



CHESTNUT CHALLENGE

By Margaret Gillespie, Illustration by Cheryl Johnson

Selective vision! That is what I found myself doing as I prepared for a fern discovery walk with the Science Center's Blue Heron School children. On my daily walk with my dog down a woods road to a pond, I collected samples and noticed ferns that I never realized were there. To my delight, after the class, one of the students in particular is now identifying ferns from car windows and on walks. Ferns now stand out in the landscape of his life! Currently my selective vision has moved from ferns to chestnut trees.

I was amazed to find chestnut sprouts on this pond walk I have done for four years! In fact, this morning when I discovered yet another sprout, I said to the young chestnut, "What are you doing here?" The question is a good one, and we will delve into the background behind this inquiry. Just don't tell anyone that I'm now talking to trees!

The American chestnut (*Castanea dentata*) is a member of the beech family and at a quick glance, the leaves resemble beech. However, the fringe of chestnut leaves looks like larger saw-teeth, hence the Latin name "dentata" (toothed). Both have nuts in spiny burrs. Other local members of this family are oaks. These chestnuts were sometimes called

"perfect trees," growing prolifically, reaching heights of 100 to 150 feet and amazing diameters of up to 10 feet! Top that with the wood being

valuable timber and the abundant production of nuts making it a keystone species, supporting turkeys, bears, and other wildlife, not to mention people, particularly in the Appalachian Mountain region. American chestnuts are naturally sweet, storing carbohydrates as sugar in the raw nuts rather than starch.

A favorite visual legend of mine is that in the 1800s, a

squirrel could get from Georgia to Maine without touching the ground by traveling through the chestnut canopy. If, at the time, one in four, in the core of its range were chestnuts, what happened to them?

At first, the chestnut blight was a mystery. Trees starting dying in the late 1800s, but the cause, a new fungal pathogen, wasn't identified until 1904 in New York City. Scientists first noticed the orange-red fruiting bodies on the bark of ailing trees. These trees were eventually girdled by large cankers and died. Ultimately the culprit was identified to be chestnut blight fungus (*Cryphonectria parasitica*), probably introduced with imported Japanese chestnut trees.



American chestnut

Continued on page 10

FORGING TRAILS

JOIN ME IN SCOTLAND

On page eight you will find an ad for a June 2012 trip to Scotland with me. This Hebrides and Highlands tour is a trip that I have done many times, and unlike pre-packaged trips, is a very personal and unique tour of favorite parts of my homeland. On previous trips there has often been the running joke that, like the Bonnie Prince Charlie trail, there should be plaques along the route of my trip commemorating places where Iain has slept. For some reason the Scottish Tourist Board hasn't arranged that yet.

Revisiting Hebridean haunts that I knew so well as a young man, I am always relieved to find that so little has changed. There is a "time stood still" ambience to the Western Isles. Little cottages line the salty bays and inlets where the twice daily north Atlantic tide replenishes the wrack lines on white sand beaches that would be the envy of any Caribbean island. Gray Seals still bask on rocks and bob in the water; reinforcing legends of selkies and mermaids. If you sing to a seal, it will come closer and maybe sing back.

Otters fish in the kelp beds as the evening tide turns. Their playful antics – and hunting proficiency –

Continued on page 2

FORGING TRAILS continued from page 1

often attracts the attention of huge White-tailed Sea Eagles, which have returned to many Hebridean islands after being rendered extinct by Victorian trophy hunters. They, like our closely related Bald Eagles, are not proud and will happily steal the Otter's hard-earned catch.

As the blood-red sunset puts everything in soft, pink focus, the gentle burbling of Curlews and the piping of Oystercatchers melds with the chorus of black-faced lambs still chasing their mothers for a tail-twitching meal. This is a sound palette that has changed little in centuries.

Everywhere there are standing stones and covered cairns that betray an ancient past that dates back to Norse invaders. It doesn't take much imagination to conjure up images of Viking long ships hauling up the sea lochs and sending the tartan-clad native crofters scurrying for mountain caves.

Despite these unwelcome invasions, modern day islanders are very hospitable and welcoming to visitors – with horned helmets or not – who now arrive by metal ferry rather than wooden war ship. On my trips, I seek out special hotels with character; grand estate homes with gardens and history. Although Scottish food has, perhaps rightly, received a bad rap in the past, I know places where the cuisine is second to none. Imagine scallops, the size of saucers that the chef dived for that morning. Venison that roamed the nearby heather-clad peaks last week. You haven't really had a breakfast of champions until you have had real Scottish porridge with a generous tablespoon of whisky, followed by bangers and Aberdeen black pudding. And then there is haggis . . . everyone who tries it, loves it. The very best comes from McSweens in Edinburgh.

So if you crave scenery that is second to none, spectacular wildlife, rich cultural history, and great food, all packaged in an intimate, relaxing, small group adventure, then please check out my Hebrides and Highlands itinerary and give me a call. I would love to share this very special place with you.

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

◆ Join us in welcoming Nancy Kitchen as our new Animal Care Manager. Nancy is a graduate of Bloomsburg University of Pennsylvania. She comes to us from the Jacksonville Zoo and Gardens in Jacksonville, Florida, another AZA-accredited organization, most recently as Senior Mammal Keeper dealing primarily with Great Apes. Nancy has also worked at the Bergen County Zoo, Six Flags Great Adventure Wild Animal Park, and interned at the Center for Great Apes. Nancy has over eight years of experience in animal husbandry and is a member of the American Association of Zoo Keepers. She has also spent time volunteering with Florida Fish



and Wildlife Commission's Marine Mammal Rescue Team. Nancy moved to Holderness with her husband, Terry, and their two children in June.

