



FASCINATING FERNS

By Margaret Gillespie, Illustrations by Cheryl Johnson

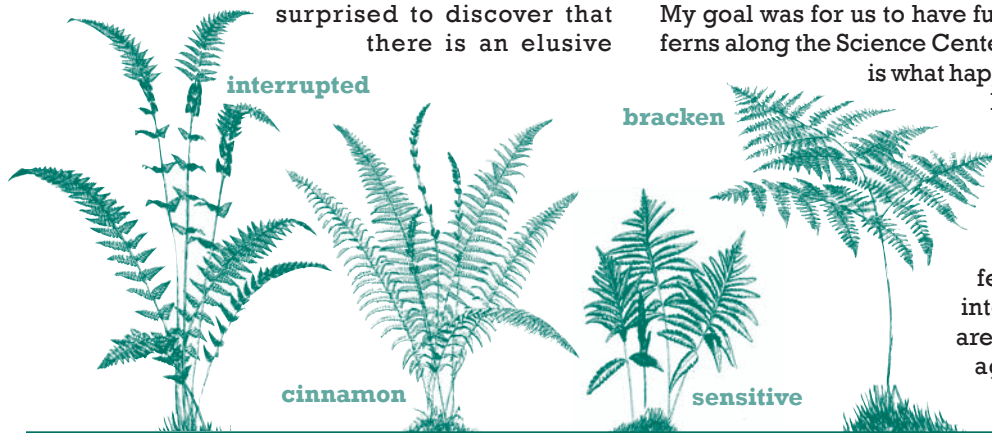
Blackflies and ferns must talk to each other! How else could they coordinate their spring arrival? I'm speaking mainly about ostrich ferns, which are the deliciously edible "fiddleheads" that fern hunters seek early in the season. These ferns grow on the wet banks of woodland streams, also good places for blackflies to hatch in the cool running water. As good as these fiddleheads taste, the real delicacies are the more common ferns that delight the eye rather than the palate. You'll find them unfurling by stone walls, old woods roads, and along meadow edges. I'll introduce you to some of my favorites, but first let's investigate the secret lives of ferns.

Where do ferns belong? They are in a division of plants called Pteridophyta. Plants in this group have a vascular system of xylem and phloem, which carries water and nutrients, but instead of having flowers and seeds, they produce spores. Some close relatives of ferns – club-mosses and horsetails – are called fern-allies. You may be surprised to discover that there is an elusive

part of a fern's life cycle that most people never see! We commonly see the fern sporophyte – the life stage of the fern generally with leafy fronds. Some fronds carry spores, in which case they are called fertile fronds. Other fronds without spores are the sterile fronds. It can be challenging to find the tiny single-celled spores. Spores may be in cases called sporangia, and these are often clustered in groups called sori. We can locate sori hidden on the underside of fertile fronds in some ferns. In other ferns, the sporangia may be arranged on a separate fertile frond that resembles a spike. On dry breezy days, spores are blown to new locations. Given good conditions, a spore germinates, producing a prothallium, which is a tiny, flat green plant (about one centimeter long) capable of producing sperm and eggs. When an egg is fertilized, it grows into the familiar fern we know—quite a complicated cycle!

Last spring I tried an experiment with the young children in the Science Center's Blue Heron School. My goal was for us to have fun identifying different ferns along the Science Center's Ecotone Trail. Here is what happened! The youngsters

had the advantage of seeing five fern samples before going outside to search as fern detectives. The first fern we found was just into the forest in a moist area, although we saw it again later in the wet



Continued on page 10

FORGING TRAILS

Someone commented recently that the Science Center is one of the few places where the perception is that winter is just flying by. That's because the winter gives us a short window of opportunity to get major trail and exhibit work done before May 1 rolls around again. Right now, our talented Education and Facilities staff are working on a complete revamp of our White-tailed Deer Exhibit. This can only be done when the trail is closed to the public.

The building has been completely gutted. All the exhibits were removed and structural upgrades are underway. As is often the case on reconstruction projects, a simple job escalates as problems are uncovered – a window removal reveals a rotting frame, which reveals rotting wall structures, which reveals a rotten sill! At the same time, all exhibit components are being redesigned and rebuilt. A new feeding station is complete and the deer are enjoying their new "under cover" feed dispenser.

Exhibit components include facts on deer tracks, antler growth, hazards, deer tick and Lyme disease, and habitat requirements. Each exhibit has our usual tactile interactives with meaning for visitors of all ages.

Funding for this project came from three sources: an estate gift from longtime volunteer and donor Ellen

Continued on page 2

FORGING TRAILS continued from page 1

Bennett, a disbursement from a pooled income fund from Honorary Trustee Bertha Fauver, and a gift from former trustee Tom Kelsey and his wife Liz. We are hugely grateful to these wonderful donors and good friends. The updates will be complete when the trail reopens on May 1.

Another change is underway. We are excited to announce a new Blue Jay study in the Bird Exhibit aviary. The plan is to band ten to twelve Blue Jays (with color-coded plastic leg bands) to allow identification of individuals. The jays will be part of a research project to study dominance at feeders within the aviary. You as a visitor can become a citizen scientist and help gather data about which birds are dominant, what foods they choose, and how individuals interact. We may also add a vocalization component since jays are well known for mimicking raptor calls. They often do impressions of Red-tailed, Broad-winged, Red-shouldered, and Cooper's Hawks...I've even heard them mimic Ospreys perfectly. No one really knows why. Do different jays mimic specific calls or are some proficient at multiple impersonations? Stay tuned.

