FOLLOWING BUMBLEBEES

By Margaret Gillespie, Illustration by Cheryl Johnson

Imagine my surprise when I discovered that bumblebees had nested in a hole at the base of a second story porch right next to my apartment entrance. To be more precise, this meant that they buzzed right past my head as we all retired inside at dusk! It was easy to get used to – after all, bumblebees, ladybird beetles, and butterflies are the insects almost universally liked by humans, and I am a dedicated insect fan. The following year I was disappointed when none took up residence in the same spot, but I soon discovered a more challenging nest location! Eager to get natural fertilizer on my garden, I dug my shovel deep into the compost pile and out came bumblebees! Fortunately this was a very different experience from doing the equivalent to a wasp nest, and the bumblebees settled down quickly once I backed away. What stayed with me was the intense desire to learn more about how bumblebees live and work.

Do bumblebees bumble? “Bumble” describes their somewhat clumsy way of flying or could also come from the humming sound they make. This buzzing noise logically would be from the beating of their wings, but bumblebees with motionless wings still buzz! Apparently the vibrations from flight muscles in the thorax produce the buzz, and in cool weather, this activity is necessary for warming the bumblebee adequately for flight. Speaking of warmth, bumblebees are covered with soft fluffy pile often in black and yellow warning bands. They win the bee prize for cold weather flight, active at 50 degrees Fahrenheit and have even been recorded flying at 32 degrees. Do you think you could outrun one of these bumbling insects? Try zigzags at 10 miles per hour – the bumblebee will come out the winner!

Take a close look at a bumblebee – they are experts at collecting and transporting nectar and pollen. As a bumblebee visits a flower, its long tongue emerges to sip nectar which is then stored in its honey stomach, a storage compartment in the abdomen. The honey stomach is not part of the digestive system although some nectar can be transferred to give the bumblebee needed energy. Pollen, a source of protein, can be taken directly from the flower or groomed from the insect’s fuzzy body after a flower dusting. In either case, pollen is packed into a “pollen basket,” officially called the corbicula. This structure is a concave shiny surface on each rear leg which will be yellow and bulging when full of pollen. Want to tell a male from a female bumblebee? The easiest way is to check for a pollen basket – only the queen and female workers have them.

Continued on page 10
exploring, playing, and investigating. In the recently published report *Children’s Nature Deficit: What We Know – and Don’t Know* Cheryl Charles and Richard Louv highlighted recent studies that support the importance of early exposure to natural science education.

Forty years ago in her book *The Sense of Wonder*, Rachel Carson wrote: “I sincerely believe that for the child, and for the parent seeking to guide him, it is not half so important to know as to feel. If facts are the seeds that later produce knowledge and wisdom, then the emotions and the impressions of the senses are the fertile soil in which the seeds must grow. The years of early childhood are the time to prepare the soil.” . . . “It is more important to pave the way for the child to want to know than to put him on a diet of facts he is not ready to assimilate.”

Carson’s belief has recently been embraced by the Environmental Education field which has long touted the model of establishing awareness and knowledge which then leads to action and change. Indicators are now that knowledge is not the key to caring for the world around us or establishing a conservation ethic but rather frequent, unstructured outdoor explorations where joy and discovery lead to memorable experiences. This new model is further supported by evidence suggesting that when these experiences occur in the company of a supportive, caring mentor the results are magnified. Blue Heron Preschool will provide the framework in which children receive the basics of early literacy and mathematics preparation all the while immersed daily in the natural world around them with the nurturing presence of experienced teachers and naturalists.

The Science Center is uniquely positioned to combine early learning and natural science-based outdoor experiences in innovative and life changing ways. We are starting out small; a pilot project, but our hope is that the Preschool will grow and expand into a permanent part of what we do and will serve as a model for early learning centers.

For more information about the Blue Heron Preschool, contact Education Program Director Amy Yeakel at 968-7194 x14 or amy.yeakel@nhnature.org or visit the Preschool page on our website.

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

Tell us about your background, hobbies, and interests.

The first half of my career I taught in a large high school in the Greater Boston area. I got into research on language acquisition for profoundly hearing impaired adolescents and computer-assisted instruction as a professional interest, which led to a sabbatical at Boston University where I did research in the teaching of writing and computer-assisted writing instruction for college freshmen. Later, I began my second career in grants and development and developed a prototype office dedicated to bringing grant revenue and other resources to my school district. Eventually, I became a board member of the Association of Fundraising Professionals (Boston Chapter) and a presenter on grants for public education for the Massachusetts Association of School Superintendents. Since retiring, I’ve been consulting in this area for nonprofits and schools.