- ◆ Richard Hodges is a new Tour Captain who has been a Squam Lakes' summer resident for most of his life. He recently returned to the East Coast after several years in California as a naturalist at a private outdoor school.
- ◆ New this fall, 'Up Close to Animals' continues on weekends in September up until and including Columbus Day, October 10. The presentations are at 12:00 and 2:00 p.m. at the amphitheater.
- ◆ Blue Heron School successfully completed its first year in June. It reopens in September with a new option for families to enroll children ages 3 to 6 for a full day (8:30 a.m. to 4:00 p.m.) The original half-day option (8:30 a.m. to 1:00 p.m.) is still available as well.

SQUAM LAKES NATURAL SCIENCE CENTER

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Squam Lakes Natural Science Center is a non-profit educational institution incorporated in 1966 as a charitable organization under statutes of the State of New Hampshire with its principal place of business in Holderness. 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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Continued on page 3

VOLUNTEER PROFILE

NANCY-JANE DUNCAN



Tell us a bit about your background, hobbies, and interests.

My education has always been about the world around us, big and small. I went to the University of New Hampshire, where I majored in botany

and zoology and minored in literature and psychology. My master's thesis was *The Flora of Bear Island (Lake Winnepesaukee)*. Later I taught at Belknap College for nine years. I attended three National Science Foundation institutes for biology professors; one for Rocky Mountain ecology, one for desert biology, and the last one on marine life in Puerto Rico. My teaching experience started at Beaver Country Day Camp in Chestnut Hill, Massachusetts, where I was the nature counselor working with 300 children for four summers.

Do you have a favorite childhood memory that involves nature?

When I was very young my mother showed me "British Soldiers" lichen and ever since then lichens and mosses have fascinated me. A few years later, my father got me out of bed

to see the northern lights, which I have never forgotten. He also taught me how to set up a "balanced aquarium" with real rocks, plants, sand, and later goldfish.

What inspired you to become a Science Center volunteer?

It was just my love of the natural world and the joy of sharing it with others, especially young people. I saw an ad in the newspaper about the docent program and signed up in 1999.

Do you have a favorite animal or experience to share?

One of my favorite props is the skunk pelt. It always is easy to ask questions about skunk habits. I was with a school group and the children were asking, "How do skunks spray?" A little five or six-year-old girl raised her hand and said, "I know." I asked her to tell us and she explained it perfectly. When I asked her how she knew the correct answer, she said, "I got skunked." I asked her, "Why were you out with the skunks?" She answered, "I was chasing fireflies." This enchanted me because it was the same thing I might have done.

Why do you think it is important for children to have a strong connection to nature?

Having a strong connection to nature will help children to learn to care for it. Children have such an innate curiosity. Children have asked me about habitat, how to help save turtles and give them good places to live.

Nancy-Jane Duncan is a teacher who has never retired from learning about nature and sharing her knowledge with others. Nancy-Jane donated a total of 1,409 hours as of December 2010. This year alone, she has given 110 hours so far.

NEWSBRIEFS continued from page 2

- ◆ Science Center members may enjoy a special opportunity for a reciprocal membership exchange with the McAuliffe-Shepard Discovery Center in September. Remember to take your membership card with you for your free visit. See www.starhop.com or call 603-271-7827 for more information. This offer is not valid for special events or planetarium shows.
- ◆ In March, Senior Naturalist Dave Erler took part in a shrub and vine workshop offered by the University of New Hampshire Extension Service. Animal Care Assistant Tom Anderson attended the Animal Behavioral Management Alliance in Denver in April. In June, staff, interns, and volunteers all took part in customer service training, facilitated by Carrie Gendreau of The Training Connection in Littleton. Summer Instructor and Associate Teacher Jordan McDaniel went to a two-day Montessori Overview for Assistant Teachers in July, part of the

Summer Institute series at Gordon College in Wenham, Massachusetts. In August, Blue Heron School Director Laura Mammarelli organized and attended a program presented by Erin Hollingsworth, of New Hampshire Project Learning Tree, hosted by the New Hampshire Montessori Association.

- ◆ Volunteers continue as an active and strong, enthusiastic, and supportive presence. We welcomed 10 new docents to the docent program this year. Twelve First Guides attended Level I training, four First Guides completed Level II training, and five First Guides completed Level III training. A new position was created for a volunteer assistant to help at the docks with cruises. Several new volunteers joined us to help in Kirkwood Gardens and as Trailhead Greeters.
- ◆ Thanks to a grant from Plymouth Rotary Club, the Science Center is working with the Pemi Youth Center of Plymouth

from October to May to present indoor and outside environmental education programs twice a month for youth who participate in Pemi Youth Center's after school series.

- ◆ Meredith Village Savings Bank of Ashland sponsored our entry in the Independence Day parade on July 4. Volunteers and staff marched and handed out candy donated by Tootsie Roll Industries along the way.
- ◆ New this year September 10 is Raptor Day! You can learn all about raptors (hawks, eagles, falcons, ospreys) and raptor migration, and participate in a migration watch to look for birds migrating south at our hawk watching station.
- ◆ Autumn Festival is on September 24. Come and meet Michael Tougias, bestselling author of 19 books, including *There's A Porcupine In My Outhouse: Misadventures of a Mountain Man Wanna-be*. He will sell and sign his books following his program. There

Continued on page 11

GARDENER'S CORNER



WHY NOT PLANT VEGGIES IN YOUR FLOWER GARDEN?