*Forging Trails is written by Executive Director Iain MacLeod.
You may contact Iain at 603-968-7194 x 23 or iain.macleod@nhnature.org.*

NEWSBRIEFS

- ◆ You are wonderful! Thanks to generous support from almost 450 families, foundations, and businesses, we exceeded our \$300,000 Annual Fund goal by \$25,000! However, income shortfalls occurred in most other areas, notably attendance and lake cruise group tours, which made for a challenging year. Once the 2011 audit is completed in late spring, the Science Center will likely end the year with a \$51,000 operating budget deficit.
- ◆ In 2011, trail visits equaled 44,488 compared to 48,773 in 2010. Lake Cruise attendance remained strong, with 8,125 participants, down a bit from 8,298 in 2010. Fewer school children and teachers from across the state attended a program or visited, 14,806 compared to 15,899 in 2010. A devoted volunteer corps of 348 gave a total of 8,003 hours of service.
- ◆ With sorrow, we note the passing of former board member Ferris "Tommy" Thomsen, Jr. on January 2, 2012. Tommy led the Buildings and Grounds Committee and served on the Strategic Planning Committee during his time on the board from 1993 to 2004. During his tenure, the main exhibit trail was made accessible, and the goals of the Horizon Project capital campaign were realized. Longtime Camp Deerwood Director, All American lacrosse goalie, and former lacrosse and wrestling coach, Tommy was an inspiration to all who met him. We remember him with appreciation and affection.
- ◆ Project OspreyTrack continues this year when more New Hampshire Ospreys will be fitted with satellite tracking devices. Last fall, many of you followed Saco as she made her amazing journey from New Hampton to Haiti and beyond. We were all caught up in her migration and sad demise in the Caribbean. This year's goal is to track up to five birds (adult males and youngsters). We also created a new school program that uses this project to teach about adaptations. A young Osprey (found unable to fly in North Carolina) will be featured in the school program. Funding for Project OspreyTrack is provided by Public Service of New Hampshire, Jane B. Cook 1983 Charitable Trusts, and our own Innovative Project Fund.
- ◆ Explore our updated website, which we hope to have online by the end of March. Sullivan & Wolf Design in Campton reorganized our website, making improvements such as a search function and social media buttons on every page, a site map, printer friendly pages, and general content cleanup.
- ◆ Teachers across the state received a new four-color, 16-page school catalog in February. You can view it online at http://issuu.com/slncs/docs/school_catalog_2012/1, and on our website.

**Renew your membership
online at
www.nhnature.org**

SQUAM LAKES NATURAL SCIENCE CENTER

PO Box 173, Holderness, NH 03245
Phone 603-968-7194 Fax 603-968-2229
email: info@nhnature.org
website: 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.

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MEMBER PROFILE

EMILY BRUNKHURST



Emily Brunkhurst has been involved in the Squam Lakes Natural Science Center since the year it opened. Her parents, Ravida and Nathaniel Preston, were part of the group that supported its creation. At 12 years of age, Emily began volunteering as an animal care assistant, riding her bike from Mooney Point every day she could. This was before the creation of the Future Naturalist program in the 70s. "I loved hanging out at the

Science Center," said Emily. "I spent as much time there as I could and when I was home I was constantly catching garter snakes and toads. I know my time at the Science Center had a huge influence on my eventual career path to become a wildlife biologist. I have spent most of my career teaching others about nature. We need to have a close connection with the natural world, we need to understand how interesting it is, and most importantly, we need to feel connected to it in order to have the impetus to protect it. What happens to the natural world is so critical to the survival of our own species. So few people understand that connection. But it's that personal experience that really makes a difference. It's that opportunity to hold a snake or to watch a bird building its nest or to see a spider spin its web that makes people really appreciate, and better yet, love the natural world."

Emily continues to enjoy watching nature, whether it is at her bird feeder or while walking in the woods. She has been lucky to walk in the woods in New Hampshire as well as visit habitats in other parts of the world. "One of the coolest creatures I ever saw was a worm in Ecuador. I was on a trail in a cloud forest when I saw it crawling along the forest floor. I could not believe how huge it was – over three feet long and as wide as a sausage. Imagine how much soil this worm aerates and decomposes each day!"

Emily still visits the Science Center every summer, bringing her niece, nephews and friends. Recently she got

to watch Science Center staff provide enrichment activities to the animals and enjoyed the opportunity to see some different behaviors in these animals.

Emily lives on five and half acres with a big wildflower meadow full of interesting insects, some woods, and her dog, two cats, and husband. She volunteers with 4H, teaching entomology, quilting, woodworking, home repair, and orienteering.

Emily Brunkhurst is a wildlife biologist with the New Hampshire Fish and Game Department in the Nongame and Endangered Wildlife Program. Her work involves bats and loons as well as helping to create conservation plans for communities, watersheds, and regionally. She has a B.S. in zoology and wildlife management from the University of New Hampshire and a M.S. in entomology from the University of Rhode Island. Emily spent much of her career as a sanctuary director for the Massachusetts Audubon Society, including Stony Brook Wildlife Sanctuary in Norfolk and as founding director of the Oak Knoll Wildlife Sanctuary in Attleboro.