For a number of summers, I worked in day camping, starting as a counselor and eventually becoming camp director. There were several of us in camping who wanted to see more environmentally sensitive programming, so we formed the Massachusetts Camp Directors Association as a vehicle for sharing ways camps could encourage their campers to learn about the natural environment through adventures in our woods and fields.

Some of our favorite times are when we bring our five grandchildren to the Science Center. They absolutely love it! My wife, Fran, and I enjoy tennis here and in Arizona where we vacation each spring.

Bumblebee Quiz

1. You see a bumblebee with pollen baskets on its hind legs. Is this a male or a female bumblebee?
   A. Queen
   B. Female worker
   C. Male
   D. Both A and B

2. Which of these bumblebees can sting?
   A. Queen
   B. Female worker
   C. Male
   D. Both A and B

3. True or False? Both honeybee and bumblebee colonies overwinter in their nests.
   A. True
   B. False

4. What two adaptations do bumblebees have for functioning at low temperatures?

5. What special place can you visit at the Science Center to see bumblebees and their relatives at work?

Almost universally, the response is “you are doing a great job, we love it and our children and grandchildren love it.” This is both encouraging and also a reminder that we have to continue to improve what we do through fresh programming, exhibits, and outreach in order to merit such responses in the years ahead.

Do you have a favorite childhood memory that involves nature? Why do you think it’s important for children to have a strong connection to nature?

Although I grew up in a city neighborhood, I was fortunate to have a variety of wonderful encounters with the natural world through the Boy Scouts and summer vacations in farm country. I remember that every day in the woods or fields was marked by a “discovery.” Turning over a rock to see what was living underneath or caring for the barnyard animals always resulted in seeing something that I hadn’t noticed before. It was an exciting time and place. The quality of my life would be diminished if I had not been given the chance to play and grow in the natural world as a youngster. Every child should have a chance to spend some time at the Science Center. A visit to the Science Center or participation in one of our programs can provide an awakening experience that will enable a child to grow in appreciation of the beauty of nature—and the lifelong pleasures it will produce.

John Fernandes has served on the Board of Trustees since 2006 and will become Chairman of the Development Committee in August.

John is also on the Board of the Squam Lakes Association.
MINDS IN MOTION SERIES

Wednesdays: June 2, July 7, Aug. 4, Sept. 1
9:30 - 10:30 a.m. ■ Age 3 and under
The mind and body of a young child are constantly on the move. Foster your child's “natural curiosity” and explore motion from an animal's perspective – jump like a frog, swim like a fish, crawl like a caterpillar, and fly like a bird. Shared experiences you have with your child will build foundations for a lifetime.
Cost: $5/member child; $7/non-member child

GARDEN PROGRAMS

GARDEN YOGA
Thursdays, July 8–August 12
5:30 - 6:30 p.m.
Enjoy a Thursday evening yoga session in Kirkwood Gardens and relax and unwind from a busy day while strengthening your body, mind, and spirit. The class is open to all levels, welcoming both beginners and seasoned yogis. Learn sun salutations, warrior poses, balance poses as well as restorative poses and meditation. Bring a mat or large towel and water. Rain or Shine!
Cost: $48/member; $60/non-member or each session $12/person

HOW TO GROW YOUR OWN ORGANIC VEGETABLES
Saturday, July 10
9:30-11:30 a.m. ■ Adults
Our grandparents raised their food organically and so can we. Join University of New Hampshire Cooperative Extension Master Gardener Janet Towse to learn how to get started with an organic vegetable garden. Learn about soil, pests, fertilizer, and crop requirements so you can grow the best tasting vegetables you've ever eaten.
Cost: $10/member; $12/non-member

TOUR OF FOUR SANDBINCH AREA GARDENS
Saturday, July 31
Adults ■ 9 a.m.–2 p.m.
Tour four very different gardens in Sandwich, at your own pace, in order of your own choosing: A Great Garden in a Small Package, Classic New England Garden, A Garden with Green Power, and Peaceful Garden. A full description is available at www.nhnature.org. Directions will be provided upon registration. Rain or Shine
Cost: $20/person

EVALUATING YOUR GARDEN: TAKING STOCK, TAKING ACTION
Thursday, August 5
10 a.m.–12 p.m. ■ Adults
Join garden designer Doug Gagne, APLD ~ Professional Landscape Designer, of The Mixed Border Nursery and Gardens in Hollis, NH, for an informative outdoor session on garden design and redesign. Participants will learn how to evaluate an existing garden and make it more attractive through the seasons while requiring less maintenance. All gardeners are welcome, although this workshop is targeted at experienced gardeners. Bring photos of your garden, if you'd like, especially if weather is inclement.
Cost: $10/member; $12/non-member