By Karin Karagozian

When most of us think about gardens, we think about vegetable or flower gardens. I would like you to consider combining the two and creating your own piece of biodiversity. Often those who grow flowers think that growing vegetables requires farming know-how and thus think it is beyond their ability. In fact, more often people just do not even consider mixing the two.

So, those of you with flower gardens, consider how nice it would be to make space amongst your flowers for some favorite vegetables. Don't be intimidated by vegetables. They are your friends and require no more work than your flowers. Soil requirements should be the same for both but do consider how much sun you have, as vegetables like at least six hours of sun. Now mull over what vegetables you love most and how much flower space you are willing to hand over to delectable edibles. Here is where a good garden catalog may help.

There are many good seed catalogs that are terrific references and available for free: Johnny's Selected Seeds, Seed Savers Exchange, High Mowing Organic Seeds, and so forth. Order them from their websites. The catalogs show pictures of vegetables, tell you how big they will grow, and how close to plant them. You will also see the diversity available to you. Imagine a border of purple, lime green, or dappled green lettuces in front of your perennial bed. When you see the variety available, you will be emboldened to order seeds to keep your border colorful throughout the season.

You can read about different tomato plants, their growth habits, and final height. This will help you select plants next season. You will have wonderful choices of different types of tomatoes to grow ...more than are available in the market.

You will learn that cucumbers and pole beans can grow on trellises and thus save garden space. How about a nice slender French green bean or a purple bean that turns green when cooked? A slender seedless cucumber can grow alongside your clematis or amid other climbers.

This is a perfect time to scout your flower gardens and look for places to add vegetables next year. Ingredients for your favorite salad are a great starting point. Imagine eating that first homegrown salad with a few nasturtium flowers and leaves added for great color and taste.

Karin Karagozian has been an active garden volunteer since 1998.

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

FROM THE HERON'S NEST

By Laura Mammarelli



Police Chief Jake Patridge and Fire Chief Eleanor Mardin gave Blue Heron School children a tour of the police station and fire station in June. The children enjoyed seeing the jail cell, sounding the siren in a police car, and sitting in the front seat of the town's antique fire truck.

We are excited to offer a longer day option for Blue Heron School, starting in September, which we hope will make the program available to more families. The extended day program will have activities indoors and outside until 4:00 p.m. Families will have the option of signing up for either the 1:00 p.m. or the 4:00 p.m. departure. Blue Heron School is looking forward to starting its second year; some children will be returning and some new children will join the program. There are still some openings available.

"Blue Heron School is great! Every kid deserves a Nature/Montessori Preschool. Since [our daughter] has started Blue Heron, her attunement to nature has strongly deepened; she is more confident and social around her peers and around adults; and her academic skills are beginning to blossom."

—Mary Doyle, Blue Heron School parent

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. Blue Heron School starts its second year in September and is now accepting applications for enrollment. For an application or more information, contact Laura Mammarelli at 603-968-7194 x 40 or blueheron@nhnature.org.

Renew your membership online at
www.nhnature.org

NATURALIST'S CORNER

RED EFTS

By Dave Ertler

Many people avoid going outside after a rain. Your feet get wet as do your legs when you brush against ferns and shrubs and even your head feels the last of the rain drops drip from tree leaves overhead. But what a great time to be in the forest. You can walk so quietly over the damp forest floor and if you watch where you're stepping, you can't help but find the pixie-sized red eft. These little orange red amphibians (1 to 3 inches) take advantage of the damp conditions to wander out from their shelters under rotten logs, rocks, and leaf litter. Their bright orange red skin dotted with conspicuous black-outlined red spots makes them distinctive. The coloration serves as a warning to hungry birds and other predators that if they try to eat an eft they may experience effects of the toxic secretions their skin produces. Red efters are little predators themselves, preying on small insects and other invertebrates, a diet not too different from the other 11 species of New Hampshire salamanders.

Red efters are actually the immature land stage of New Hampshire's state amphibian, the eastern or red-spotted newt (*Notophthalmus viridescens*). Red efters differ from other salamanders in their life cycles, as well as with the physical characteristic of lacking external rib lines (costal grooves). They begin their life cycles as eggs individually attached to

submerged vegetation or substrate in a pond, marsh, or shallow lake. After several weeks, the larvae hatch. The mottled light brown tadpoles with their distinctive external gills feed on small aquatic animals and frog eggs. The larvae in turn are preyed upon by other predators and only about two percent of the larvae survive the next couple of months to reach the eft stage. After two or three months as larvae they metamorphose, absorbing their gills and changing to the orange red color. They typically remain in the eft stage for two to three years, but occasionally much longer. Once they achieve their maximum growth as an eft (three plus inches) their pituitary gland sends chemical signals causing them to seek water and begin their change to the olive green adult stage, while retaining the red spots from which their common name stems. The adult metamorphosis includes growing a bit larger and developing a vertically wedge-shaped tailfin. As adults, they remain in the water the rest of their lives, which allows them to be active year round. They usually live another three to four years, occasionally up to 10 years. Although not as toxic as adults as they are as efters, they still secrete enough poison to protect them from predatory fish. Come spring, if you find a shallow, weedy area you may see them engaged in what looks like a wrestling match with one putting a headlock on the other. The wrestling pair is actually engaged in courtship. The female secretes hormones and while the male headlocks her, he drops a package of sperm called a spermatophore. If she is receptive, he guides her to the spermatophore and she engulfs it with her cloaca, completing the fertilization internally. She then lays 200 to 400 eggs individually, and the cycle starts all over again.