Emily checks on a loon's nest

WISH LIST

- small TV/DVD flat screen combo
- lawn and garden treasures for Kirkwood Gardens Day sale
- hand pruners
- computer speakers

For Animal Care

- dog treats (unopened)
- dehumidifier
- stainless steel/metal bowls

FERN QUIZ

- Which of the following produce spores?
 - Ferns
 - Mosses
 - Mushrooms
 - All of the above
- Sweet fern grows in old pastures and on burned-over land. It has a woody stem and its greenery looks like fern fronds. Is it really a fern?
- True or False? Some ferns are evergreens.
- Which of these ferns are found in dry, sunny locations?
 - Bracken Fern
 - Cinnamon Fern
 - Sensitive Fern
- True or False? A fern's sterile frond has the spores.

1. D 2. No 3. True 4. A 5. False
Fern Quiz—Answers:

GARDENER'S NOTEBOOK



WHY FIGHT IT? CONSIDER INVITING MOSS TO YOUR LAWN AND GARDEN

By **Brenda Erler**

Many gardeners seem to be in a love-hate relationship with moss. It can invade flower and vegetable gardens, choking out desired plants. This is where the hate comes in. But, it can also create a lush, beautiful, green groundcover in difficult, shady areas. What's not to love? In fact, there is a growing movement to replace entire water-gulping, fertilizer- needy, and high maintenance lawns with native mosses entirely, eliminating the need for mowing, costly fertilizers, and supplemental watering.

Mosses have been cultivated for centuries in Japan for their calming colors and beautiful textures. Mosses can be grown as groundcovers, between paving stones, on logs and rocks, on pottery and cement planters, and as a lawn substitute. They tolerate poor soils and are useful in preventing soil erosion on slopes. Even better, they are completely ignored by hungry deer but attract some birds that use moss in their nests.

There are roughly 12,000 species of moss native to the United States. Most prefer moderate to heavy shade with some morning or late filtered afternoon sunlight. They can withstand both heat and cold. The acidic soils and relatively moist climate of New Hampshire is inviting. Poor soils and even rocky surfaces work for mosses since, unlike vascular, rooted plants, they do not obtain any of their nutrients from soil, instead taking nourishment from the air and rainwater.

Mosses are primitive plants that reproduce by spores. The spores develop into delicate threadlike structures called protonema, or rhizoids, that act like anchors, clinging to rocks, soil, or other substrates. Tiny leaves (many only one-cell thick) grow from these rhizoids. It takes thousands of these plants clumped together to form a single patch of moss. If the moss encounters dry conditions, the leaves curl to conserve moisture and the moss takes on a darker color until the rain returns. Their ability to absorb moisture from rain or humid air helps them to retain moisture in the substrate below and enriches the soil when the moss decays.

Mosses are easy to cultivate, although few nurseries sell them. Don't worry! If you provide the proper conditions, the mosses will come. One cultivation method is to simply apply sulfur or ammonium sulfate to the planting area and wait. The lower pH you've just created will kill grasses and other weeds, allowing moss spores to take hold. Just keep the area moist and be patient. In a year, you should see the beginnings of a moss garden. If patience is not one of your virtues, you can gently lift existing patches of moss from other areas. Trying to disturb the rhizoids as little as possible, place the moss on tamped down soil or other planting surfaces, keep moist

(with non-chlorinated water) and enjoy. A third method is to create a "moss milkshake." Simply collect a patch of moss you find attractive and crumble it into a blender with two cups of buttermilk and two cups of distilled water. Blend the mixture on low until it is the consistency of a milkshake. Paint this mixture on your pots, rocks, garden sculptures or bare soil, keep moist, and watch the moss grow.

Moss is native, beautiful, multi-textured, and easy. It provides hiding spots for worms, insects, and amphibians, and nesting material for some birds. Why fight it?

Gardener's Notebook and Kirkwood Gardens are sponsored by the Belknap Landscape Company, Inc.
www.belknaplandscape.com

GREEN FACT

Here is one small thing that will make a big difference!

Spring Cleaning

- Instead of chemical air fresheners, use a box of baking soda or cedar blocks for natural fragrance in your home. Many houseplants are natural air cleaners, too.
- Consider using baking soda and vinegar instead of harsh chemical cleaners.
- Vacuum the coils on your refrigerator to help it run more efficiently.
- Avoid using paper towels and other disposables to clean; use rags instead.
- Don't throw out unwanted items like wood furniture, old clothes, or old electronics. Sell them online or at a yard sale, or give them away.

HELP SUPPORT SLNSC BY USING GOODSEARCH.COM

GoodSearch.com is a new Yahoo-powered search engine that donates half its advertising revenue, about a penny per search, to the charities its users designate. Use it just as you would any search engine, get quality search results from Yahoo, and watch the donations add up! Just go to:

www.goodsearch.com

and enter Squam Lakes Natural Science Center as the charity you want to support.

And, be sure to spread the word!

NATURALIST'S CORNER

SALAMANDER MARVEL

By Jeremy Phillips

When winter ends, I just cannot take a walk through the woods without flipping over logs and checking the edges of ponds. Spring is when I start my species count for the year. This year my tally started a little early and with a wet foot. Crossing a beaver dam near my house in January, my foot slipped and broke through the thin layer of ice at the pond's edge. As a water boatman (Corixidae family) swam by and the mud from its disturbance cleared, I noticed movement in the detritus at the bottom of the pond. Amid the leaves and sticks, I saw about 25 red-spotted newts (*Notophthalmus viridescens*). "One," I said to myself as I enjoyed their company and yearned for spring when I knew I would finally see more salamander species. Adult red-spotted newts remain active all winter long, usually under the surface of ice-covered ponds.