BIRD ID SERIES

BOREAL FOREST BIRDS
Sunday, June 27
7 a.m. - 5 p.m. ■ Age 16 and up
Join Iain Macleod for an in-depth workshop focusing on the boreal birds of northern New Hampshire’s forests. We will meet at the Science Center and travel (by van) to Trudeau Road in Twin Mountain, Pondicherry Wildlife Refuge in Whitefield/ Jefferson, and perhaps Cannon Mountain in search of spruce and fir specialties such as Black-backed Woodpeckers, Boreal Chickadee, Yellow-bellied Flycatcher, and northern forest-dwelling warblers.
Cost: $30/member; $40/non-member

SHOREBIRDS
Sunday, August 29
7 a.m. - 5 p.m. ■ Age 16 and up
This birding trip will focus on the dozens of species of sandpipers and plovers that pass through New England’s coastal habitats on their southbound migration. The group will meet at the Science Center and travel (by van) to New Hampshire’s seacoast and Massachusetts’s Plum Island for a spectacular show that should include Semi-palmented Sandpipers, Dunlin, Red Knot, Whimbrel, Least Sandpipers, Willets, Short-billed Dowitcher, Greater and Lesser Yellowlegs, and maybe a Godwit or two.
Cost: $30/member; $40/non-member

RAPTOR MIGRATION
Saturday, September 11
7 a.m. - 5 p.m. ■ Age 16 and up
Every fall, thousands of migrating raptors – hawks, eagles, ospreys, falcons, and harriers – fly from their nesting areas in northern North America to their wintering ranges in the southern U.S. and Central and South America. Meet at the Science Center and travel together (by van) to the Pack Monadnock Raptor Migration Observatory in Peterborough where Iain will use in-the-field techniques to demonstrate the finer points of identifying raptors up-close and afar. Iain will also explain the dynamics of migration. Mid-September is the peak time for viewing groups of hundreds of Broad-winged Hawks on their way south, so if the winds are right, we could be in for a show. This is also when Ospreys, Bald Eagles, American Kestrels, Sharp-shinned Hawks, Cooper’s Hawks, and Northern Harriers are on the move.
Cost: $30/member; $40/non-member

Sponsored by Belknap Landscape Company, Gilford, NH
www.belknaplandscape.com

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

Historical perspectives, and the key role of biologist John Viar. Stocking strategies, bears graze on a salad of flowers and berries. Join us to kickoff the start of the StoryWalk. The science center’s annual breeding bird census has been a tradition for over 30 years. Join senior naturalist Dave Erler and learn to identify some of the area’s resident birds. Early risers meet us at 6 a.m. to help scan the skies or join us at 8 a.m. to complete the census.

Travel to the north country for an evening of moose and black bear watching. Meet at the science center and journey together (by van) to visit a special place where mother black bears graze on a salad of flowers and berries while their cubs frolic nearby, then as dusk approaches we’ll visit a moose ‘hot spot’ in hope of sighting these giants as they feed on roadside mud.

COLDWATER FISHERIES MANAGEMENT IN N.H.’S LARGE LAKES
Tuesday, June 1
7 p.m. ■ Adults
Join us for a presentation on landlocked salmon, rainbow trout, and lake trout fisheries management by NH Fish and Game Fisheries Biologist, John Viar. Stocking strategies, historical perspectives, and the key role of forage fish will be discussed.

Cost: free

ANNUAL BREEDING BIRD CENSUS
Saturday, June 5
6 a.m. and 8 a.m. ■ Age 10 and up
The Science Center’s annual breeding bird population census has been a tradition for over 30 years. Join Senior Naturalist Dave Erler and learn to identify some of the area’s resident birds. Early risers meet us at 6 a.m. to help scan the skies or join us at 8 a.m. to complete the census.

Cost: free/member; $4/non-member

COYOTE CAPERS
Saturday, July 10
1-2:30 p.m.
Families, age 6 and up
Are “wily coyotes” really that clever? Why do they howl and where do they live? The eastern coyote is a relative newcomer to New Hampshire and so we will delve into some of the mysteries about them. Join us to learn about coyotes with plenty of activities, story-telling, and a visit with our two-year old coyote.