So the next time it rains, make a point of going out for a walk in the woods. You might be amazed at how many efters you find. My record for a quarter-mile stretch (with the help of my daughters when they were much younger) is 79. Although that record stands for over a decade now, I still find myself counting red efters on every post rain walk. When I find the first one, I can't stop myself from picking up and saying hi to this little red pixie.

GREEN FACT

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

Bottled Water vs. Tap Water

We all know drinking water is essential to good health, but should you drink bottled water or tap water?

- bottled water costs up to \$4 per bottle; tap water costs less than a penny
- most of the cost of bottled water is packaging and requires significant energy to produce
- the plastic most commonly used for bottled water is made from petroleum
- most plastic water bottles are not recycled, going instead to clog up landfills
- plastics used for bottled water may leach chemicals into the water called phthalates, known to disrupt human hormones
- shipping bottled water is costly, causes pollution, and wastes gasoline
- globally the Earth is undergoing desertification; pumping groundwater out faster than it is replenished naturally is unsustainable
- bottled water is seldom of higher quality or safer than tap water and about 25 percent of the time actually is tap water

The environmental choice is clear: tap water is best for you and for the planet.

AMERICAN CHESTNUT QUIZ



1. The American chestnut is in the same family as the
A. oak B. elm C. beech D. A and C
2. True or False? Because of the chestnut blight, there are no American chestnut trees left in New England.
3. The chestnut blight is caused by
A. bacteria B. insects C. fungus
4. American chestnut trees were important for
A. lumber B. nuts C. tannins D. all of the above
5. What protects the nuts of chestnut trees until they are ripe?

1. D 2. False 3. C 4. D 5. Spiny burrs
American Chestnut Quiz—Answers:

NATURAL ADVENTURES

COLOR CODED MESSAGES

Wednesday • September 7

9:30 to 10:30 a.m.

Age 3 and younger

Adult must accompany children
(at no charge).

Nature talks with color—some colors help to hide, some say danger, and still others mean welcome. Explore the natural world of color with your child.

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

WILD FOR WETLANDS

Sunday • September 11

1:00 to 3:00 p.m.

Families, Age 6+

Although our Earth is covered in water, most is located in the oceans. Only a small fraction is fresh water, essential to all living things. From the seacoast to the mountains, New Hampshire has many different kinds of wetlands. Learn why wetlands are important and what forms of life depend on them. You will learn through outdoor exploration and hands on observations as you dive into the world of wetlands.

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

SWAMP WALK

Friday • September 23

10:00 a.m. to 12:00 p.m.

Families, Age 8+

The first day of autumn may be the best day of the year to explore a swamp. Water levels are low, the first hard frost has reduced the mosquito population, and the red maples are ablaze with color. This easy hike includes a foray along the edge of a red maple swamp and then through its middle via the Chamberlain-Reynolds Memorial Forest boardwalk. You will learn why swamps are important and learn about the amazing plants that inhabit them.

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

FALL FOLIAGE PHOTO CRUISE

Saturday • October 1

7:00 to 9:30 a.m.

Age 16+

Picture a crisp morning cruise on Squam Lake surrounded by loons and the vibrant colors of fall, what could be better? Come aboard and set out to capture the images of the brief, colorful foliage season on Squam Lake. You will photograph from the water as well as from different shore locations (weather permitting). Learn about lighting, composition, perspective, and subject matter, (subject to the comfort level and knowledge participants). This trip is for beginning and amateur photographers alike.

Cost: \$22/member; \$24/non-member

GO WILD WITH CRAFTS

Saturday • December 3

Families, Age 4+

10:00 to 11:30 a.m.

Let's have fun with natural materials and learn about nature through crafts! You will transform pinecones, milkweed pods, acorns, seeds, sticks, and other natural treasures into amazing items to take home. You will also meet a creature that depends on its own wild creations to survive.

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

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

New! UP CLOSE TO ANIMALS
presentations continue this fall!

Saturdays and Sundays

September 3 through Columbus Day,

Monday, October 10

12:00 p.m. and 2:00 p.m.

VISITING NATURALIST MINI-SERIES

Free Adult Lectures

*No charge to attend,
but reservations are requested.*

FRESHWATER MUSSELS OF NEW HAMPSHIRE

Monday • September 12

7:00 p.m.

Freshwater mussels are one of North America's most endangered groups of organisms. Join Mike Marchand, Wildlife and Wetlands Biologist of New Hampshire Fish and Game, for a review of the 11 species of freshwater mussels native to New Hampshire, three of which are of concern. Learn about their status and conservation efforts in New Hampshire.

NORTHEASTERN BATS: GOING, GOING, GONE

Monday • September 19

7:00 p.m.

Join Susi vonOettingen, Endangered Species Specialist for the New England Field Office of the U.S. Fish and Wildlife Service, for this engaging presentation about bats of the northeast. Specifically, you will learn about white nose syndrome, what it is, and what it means to our native bats' future.

EFFORTS TO PROTECT AND RESTORE WILD BROOK TROUT POPULATIONS

IN NEW HAMPSHIRE

Monday • September 26

7:00 p.m.

Although once considered to exist in every major watershed in New Hampshire, the current distribution of wild brook trout populations has been reduced in several areas of the state. As a surrogate to illustrate good water quality and pristine aquatic habitats, the presence of wild brook trout should not only be a concern for anglers, but all those who prefer clean waters in our rivers and streams. Join Ben Nugent, Fishery Biologist for New Hampshire Fish and Game to learn about current conservation efforts in New Hampshire, as well as what can be done at the local level to protect this state treasure.