Once spring arrives the mole salamanders will emerge from the ground. One of the first is the yellow-spotted salamander or spotted salamander (*Ambystoma maculatum*). These chunky salamanders reach a length of eight or nine inches. They are black with yellow spots, as their name suggests. Spotted salamanders spend most of their time underground, except in early spring when they make their way to nearby ponds or vernal pools. The best time to find them is when they move from their underground tunnels to breeding ponds. Hundreds may flock to these ponds during warm rainy spring nights. During one spring rain, I counted 170 crossing a road that separated their breeding pond from their wooded underground homes. I walked up and down the road helping them cross.

They spend only a few days in the pond before they move back underground, leaving large egg masses attached to sticks and other debris in the water. The eggs usually hatch within 45 days. The gilled larva spends another 90 days underwater before emerging as small, two-inch versions of the adult. They will spend their first winter underground.

There are twelve species of salamanders living in New Hampshire, three of which are considered a species of concern by our state's Wildlife Action Plan. Five to seven of the species are easily found here, depending on where you live and if you look in the right places.

From the murky waters under ice, to deep underground in dark places, and under rotting and decaying logs...what marvelous creatures exist in seemingly undesirable places! Roll a log, look under rocks in streams, or get your feet wet. How many secretive salamanders can you find this year?



BLUE
HERON SCHOOL
OPEN HOUSE
Thursday • March 8
5:30 to 6:30 p.m.

FROM THE HERON'S NEST

By Laura Mammarelli



Despite the lack of snow, the children at Blue Heron School enjoyed the Science Center's fields, forests, and streams. Naturalist Eric D'Aleo went outside with them to look for examples of living and non-living things.



The children were delighted when the snow finally arrived. Outdoor activities included hiding in the trees, climbing on snow-covered rocks, and sliding down slopes at every opportunity.



On an especially warm winter day, the children stayed outside to play in the snow and enjoy lunch al fresco - a rare treat!

Blue Heron School, a nature-based Montessori school for children ages three to six, operates from Monday through Friday, 8:30 a.m. to 1:00 p.m. or 4:00 p.m., September to June. Interested parents may contact Laura Mammarelli at 603-968-7194 x 40 or blueheron@nhnature.org.

NATURAL ADVENTURES

PROJECT OSPREYTRACK

Saturday • March 24 • 10:00 to 11:30 a.m.
Ages 12+

Join Iain MacLeod to learn about Project OspreyTrack. This multi-year project uses satellite transmitters to follow Ospreys as they migrate from New Hampshire to South America. This summer, a female Osprey chick from New Hampton left her nest and journeyed south. In 10 days, she travelled more than 900 miles and then settled in West Virginia for a month before resuming her migration in October. Follow her movements and gain an amazing insight into migration using Google Earth, including a look at other Ospreys from the U.S. and the U.K. now being tracked using the same technology. Adult must accompany children.

Cost: \$7/member; \$9/non-member

NEW HAMPSHIRE WILDLIFE

Monday • April 23 • 10:00 to 11:00 a.m.
Families

Are you curious about the critters that inhabit the Granite State? Meet some wild animals you might see on a hike and learn about the characteristics that suit them for life in New England.

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

MOUNT FAYAL HIKE

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

Celebrate spring and Earth Day with a guided natural history hike on Mount Fayal (elevation 1,067 feet). A staff naturalist will help you to explore above your head and under your feet for nature's treasures.

Cost: \$7/member; \$9/non-member

LOST AND FOUND

Friday • April 27
10:00 a.m. to 12:30 p.m.
Families, Ages 10+

Have you ever experienced the feeling of being unsure of where you are in the woods, even for a moment? Spend the morning with Naturalist Eric D'Aleo to learn the basics of finding your way. Through fun activities and challenges, you will work alone and in small groups to develop your map, compass, and landscape observation skills. The final challenge will be for you to navigate successfully to a home base after being "lost."

Cost: \$7/member; \$9/non-member

SPECIES IN DANGER

Sunday • April 29 • 1:00 to 2:00 p.m.
Families, Ages 8+

The term 'endangered species' is often heard, but what does it really mean? This family program will clarify what endangered species status means at the state and national levels. You will meet a close relative of an endangered species, a species that is recovering well, and an endangered New Hampshire resident.

Cost: \$6/member; \$8/non-member

POSSUM POCKETS

Sunday • May 20 • 2:00 to 3:30 p.m.
Families, Ages 5+

Meet a marsupial! Yes, the opossum is the only mammal in North America that carries its young in a pouch. Through outdoor games, indoor explorations, and a face-to-face meeting, find out what makes these creatures tick.

Cost: \$7/member; \$9/non-member

LAKE SUNAPEE'S GLEON BUOY

Tuesday • June 5 • 7:00 p.m.
Adults

GLEON, the Global Lake Ecological Observatory Network, (www.gleon.org) is a grassroots group of limnologists, ecologists, information technology experts, and engineers with a common goal of building a network of lake observatories. June Fichter, Executive Director of the Lake Sunapee Protective Association (LSPA), will talk about LSPA's participation with GLEON. She will discuss Lake Sunapee's data retrieving buoy and the effects of extreme weather such as Hurricane Irene.

No charge, but reservations are required.

BREEDING BIRD CENSUS

Saturday, June 9
5:30 a.m. and 8:00 a.m.
All ages

Every spring, Senior Naturalist Dave Erler conducts a yearly breeding bird census on the Science Center's campus. You can participate, rain or shine, and get a snapshot of which breeding birds are on territory by listening to their unique songs. Come early at 5:30 a.m. to help inventory forested sections, including a hike up Mt. Fayal, or start at 8:00 a.m. to cover the fields and forest edges. Binoculars are available at no extra charge, or bring your own.

