come!

*Trail's End is written by David Martin, Chair of Squam Lakes Natural Science Center's Board of Trustees.
You may contact David at dave.martin@nhnature.org*

NATURALIST'S LEGACY SOCIETY

Please let us know if you have named Squam Lakes Natural Science Center in your will or other estate plans. Naturalist's Legacy Society members are invited to donor recognition events and recognized in the Annual Report and on the legacy giving tree display in the Trailhead Gallery.



A GREAT GIFT FOR ANYONE!



BENEFITS INCLUDE:

- Free trail admission
- Discounted rates on lake cruises and programs
- 10% Discount at the Howling Coyote Gift Shop
- AZA and ANCA reciprocal admission discounts, and much more!

Respect. Integrity.
Teamwork. Excellence.
Stewardship.

Values for success.



www.mvsb.com/values

THE HOWLING COYOTE GIFT SHOP

Support the Science Center with your holiday shopping at the Howling Coyote Gift Shop. *The Howling Coyote is open by appointment during December. Contact us to arrange a time. Members always receive a 10% discount on non-sale merchandise.*

Prefer to shop online? Support the Science Center by using GoodShop.com and Amazon Smile. Purchase online like you normally would and a percentage of your sales go to the Science Center.



WISH LIST

- CD player
- Tablecloths
- 4-drawer lockable file cabinet
- Little Tikes or Step2 playground climbers or slides for animal enrichment
- iPods, tablets, and laptops in good condition for education programs
- Grocery store gift cards for animal food
- Large (12-16 inch) digital picture frames
- Animal crates
- Hav-a-hart traps
- 19 inch older model TV with jacks for audio and video

ACREDITED BY THE
ASSOCIATION OF ZOOS & AQUARIUMS
Printed on 70# Rolland Opaque Natural. 30% recycled content

Non-Profit Org.
U.S. Postage
PAID
Permit No. 1
Holderness, NH
03245

SQUAM LAKES NATURAL SCIENCE CENTER
PO Box 173, 23 Science Center Road
Holderness, NH 03245
Return Service Requested