HOME SCHOOL SERIES EARTH CYCLES

These educational series are specifically for home schooled students. Programs focus on the cycles you can observe in the natural world around us. Topics include rock cycle, water cycle, life cycles and more!

November through April • First Thursday of the month

November 3 • December 1 • January 5 • February 2 • March 1 • April 5

10:00 to 11:30 a.m.

Two sessions available: Age 4 to 6 or Age 7 to 10

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

Reserve all six programs for a discounted rate: \$8/member child; 10/non-member child

All Home School Programs align with the New Hampshire Science Framework. One adult must attend with children at no cost. Each additional adult pays child fee.

SPECIAL EVENTS

RAPTOR DAY

Saturday • September 10

9:30 a.m. to 4:30 p.m. (last admission at 3:30 p.m.)

Join us for a special day to learn all about raptors. No . . . we didn't add Jurassic Park dinosaurs to our collection . . . we mean modern-day feathered raptors (hawks, eagles, falcons, ospreys). Hourly live-animal programs will showcase the raptors that live here. You will also have a chance to learn about raptor migration and participate in a migration watch. With luck, there will be many hawks overhead, migrating south. Thousands of birds migrate from their summer breeding grounds across North America to southern locations, some as far away as South America. Learn where the best viewing spots are in New Hampshire, how to identify hawks, and scan the skies at our hawk watching station.

Cost: \$15/adults, \$12/seniors, \$10/youth

No charge for Science Center members or children 2 and under

GRANDPARENT'S DAY

Sunday • September 11

9:30 a.m. to 4:30 p.m. (last admission at 3:30 p.m.)

Celebrate Grandparents Day with free admission to the Gephart Exhibit Trail for each grandparent accompanied by a paying grandchild. Bring the whole family "Nearer to Nature!"

Cost: \$15/adults, \$12/seniors, \$10/youth

No charge for Science Center members or children 2 and under

AUTUMN FESTIVAL

Saturday • September 24

9:30 a.m. to 4:30 p.m. (last admission at 3:30 p.m.)

Meet Michael Tougias, bestselling author of 19 books. Hear tales of his misadventures at his remote Vermont cabin as chronicled in his book *There's A Porcupine In My Outhouse: Misadventures of a Mountain Man Wanna-be*. He will sell and sign his books following the program. Enjoy live animal presentations and crafts for children throughout the day at this enjoyable family festival. Volunteer docents will be on hand with live animals and demonstrations. Lunch will be available for purchase from Longhaul Farm.

Generously sponsored by



Community
Guaranty
Savings Bank

Cost: \$15/adults, \$12/seniors, \$10/youth

No charge for Science Center members
or children 2 and under

QUILLS, SHADOWS, AND LODGES

Sunday • October 9

9:30 a.m. to 4:30 p.m. (last admission at 3:30 p.m.)

This fun-filled day concentrates on the interesting lives of rodents! This group sometimes gets a bad rap but they are often misunderstood and have many amazing features and habits. Learn about some of New Hampshire's larger rodents such as porcupines, woodchucks, and beavers. Try your skill at rodent crafts and even undertake building a life-sized beaver lodge!

Cost: \$15/adults, \$12/seniors, \$10/youth

No charge for Science Center members
or children 2 and under

EYES ON OWLS

Saturday • November 19

Two showings: 11:00 a.m. and 1:30 p.m.

Marcia and Mark Wilson of "Eyes On Owls" present a live owl program with close-up views of these secretive birds of prey found in New England and other parts of the world. A slide show begins the program with colorful photos by Mark Wilson. Marcia will give you a hooting lesson and then bring out live owls one at a time. You won't want to miss this program!

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

Reserve your seats by calling 603-968-7194.

HALLOWEEN HOOT 'N' HOWL

October 22

Eerily entertaining 40-minute guided tours along a jack-o-lantern-lit trail features family-oriented live skits, storytelling, and fun Halloween themes. Call 603-968-7194 to reserve your spaces.

Cost: \$8/member; \$11/non-member

\$1 discount for reservations made by October 14.



SQUAM LAKES
NATURAL SCIENCE CENTER

WISH LIST

For Howling Coyote Gift Shop
Small TV/DVD flat screen combo

For Kirkwood Gardens
Lawn and garden treasures for
Kirkwood Gardens Day Sale

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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!

SCIENCE CENTER LAKE CRUISES

EXPLORE SQUAM

Through October 16

Daily at 11:00 a.m., 1:00 p.m., and 3:00 p.m.

NATURE OF THE LAKES

September 1 to October 16

Tuesdays, Wednesdays, and Thursdays at 3:00 p.m.

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

Contact Operations Manager

Tom Klein at 603-968-7194 x 10 or
tom.klein@nhnature.org for reservations.

NATURALIST'S LEGACY SOCIETY

If you have already named the Squam Lakes Natural Science Center through your will or other estate plans, please let us know. As a member of the Naturalist's Legacy Society, you will be invited to donor recognition events and recognized in the Annual Report, unless you prefer to remain anonymous. Recognizing planned giving donors allows us to express our appreciation and may also inspire others to give support through their own estate plans.

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

NATURE TOURS

LAST CHANCE:

Wildlife of Scotland Hebrides and Highlands

June 7–20, 2012



By special request, Executive Director Iain MacLeod is offering his Hebrides and Highlands tour once more. Join Iain for a two-week tour of his homeland in search of birds, beasties, history, and culture. This very personal tour of Iain's favorite Scottish haunts will give one and all a flavor of Caledonian heritage and natural history. Iain has chosen hotels with exceptional Highland hospitality, charm and comfort, outstanding cuisine, and spectacular settings.