No charge, but reservations are required.

Natural Adventures have limited space available; reservations and advance payment required unless otherwise noted. Programs are subject to cancellation if minimum enrollment is not met.

CANOEING WITH BINOCULARS

Saturday, June 16 • 7:00 to 9:00 a.m.
Adults, Ages 16+

The Squam Lakes Natural Science Center and the Squam Lakes Association are teaming up for a birding by boat expedition. Enjoy a serene paddle along Squam's shoreline where many birds make their home. Scan the trees and water with binoculars to explore the lives of birds that live near or on the water. How many can we find? Which species will we see? We'll explore other natural history opportunities as well. Canoes are available at no extra charge, or bring your own.

Cost: \$15/member; \$18/non-member

SPRING BIRD ID SERIES

Fridays
May 4, 11, 18, 25 • June 1, 8, 15, 22
7:00-11:00 a.m.
Age 14+

Thanks to the Squam Lakes Conservation Society's land protection efforts, there are many protected acres of woods, meadows, and wetlands that provide outstanding and diverse habitats for birds. Join Iain MacLeod (on 5/4, 5/11, 5/18, 5/25, 6/1), Tony Vazzano (6/8), Rick Van de Poll (6/15), or Bob Ridgely (6/22), for this series of beginning birding programs to learn identification by sight and sound. Meet at the Science Center to travel by van to each site.

Cost: \$12/SLNSC or SLCS member;
\$15/non-member per date

PRESCHOOL SERIES

DISCOVER YOUR WORLD

June 13 • July 11 • August 8
September 5
9:30 to 10:30 a.m.
Ages 3 and under

Foster your child's own 'natural curiosity' and sense of wonder with a visit to a different natural community each month. These adventures will build a foundation for a lifetime of enjoyment and appreciation of the natural world.

Adult **MUST** accompany child at no additional cost.

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

SPECIAL EVENTS

Clean Up Day

Saturday • April 21 • 9:00 a.m.–1:00 p.m.

We need your help! Bushels of leaves, miles of trails, and winter's debris are waiting. Please come and help clean up the trails and grounds, including Kirkwood Gardens, in preparation for opening day on May 1. Some projects are messy and most work is outdoors, so dress appropriately. Extra leaf and garden rakes and work gloves are helpful too. Volunteers and staff share a complimentary picnic lunch at noon. Groups are welcome.

Sign up by contacting Volunteer Coordinator Carol Raymond
603-968-7194 x 22 • carol.raymond@nhnature.org.

New Hampshire Day

Saturday • May 5 • Trails open at 9:30 a.m.

\$3 Admission for New Hampshire residents

Thanks to the
sponsorship of



Celebrate the start of the 2012 trail season on New Hampshire Day! You might also find a bargain at the Howling Coyote Gift Shop sale.

Time your visit to take in a presentation

Up Close to Animals – 11:00 a.m. • 1:00 p.m. • 3:00 p.m.

WILD NH Canines Day

Sunday, June 3

Why do coyotes howl? How sly is a fox? Can you tell the difference between fox, coyote, and dog tracks? Find out about foxes and coyotes through crafts and a scavenger hunt or take a challenge to survive in a wild canine game.

Save these Dates

SUNDAY
MAY 13

MOTHER'S DAY
Free admission for
moms with another
paid admission

SUNDAY
JUNE 3

**WILD
NH CANINES**
Learn about
New Hampshire's
native wild dogs!

SUNDAY
JUNE 17

FATHER'S DAY
Free admission for
dads with another
paid admission

FOLLOW THE
SCIENCE CENTER ON

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Kirkwood Gardens Day

— NEW DATE —

Saturday • June 2

9:00 a.m. to 1:00 p.m.

*Gain inspiration from Kirkwood Gardens
and find beautiful plants for your own!*

- Fine perennials from a prestigious New England nursery
- Silent Auction of desirable plants and garden items
- Plants from knowledgeable local gardeners
- Garden collectibles and treasures
- Expert opinions and advice
- Coffee, cocoa, tea, cold drinks, and baked goods for sale
- Exceptional craft vendors, including:
- South African handmade linens, herbs, pottery, lampshades

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SUMMER EVENTS

SATURDAY NIGHT WILD!

Saturday • July 21 • 6:00 p.m.

"Live from Squam Lake, it's Saturday Night!"

Live comedy variety show, live music, silent auction, appetizers, dessert, and cash bar

ANNUAL MEETING

Saturday • August 11 • Business meeting at 9:30 a.m.

Election of officers and trustees

Presentation of

Association of Zoos and Aquariums' Accreditation

Complimentary continental breakfast follows

SHARE THE DISCOVERY BECOME A DOCENT IN 2012

Docent Training—Age 18 and up

Saturday • June 23 • 9:30 a.m.–5:00 p.m.
 Monday • June 25 • 4:00–8:00 p.m.
 Wednesday • June 27 • 4:00–8:00 p.m.
 Thursday • June 28 • 4:00–8:00 p.m.

Volunteer docents interact with guests on the Gephart Exhibit Trail, providing information about animals, exhibits, and trails. Docents may demonstrate live animals and help with animal enrichment. Docents serve as mentors to First Guides teen volunteers. Docents travel offsite to assist with naturalist programs and represent the Science Center at local fairs and events.