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

ABSOLUTELY, POSITIVELY WILD ABOUT MUD!
Tuesday, July 13, 9:30 a.m.—12 p.m.
Tuesday, August 3, 12–2:30 p.m.
Age 7-10
Come along on a mud trek as we investigate what mud is made of and experience its soft texture as we search for the creatures that live in it. We’ll conduct interesting and fun mud experiments along the way, culminating in each participant creating and painting their own mud t-shirt. Join naturalist Eric D’Aleo for a muddy morning of excitement, discovery, and fun.

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

EVENING BAT VIEWING
Thursday, July 15
7–9 p.m. ■ Age 8 and up
This evening features an introduction to bat biology, an update on the status of bat populations, a chance to meet a live bat up close, and culminates in viewing the evening departure of the resident bats roosting in the Science Center’s bat houses.

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

OVER AND UNDER
Wednesday, July 21, 1–2:30 p.m.
Wednesday, August 11, 1–2:30 p.m.
Families, Age 4 and up
There are so many interesting critters that we walk by and overlook every day. Come to the Science Center for this fun-filled program in which we will roll over logs, push back grass, and dip in to the water to search for the creatures that are just out of our usual line of sight.

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

BUSY BEAVERS
Saturday, July 24
1–2:30 p.m. ■ Families, Age 5 and up
We will all be “busy as beavers” discovering the special lives of these rodents through activities, story-telling, a craft, and of course, visiting with a live beaver! What do beavers do in summer and what do they eat? How can they stay underwater so long and where are the secret entrances to their homes? Let’s explore how beavers design parts of their own habitat!

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

PONDS AND PUDDLES
Thursday, July 29, 10 a.m.—12 p.m.
Tuesday, August 10, 2–4 p.m.
Families, Age 4 and up
The lakes, ponds, streams and even puddles that surround us are teeming with many forms of life. Join us to explore and learn as we venture to our ponds to meet creatures big and small!

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

LET’S GO FISHING
Saturday, August 7
1–4 p.m. ■ Age 10–12
Are you headed to the lake this weekend and looking for a fun family activity? Why not grab a fishing pole, get some worms, and go fishing? If you don’t know where to go, what equipment you need, or how to fish – the Let’s Go Fishing Program, part of the New Hampshire Fish & Game Department’s Aquatic Resources Education, is here to help. Join us as to learn the basics and equipment you need and the resources available to you on your journey to becoming an angler. Once you know the basics you’ll get the chance to put your new skills to the test; we’ll head out to a local pond and do some fishing! All equipment and materials are provided.

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

SUMMER WILDFLOWER WALK
Wednesday, August 18
10 a.m.—12 p.m. ■ Age 8 and up
August marks the transition between the mid summer and early autumn blooming plants. Find out how these plants got their names and how they’re used by wildlife and humans. This walk is an easy stroll along the Center’s trails winding through meadow and adjacent woodlands.

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

WilD ABOUT MUD!
Tuesday, August 3, 12–2:30 p.m.
Age 7-10
Come along on a mud trek as we investigate what mud is made of and experience its soft texture as we search for the creatures that live in it. We’ll conduct interesting and fun mud experiments along the way, culminating in each participant creating and painting their own mud t-shirt. Join naturalist Eric D’Aleo for a muddy morning of excitement, discovery, and fun.

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

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

STORYWALK™ KICKOFF
July 1
10 a.m.—12 p.m. ■ Families
Join us to kickoff the start of the StoryWalk with a program featuring live bats and fun for the whole family.

Cost: free

NORTH COUNTRY MOOSE AND BEAR EXCURSION
Saturdays, June 5, 12, 19, 26
6–10:30 p.m. ■ Age 10 and up
Travel to the North Country for an evening of moose and black bear watching. Meet at the Science Center and journey together (by van) to visit a special place where mother black bears graze on a salad of flowers and berries while their cubs frolic nearby, then as dusk approaches we’ll visit a moose ‘hot spot’ in hope of sighting these giants as they feed on roadside mud.

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

TRACKS AND TRAILS - SUMMER 2010

5
Nature Tours
Led by Iain MacLeod

North Country Weekend at the Balsams
July 17 and 18
Join Iain MacLeod for a weekend in the Great North Woods. The trip includes a pontoon boat tour of Lake Umbagog and the Magalloway River, evening Moose viewing around Errol, and a morning of birding for northern forest specialties, such as the Black-backed Woodpecker. Of course, there are also delightful meals at the Balsams Grant Resort. View an illustrated itinerary at www.nhnature.org/nature_tours.

Cost: $550 per person (includes van transportation, pontoon boat ticket, lunch on Saturday and Sunday, Saturday dinner, Sunday breakfast, overnight accommodations, and leader fees). Does not include purchase of alcohol with meals or hotel gratuities.