Hebridean natural history highlights will include birds, seals, otters, and wildflowers on the rich "Machair" farmland and kelp-filled sea lochs of North Uist, Benbecula, and Skye. Along the way, we will visit ancient stone circles and spectacular white sand beaches. NOTE: Iain is exploring substituting the Uist portion of the trip with a trip to the equally spectacular islands of Mull, Staffa, and Iona.

In the Highlands we'll explore the ancient pine forests known as the Great Wood of Caledon and the lochs and marshes of the river Spey. Visits to castles, ruins, and other cultural antiquities are scattered throughout the trip. Iain might arrange a special dusk viewing of badgers (of *Wind in the Willows* fame).

Another highlight is the sight, sound and smell of tens of thousands of breeding seabirds – including puffins – on the huge sea cliffs of the Aberdeenshire coast. The trip will wrap-up in historic Edinburgh with its famous castle, royal mile, and beautiful gardens.

This will be a trip to remember!

Group size limited to nine.

Cost: \$5,500 per person.

All-inclusive cost includes hotel accommodations and all meals, round-trip airfare from Boston to Glasgow, van transportation in Scotland, and admission fees to nature reserves and most other destinations listed on the itinerary. View a comprehensive illustrated trip itinerary at www.nhnature.org/nature_tours.html. Contact Iain at iain.macleod@nhnature.org to reserve your place or for more information.

SEA TO LAKE, SUMMIT TO SKY

2011 ANNUAL MEETING AND SUMMER GALA

The 2011 Annual Meeting and Summer Gala took place on Saturday, August 13 at the Science Center in Holderness. A quorum of members unanimously accepted the minutes of the August 14, 2010 Annual Meeting. Treasurer Bruce Whitmore presented the 2010 financial report. Copies of the 2010 Annual Report were available for review.

Chair Laurie Beeson honored six retiring trustees for their dedicated service on the Board of Trustees: Alexandra T. Breed, George Carr, John Gephart, Michael O'Leary, Bob Ritz, and Bob Snelling.

Officers were elected unanimously to serve one-year terms, commencing with election: Chair Laurie Beeson, Holderness; Vice Chair Nancy Beck, Holderness; Treasurer Bruce Whitmore, Holderness; and Secretary John Fernandes, Ashland.

Re-elected unanimously to serve three-year terms commencing with election were trustees Arthur McGinnes, of Center Harbor and Wellesley Hills, Massachusetts and David Merrill of Weston, Massachusetts.

Harriet R. Harris of Holderness and Dover, Massachusetts; William F. Lee, Jr. of Meredith; and Lea A. Stewart of Campton were unanimously elected as new trustees to serve three-year terms, commencing with election.

Those present voted to approve the proposed changes to the By-Laws. The changes update the by-laws to reflect how Squam Lakes Natural Science Center operates, the number of members required for a quorum, to permit electronic communications, to clarify certain voting requirements, and to make the by-laws gender neutral.

Board Chair Laurie Beeson recognized and thanked five employees for milestone anniversaries: Dennis Capodestria (5 years), Margaret Gillespie (25 years), Ron Huntoon (5 years), Iain MacLeod (5 years), and Liz Rowe (5 years).

Chair Laurie Beeson presented volunteer Natalie Parsons with the 2011 Horizon Award for her sustained volunteerism and dedicated efforts to advance the Science Center's cause.

A presentation highlighting the informal science education collaborative, Sea to Lake, Summit to Sky, of the

Science Center and our three partners: Seacoast Science Center, Mount Washington Observatory, and McAuliffe-Shepard Discovery Center followed the Annual Meeting. The Common Man provided dinner. A live auction featuring an exceptional experience from each Sea to Lake, Summit to Sky partner occurred during dinner.

Thank you to these Sea to Lake, Summit to Sky sponsors:

Sky: Tashia and John Morgridge;

Summit: Barbara and Bev Ridgely;

Lake: Ingrid and Donald Graham, Joan and David Martin, Sandra and Thomas McClaskie, Winky and Dave Merrill, Jean and Bayne Stevenson, Jean and Murray Swindell, Webster Land Corporation, Betsy and Bruce Whitmore, Nancy Wolf and Jacob Rosengarten; **Polaris, the North Star:** Nancy and Lawrence Coolidge, Margy and Tom Garesche, Malone, Dirubbo & Company, P.C., Gail and Sam

Murdough, Patty Stewart & Associates, Squam Boat Livery; **White Mountains:** Diane Garfield and Peter Gross, M.D., Lois and Will Stratton; **Squam Lake:**

Anonymous, Beach Foundation, Bea and Tony Edgar, Leslie and Austin Furst, Barbara Hendrick, Liz and Tom Kelsey, Linda and Bill Lee, Jr., Sandra and Carl Lehner, Louise and Arthur McGinnes, Susan McKimens, Polly and Leo Sanfacon, Marguerette Smylie, Carolyn and Bryant F. Tolles, Jr.; **Gulf of Maine:** John T. Bennett, Jr., Jane H. Choate, Nancy and John Conkling, Cormack Construction Management, Jerry and Alan English,

Clara and Wade Fowler, Jr., Bonnie Hunt and Bob Maloney, Missy Mason, MegaPrint, Meredith Village Savings Bank, New Hampshire Colonials Realty, Barbara and David Preston, Lea A. Stewart, Carol and John Thompson, Mary Alice and Kent F. Warner.