Cost: \$50 (financial aid available)

First Guides—Teen Volunteer Training

First Guides are teen volunteers who demonstrate natural artifacts on the Gephart Exhibit Trail, accompanied by adult volunteer docent mentors. First Guides may assist with Guided Discoveries courses for children.

Level I • Age 14–17 Tuesday • June 26 • 9:30 a.m.–4:30 p.m.
 Friday • June 29 • 9:30 a.m.–4:30 p.m.
 Saturday • June 30 • 9:30 a.m.–2:30 p.m.
Cost: \$50 (financial aid available)

Level II • Age 15–17 Tuesday • June 26 • 9:30 a.m.–2:30 p.m.
 Friday • June 29 • 9:30 a.m.–4:30 p.m.
 Saturday • June 30 • 12:30–2:30 p.m.
*Pre-requisite: Completed Level I
 No fee, but registration is required.*

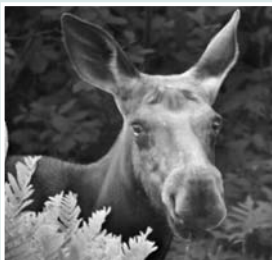
Level III • Age 16–17 By arrangement with Volunteer Coordinator
*Pre-requisite: Completed Level I and II
 No fee, but registration is required.*

Certified Interpretive Guide Training

Week of June 19

Taught by Audrey Eisenhauer,
 National Association for Interpretation Certified Interpreter Trainer.

**For more information or to register, contact
 Volunteer Coordinator Carol Raymond at 603-968-7194 x 22 or
 carol.raymond@nhnature.org.**



MOOSE AND BEAR TOURS

Saturdays in May and June

May 12, 19, 26
 June 2, 9, 16, 23, 30
 6:00–10:30 p.m.

Age 10+

Meet at the Science Center to travel together by van to the North Country for an evening of moose and black bear watching. First, we will visit a special place where mother black bears graze on a salad of flowers and berries while their cubs frolic nearby. As dusk approaches, we'll visit a moose 'hot spot' in search these giants feeding on roadside mud.

Cost: \$18/member; \$22/non-member

NATURE TOURS Wildlife of New Mexico

November 5–15, 2012

Join Iain MacLeod for a spectacular trip to the great southwest. Get away from cold New England weather and delight in the warmth of New Mexico. Visit Carlsbad Caverns, Bosque del Apache, and Bitter Lakes National Wildlife Refuges. Highlights include the spectacular caverns of Carlsbad, breathtaking dusk and dawn flights of sandhill cranes and snow geese, Bandelier National Monument with its ancient cliff dwellings, and the Living Desert State Park (AZA-accredited). The trip ends with a visit to Santa Fe to see the National Forest and explore this beautiful and historic town.

Contact Iain at 603-968-7194 x 23 or iain.macleod@nhnature.org for a full trip itinerary or to book your place on the trip.

Group size limited to 10 • Cost: \$1,950 per person

Includes all accommodations, leader fees, van transportation beginning and ending at Albuquerque airport, and admission fees.*

(Cost of meals and flights NOT included).

** Accommodations are double occupancy rooms (i.e. couples in one room, singles share with one other person). There is a \$200 additional fee for a single room.*

SCIENCE CENTER LAKE CRUISES

Sit back, relax, and enjoy the beauty of Squam Lake on one of these 90-minute guided tours aboard a canopied pontoon boat. See Squam Lake's beauty and majestic features. Observe Loons and Bald Eagles in their natural habitat.

EXPLORE SQUAM

May 19 to June 30 • Daily • 1:00 p.m.

July 1 to October 14

Daily at 11:00 a.m. • 1:00 p.m. • 3:00 p.m.

EAGLE CRUISE

May 22 to June 26 • Tuesdays • 3:00 p.m.

LOON CRUISE

June 15 to August 24 • Fridays • 3:00 p.m.

NATURE OF THE LAKES

July 3 to August 30

Tuesdays • Wednesdays • Thursdays • 4:00 p.m.

September 4 to October 11

Tuesdays • Wednesdays • Thursdays • 3:00 p.m.

DINNER AND SUNSET CRUISE

July 19 to August 23 • Thursdays • 5:00 p.m.

Reserve our canopied pontoon boats for your Church Island wedding, or charter a private cruise.

Reservations: Operations Manager Tom Klein
 603-968-7194 x 10 or • tom.klein@nhnature.org

**We are grateful for these memorial and honorary gifts received from
October 1 through December 31, 2011:**

**IN MEMORY OF
ANNE AND JAMES ALVORD**
The DeHaven Family

**IN MEMORY OF
ELLEN FABIAN BARRY**
Georgene and Rick Fabian

**IN HONOR OF
SUSAN AND LAURIE BEESON**
Beth and Hank Holden

**IN MEMORY OF
NATALE L. AND J. WILCOX BROWN**
Kris and Tom Brown

**IN MEMORY OF
DR. AND MRS. L. BETTS COPENHAVER**
Marcia and Dick Barrere

**IN MEMORY OF
MARY DENISON**
Elizabeth and William Dewey

**IN HONOR OF
INGRID AND DONALD GRAHAM**
Lola and Charles Baldwin

**IN MEMORY OF
FRAN FERNANDES**
Liza Acanfora
Jane and Allan Ames
Jennifer Balbach
Nancy and Erwin Chaves
Joyce and Joseph Ciffolillo
Elisabeth and Alan Cody
Patricia and Gerald Coken
Michelle and Rick Cusolito
Patty and Nate Dowden
Elinor and John Durkin
Andy and Mal Eaton
Rosemary Ford
Robin and Steven Fusco
Deborah Gerstein
Anna and James Gosse
Pamela Gould
Julie and Cutler Greene
Sally Guzdar
Richard Harris
Margaret Phillips and Jon Johnsen
Leslie and Daniel Keane
Betty and Kevin Keane
Barbara Kelley
Laura and Michael Kelly
Sandy and William Larsen

Susan and Tom Lindsey
Maureen Lynch
Missy Mason
Suzanne Missert
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Joanne and Robert Perry
Anita Phelan
The Purdy Family
Suzanne and Angelo Riva
Nina and Timothy Rose
Nance Ruhm
Judy Sniffen
Squam Lakes Association
Dorothy and Robert Steinle
Susan and Tom Stepp
Michelle McArdle and Terence Suchma
Karen Sudbury
Natalie Thompson
Melissa Wightman
Marcia Zahr
Shirley Ziebart

**IN MEMORY OF
PAUL MAYERSON**
Joan Mayerson

**IN MEMORY OF
'GIB' MERRILL**
Rose Anne Merrill

**IN MEMORY OF
BETSEY MORAN**
Patsy and Thomas Swindell

**IN MEMORY OF
DON PARSONS**
Priscilla and Wayne Fletcher
Nancy Parsons and James McDermott
Donna, Susan, and Natalie Parsons

**IN MEMORY OF
RICHARD SANDERSON**
Anonymous

**IN HONOR OF THE MARRIAGE OF
HALEY BOLIN AND JOHN SHELLITO**
Emily Andrews

**IN MEMORY OF
GREG SMITH**
Barbara and Ronald Geigle
James Talcott Fund of the New York Community Trust

IN MEMORY OF ROBERT WOODWARD
Marilyn W. Twombly

FASCINATING FERNS continued from page 1

field by the osprey nest platform. This fern has sterile fronds that are short, triangular, and light green with wavy divisions that do not cut right back to the midrib. We also found a fertile frond from last year – a brown shoot with bead-like spore cases arranged in two rows at the top. I tried to shake out spores but they had all dispersed. What kind of fern do you think this is? It is a sensitive fern, named because it wilts with the first frost in the fall.

Next, we stopped on a bridge over an intermittent stream and saw fluffy fiddleheads unfurling along its banks. There were also tall green sterile fronds surrounding narrow fertile fronds. Some of the young fertile fronds were dark green while others had developed a characteristic cinnamon color. Did you guess this is a cinnamon fern? Close to another stream further up the wooded trail, we diverged onto the rocky hillside and located another well-named fern. Because this fern is evergreen, we saw the large, dark fronds from last year close along the ground. New brighter green fronds were just emerging. At the base of the pinnae (leaf-like sections of the frond) we saw a distinct “toe” that makes each pinna look like a Christmas stocking! Yes, this is the Christmas fern.

Where the Ecotone Trail opens up into a field, we found a fern well adapted to sunlight and dry soils. In this fern, the blade (“leafy” part of the frond) is triangular and divided into three sections. The edges of some frond segments are rolled under, hiding spore cases. It is called an Eagle fern because its shape resembles this bird in flight. More commonly, it is called . . . a bracken fern.

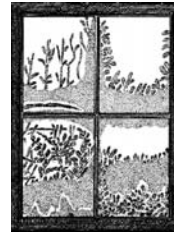
Our last fern made us work to find it. We descended past the Upper Pond, across the floating part of the Wetlands Boardwalk and scanned the outlet stream banks. There it was! This tall fern, fronds clumped together, has a strange section in the middle of several fronds. All of a sudden, the pinnae (frond “leaflets”) are reduced – they are very short and dark. This is a different place for the spores than we had seen – a fertile section, interrupting the frond. Yes, this is an interrupted fern. A high five for the five ferns!

Being four or five years old like the little “Blue Herons” is not a requirement for getting excited about ferns. You can join the fun too. Use the pocket guide, *Ferns of the Northeastern United States*, by Farida A. Wiley for a great start. Spring is a good time to unfurl and try something new. If you are an experienced fern finder, why not take a walk and check in with your fascinating fern friends!

NATURALIST'S LEGACY SOCIETY

Please let us know if you have named the Squam Lakes Natural Science Center in your will or other estate plans. Naturalist Legacy Society members are invited to donor recognition events and recognized in the Annual Report. Your participation may inspire others to follow your lead.

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



OPENING A WINDOW TO THE NATURAL WORLD

RECENT BEQUESTS

Marjorie L. Tuttle of Concord passed away in January 2011. She was the wife of Lewis C. Tuttle, who died in 1995. Marge was a generous member and donor who visited the Science Center several times a year. She loved to bring her grandchildren here (all adults now) to teach them about the environment and animals. She was especially concerned that young people become educated about the environment to preserve our future. Marge was also an active member of the Appalachian Mountain Club, the Harris Center, and the Society for the Protection of NH Forests, which named her Volunteer of the Year in 2000. In May 2011, the Science Center received an unrestricted donation from Mrs. Tuttle's estate, which the Board of Trustees used to fund two special projects. The first is a Point-of-Sale (POS) system for admissions and gift shop operations. This winter we converted to TAM Retail, eliminating four 20-year-old cash registers. The POS system allows us to manage gift shop inventory, obtain admissions and store sales reports, and analyze sales trends and profits with efficiency and accuracy. (Former Trustee Pete Richards also made a donation towards the POS purchase.) The second project is the replacement of 15-year-old database software. Sustain, the new system, will track donors, members, and volunteers, and improve efficiency, security, and productivity. We are grateful to Mrs. Tuttle for this bequest.