We extend special thanks to the Appletree Nursery, Asquam Marina at Holderness Harbor, Belknap Landscape Company, The Common Man, Lakes Region Tent and Event, McAuliffe-Shepard Discovery Center, the Mount Washington Observatory, and the Seacoast Science Center. We also thank the Gala Committee: Nancy Beck, Andrea Eaton, Joan Martin, and Judy Webster, our devoted volunteers, our dedicated trustees, and staff.



Newly elected trustees Harriet Harris, Bill Lee, and Lea Stewart (left to right)



Retiring trustees John Gephart, Alexandra Breed, and Bob Snelling (left to right) were thanked for their service on the Board of Trustees.

AMERICAN CHESTNUT continued from page 1

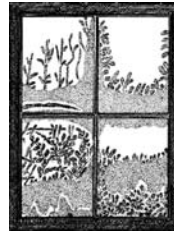
These foreign chestnuts can carry the fungus but are resistant to it. From its hub in New York City, the fungus spread its devastation north and south, reaching New Hampshire in the 1920's and completing its swing through the whole range by the 1950's. An estimated three to four billion American Chestnuts were killed! It is hard to imagine the economic and cultural impact that the demise of the chestnut trees had in the core of this magnificent tree's range in the Appalachian Mountains. From families gathering nuts to timbering to extracting tannins from chestnut bark and wood for tanning leather, the loss of these trees was monumental. The chestnut blight has been called the largest ecological disaster of the 20th century!

Has the chestnut blight fungus changed our forests forever? Some would adamantly say "No!" They are working hard to bring American chestnut trees into our present and future. Original efforts, starting in the 1930's, to cross American chestnuts with resistant Asian chestnuts sprouted many problems. The Asian trees lack the towering form and cold resistance of the native chestnuts and the resulting hybrids often followed suit along with succumbing to the blight. Time marched on. A new approach was fighting the chestnut fungus with a virus that attacks it. Although not the light at the end of the tunnel, this puzzle piece may prove to be part of the picture.

The future of the American chestnut may well have "walked" into my office in May! Gary Robertson, husband of Janet Robertson, the Science Center's Development and Communications Director, was delivering a chestnut seedling to be planted next to another seedling just down the road in Center Harbor, New Hampshire. He stopped by to show me the tiny tree. It takes two trees to produce chestnuts. Although chestnut trees have male and female flowers, they are not structured to self-pollinate. Gary is active in The American Chestnut Foundation whose goal is "bringing back the mighty giant." The excitement in Gary's face as he held this miniature tree was contagious. Gary's grandfather remembered gathering and eating chestnuts as a boy and then watching the blight wipe out virtually every mature tree. He hoped that if Gary planted some of the chestnuts he found on his hikes, one might prove to be that resistant miracle. Taking a different path, here was Gary forty years later, holding that ideal resistant tree!

There is a saying that "watching trees grow takes a lifetime." This seedling was breaking the speed limit! It was barely a few months old but was a mere 28 years in the making. To achieve American chestnut form with the disease resistance of a Chinese chestnut, this seedling had quite an ancestry. First, a Chinese chestnut and American chestnut were crossed, introducing blight-resistance from the Chinese chestnut. Then additional crosses were made between the hybrid offspring and pure American chestnuts, each time selecting trees that looked like the American chestnut but retained the blight resistance of the Chinese chestnut. Confusion aside, after six generations of crossing, the final tree is 15/16 American chestnut, visually indistinguishable from a pure American chestnut and blight resistant! These new trees should keep the resistance in their genetic makeup

Continued on next page



OPENING A WINDOW TO THE NATURAL WORLD

Later this fall you will receive a request to contribute to the 2011 Annual Fund. The Annual Fund is a key piece of our yearly operating budget. This year's Annual Fund goal is \$300,000. With your support, the leadership of our board, and the dedication and excellence of our staff and volunteers, the Science Center continually strives to fulfill its mission to advance understanding of ecology by exploring New Hampshire's natural world.

One way to leverage your Annual Fund contribution is to participate in a matching gift program that many businesses offer their employees. As a 501(c) (3) nonprofit, the Squam Lakes Natural Science Center qualifies for matching gift programs.

Please consider making a new gift or increasing your gift this year. Together we can ensure that the Squam Lakes Natural Science Center remains a very special place for you, your children, and grandchildren, for years to come.

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

We are grateful for these memorial and honorary gifts received from April 1 through June 30, 2011:

In honor of Rosy Hartke's birthday
Kayser Family Fund

In memory of Alex J. Higgins
Sara and Paul Higgins

In memory of Frederic H. Main
Betty, Ric, John, and Paul Cannon

In memory Paul Mayerson
Natale L. Brown
Joyce and Steve Hackett

In memory of Elizabeth Ellis Moran
Meta P. Barton

In honor of Tashia Morgridge
Jean Landweber

**In honor of Richard Sanderson
for Kirkwood Gardens**
Alfred Fosse
Anne Fosse and Hal Katora

TRAIL'S END

A ZOO OR A SCHOOL?

Which of these best describes the Science Center? Which do we want to be?

Not questions that are keeping any of us up at nights, but they have relevance in terms of how we plan the Center's future.

The simple answer is we're both, as is virtually every major zoo and as are most Science Centers. Check out their websites and you'll see school programs offered by the zoos, critters and critter movies at the science centers.

So does it even matter how we perceive ourselves? I think so. Case in point: We've been contemplating a new exhibit in which children would engage in unstructured, unsupervised play. To some on our board, this might be unfaithful to our mission because we wouldn't be actively instructing the kids. (For now, the issue has been mooted by the educational theory that free play in atypical environments – such as, outside – constitutes valid education.) Similarly, some members of our community doubted the wisdom of our starting a nature preschool because, and I quote one donor, "You're a zoo, for heaven's sake!"

It also matters in determining how we present ourselves in our external communications. If we quack too much like

an "attraction" (think: ski area advertising) we might not be seen in as serious a light as we'd like by school administrators who make program decisions. If we sound too school-like, we might miss some visits from moms and dads who are looking for a fun family outing.

The business background that underlines the relevance of the issue is this: schools everywhere, under budget duress, are making fewer field trips and bringing in outside educators like us less frequently. This problem is hardly unique to us, and it's been going on for almost a decade. Trail admissions, on the other hand, have been trending upward – and we have capacity to handle even more growth.

All of us are subject to Maslow's law to some extent – you know, you have a hammer so all problems look like nails. Thus, the educators on our board tend to think of the Center in school-like terms, and the marketers like me tend to look for ways to make the turnstile spin.

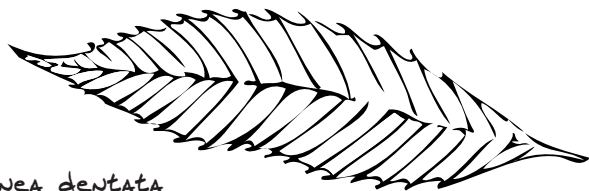
What do you think? I'd love to hear some thoughts, at 603-968-2409 or lbeeson@worldpath.net.

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.

AMERICAN CHESTNUT continued from page 10

to pass on to future generations. The vision is to use them to build American chestnuts back into the landscape. Gary informed me that each state is developing unique resistant strains using their own surviving native American chestnut trees to incorporate local characteristics. If you see a tree you believe is a flowering American chestnut, the Vermont/New Hampshire chapter of The American Chestnut Foundation would be interested in identifying and potentially breeding these rare large survivors. The Lakes Region is an active area of interest in the breeding program!

Before Gary left my office, I asked him if I could touch the chestnut seedling. I felt like I was touching the future! Those chestnut sprouts on my walk to the pond are destined to grow to only about 15 feet and then the chestnut blight will find them. They have been coming back again and again since the 1920's in New Hampshire. It's possible that there is some pocket of resistance growing there. In the meantime, I'll let them know that the new recruits are on their way!



Castanea dentata

NEWSBRIEFS continued from page 5

will be live animal presentations, childrens' crafts, and demonstrations by volunteer docents. Lunch by Longhaul Farm will be available for purchase. Community Guaranty Savings Bank of Plymouth generously sponsors this fun, family event.

- ◆ On October 9, you can find out about the interesting lives of rodents at another new special day called Quills, Shadows, and Lodges. Learn about some of New Hampshire's larger rodents such as porcupines, woodchucks, and beavers.
- ◆ Halloween Hoot N Howl returns this year on October 22. Sign up by calling 603-968-7194 and receive a \$1 discount per person if you reserve your spaces before October 14.
- ◆ On November 19, Marcia and Mark Wilson of "Eyes On Owls" present a live owl program with close-up views of these secretive birds of prey found in New England and other parts of the world. A slide show begins the program with colorful photos by Mark Wilson. Marcia gives a hooting lesson and then brings out the live owls one at a time. You won't want to miss this program; there are two showings, one at 11:00 a.m. and one at 1:30 p.m. Reserve your seats by calling 603-968-7194.
- ◆ Please consider contributing to the 2011 Annual Fund by December 31. The Annual Fund supports general operations to care for and feed our live animals, maintain our buildings, trails, and exhibits, and to offer a wide variety of quality natural science programs for all ages and audiences. Your support is vital to our success! In October you will receive a request for a donation. Please consider making a new gift or increasing your donation this year. Thank you.

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Open by appointment after November 1.
Please call 603-968-7194.

Save these Dates!

SUNDAY
SEPTEMBER 11

GRANDPARENT'S DAY

Free admission for
any grandparent
accompanied by a
paying grandchild

SUNDAY
OCTOBER 9

**QUILLS,
SHADOWS,
AND LODGES**

SATURDAY
OCTOBER 11

RAPTOR DAY
Live Animal Programs,
Migration Watches
and more!

SATURDAY
OCTOBER 22

**HALLOWEEN
HOOT 'N' HOWL**
Reserve your space today!

EYES ON OWLS



Saturday, November 19

Two showings: 11:00 a.m. and 1:30 p.m.

Marcia and Mark Wilson of "Eyes On Owls" present a live owl program with close-up views of these secretive birds of prey found in New England and other parts of the world. A slide show begins the program with colorful photos by Mark Wilson. Marcia will give you a hooting lesson and then bring out live owls one at a time. You won't want to miss this program!

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

Reserve your seats by calling 603-968-7194

**AUTUMN
FESTIVAL**

Saturday, September 24

9:30 a.m. to 4:30 p.m.
(last admission at 3:30 p.m.)

Meet Michael Tougias, author of *There's A Porcupine In My Outhouse: Misadventures of a Mountain Man Wannabe*. Live animal presentations and demonstrations. Crafts for children throughout the day at this enjoyable, family festival. Enjoy a delicious lunch from Longhaul Farm

Cost: \$15/adults, \$12/seniors, \$10/youth
No charge for Science Center members or
children 2 and under

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