We note the passing of Natale L. Brown in December 2011. Her spouse of more than 60 years, J. Willcox Brown, passed away in 2005. Will served here on the Board of Trustees from 1985 to 1987 and was an Honorary Trustee from 1995 until his death. Natale and Will were delightful people whose lives touched many. Almost anyone who knew them can tell charming stories about them and was inspired by their lives and dedication to numerous organizations and causes. In 2001, the University of New Hampshire honored both Natale and Will with the Granite State Award for their work as conservationists and longtime public servants to the State. Their philanthropy continues after their deaths. The Science Center received a bequest in January from Natale and Will's estate. They directed their gift to the permanently restricted endowment fund where it will support the Science Center's long term financial stability.

More than ever, nonprofit organizations like Squam Lakes Natural Science Center benefit from strong financial assistance from people like Marjorie Tuttle and the Browns. Just as they did, you can make a lasting contribution to environmental education by remembering Squam Lakes Natural Science Center in your will.

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

TRAIL'S END

IN PRAISE OF BOATS

Back in 1997, my wife and I bought one of the then-new plastic buoy markers for Squam, and were rewarded with a free "Golden Pond" boat tour. We learned that fishermen hate loons because they eat all the smelt salmon might survive on, that moose never come to the shores of Squam, and that the owners of Three Sisters were heirs to a plumbing supply fortune. Of course, none of this was true.

The Science Center has offered lake ecology classes for students since 1984, but got into the tour business big time when we acquired the Golden Pond/Movie Tour assets in 2000. That made us the obvious choice for Captain Joe Nassar to approach when he decided to retire and sell his operation in 2006.

Since then, we've served nearly 50,000 visitors to Squam with a combination of general ecology tours, loon tours, eagle tours, naturalist-guided tours, and even dinner cruises. We're also the go-to transport provider for weddings on Church Island, and a waterborne venue provider for family reunions, cocktail parties, and the like. And, we always get our facts right.

Here are some of the things I love about our boat business. First, it lets us reach some demographics our trail and school operations don't – out-of-staters who come in on group tours, childless couples from nearby resort communities, older people to whom our trails are challenging. Of course, we

cross-sell our boat visitors on trail visits, and vice-versa, often via our very healthy "combo pass" offering.

Second, the boats extend our mission fulfillment to the ecology of New Hampshire's fresh water world, in a much more compelling fashion than we were able to do on our main campus.

And, not unimportantly, boats represent one of two business segments (retail is the other) that fully covers its costs and contributes to support of our core school and trail enterprise. We were reminded how important boats are to us last August, when a weak economy and broad TV coverage of hurricane-damaged roads caused several busloads of tours to cancel. Our annual boat revenues were only flat, after several years of lovely increases....and boy did we feel it!

So, here's a shout-out to our 13 able captains; to Tim Curry's staff which maintains our 5-boat flotilla; to Operations Manager Tom Klein and crew who try to fill up all 110 boat seats, every day; and to the visionary staff and trustees who got us into this: thanks, people, it's a business we couldn't and shouldn't do without.

Trail's End is written by Laurie Beeson, Chairman of the SLNSC Board of Trustees. You may contact Laurie at 603-968-2409 or lbeeson@worldpath.net.



SQUAM LAKES
NATURAL SCIENCE CENTER

SPONSOR A SPECIES

Sponsor a Species is an educational experience. Once you have chosen a species and submitted the form, you will receive a certificate, information about your species, a natural history word game, and a photo postcard. You will also be satisfied knowing that you are helping the Science Center teach its visitors about wildlife. Your name will be listed on a poster in the Trailhead Gallery from May 1– November 1.

I want to Sponsor A Species

Name _____ Phone _____

Mail Address _____

City _____ State _____ Zip _____

Email _____

Name to be listed in Trailhead Gallery: _____

Select the species you would like to sponsor for this season for \$50. All gifts are tax deductible.

- | | | | |
|--|---------------------------------------|--|---|
| <input type="checkbox"/> Black Bear | <input type="checkbox"/> Saw-whet Owl | <input type="checkbox"/> Beaver | <input type="checkbox"/> Coyote |
| <input type="checkbox"/> White-tailed Deer | <input type="checkbox"/> Bald Eagle | <input type="checkbox"/> Mountain Lion | <input type="checkbox"/> Bobcat |
| <input type="checkbox"/> River Otter | <input type="checkbox"/> Red Fox | <input type="checkbox"/> Striped Skunk | <input type="checkbox"/> Great Horned Owl |

Enclosed is my check in the amount of \$ _____ MC Visa AmEx Discover

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TRACKS AND TRAILS - SPRING 2012

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 Teamwork. Excellence.
 Stewardship.

Values for success.



THE
**HOWLING
 COYOTE**

Gift Shop at the Science Center

Members receive a
10% DISCOUNT

GIFTS * BOOKS * APPAREL * TOYS

**STARTING MAY 1
 OPEN DAILY**

9:30 a.m.-5:00 p.m.

Open otherwise by appointment;
 please call 603-968-7194.

WELCOME BACK!

**Trails open for the season
 Tuesday, May 1
 9:30 a.m. to 4:30 p.m.
 Last admission 3:30 p.m.**