All tours require a minimum of six participants and the maximum group size is 10.
For details on any of these tours, contact Iain at 603-968-7194 x 23 or iain.macleod@nhnature.org.

Science Center Lake Cruises

Explore Squam
May 22–June 30 ■ Daily at 1 p.m.
July 1–October 17
Daily at 11 a.m., 1 p.m., and 3 p.m.

Eagle Cruise
June 8–June 29 ■ Tuesdays at 3 p.m.

Loon Cruise
June 18–August 20 ■ Fridays at 3 p.m.

Nature of the Lakes
July 1–October 14
Tuesdays, Wednesdays, and Thursdays at 4 p.m.

Wish List
Lockable file cabinet
Grind and brew coffee maker
Plastic 6 or 8-foot folding tables
Electrical outlet and wall plate insulators
Food processor for animal care
Little Tyke or Playskool plastic toys for animal care
Answering machine for staff residence
New (energy star) refrigerator
Used or new garden-related “treasures” for Kirkwood Gardens Day
**SUSTAINABLE LIVING SERIES**

**NET ZERO HOUSE TOUR**
**Tuesday, July 6, 5 - 6:30 p.m.**
As an optional introduction to the 7 p.m. presentation (below), Holderness homeowner Jane Bindley has graciously opened her net zero energy home for a tour. Her home was renovated to attain a challenging objective – all energy consumed for heating, hot water, and electricity over a full year will be less than the energy generated by the home’s solar electric and solar thermal systems. Very few net zero energy homes have been built and renovations to existing homes to make them net zero are rare. To see more about the Bindley home, visit www.garlandmill.com/holderness.htm

**REMODELING YOUR HOME WITH SUSTAINABILITY IN MIND**
**Tuesday, July 6, 7 p.m.**
Join Robert Tortorice, Building Performance Institute-certified, Certified Green Building Professional (and soon certified Home Energy Rating System rater) to learn how green home remodeling can also be a smart financial investment. Bob has over 30 years experience in residential and commercial construction. Find out about cost saving measures, federal tax credits, and utility rebate programs.

**MASONRY HEATERS**
**Tuesday, July 20, 7 p.m.**
Chris Springer of Iron Hammer Stoneworks in Danbury, NH will discuss the centuries old heating technology of masonry heaters. Commonly used in Europe, these heaters are very efficient and clean burning. Learn about the history, operation, benefits, types, and finishing options for masonry heaters.

**SOLAR ENERGY – WHY NOW IS THE RIGHT TIME**
**Tuesday, August 3, 7 p.m.**
James Gamble, owner of GreenSource Energy Solutions, will provide an introduction about how to harness solar energy to make electricity and hot water. The discussion will include an overview of the latest solar technologies, applicability of solar in New Hampshire, typical costs, financial incentives, and local examples.

**INTRODUCTION TO PERMACULTURE – A FRAMEWORK FOR GREATER FOOD AND ENERGY SECURITY**
**Tuesday, August 17, 7 p.m.**
What is permaculture and why is it important to you? What could it mean for your property and community? How does it differ from other approaches to sustainability? This session is especially useful for homeowners, community organizers, design professionals, farmers, and gardeners. If you are working toward a sustainable future and want practical tools and applicable methodologies, then this session with Steve Whitman, Plymouth State University geography professor and senior planner with Jeffrey H. Taylor and Associates, is for you!

**This series is co-sponsored by New Hampshire Sustainable Energy Association**

**BOTANY AND CONSERVATION WORKSHOPS**

**FRAMEWORK TREES OF NEW ENGLAND**
**Wednesday, July 7, 6–8:30 p.m.**
**Sunday, July 11, 9 a.m.–3:30 p.m.**
**Saturday, July 17, 9 a.m.–3:30 p.m.**

Adults
Join Chris Mattrick, Forest Botanist, White Mountain National Forest, for this three-part survey course. Trees are the dominant plant of New England, with forests covering most of the land area. We will address identification and natural history of individual species as well as forest ecology. Since understanding today’s forests requires familiarity with their history, we will review the changing landscape from the Ice Age through European settlement. Participants will learn to identify native New England trees and their habitats, to recognize different aged stands (pioneer, second growth), and will become familiar with forest communities of the northeastern temperate region. We’ll also consider how natural conditions and human disturbance factors affect forests. We will take field trips to see a variety of forest types.

**Cost: $176/member; $204/non-member**

**NATIVE NEW ENGLAND SHRUBS**
**Wednesday, September 8, 6 - 9 p.m.**
**Sunday, September 12, 9 a.m. - 1:30 p.m**
**Saturday, September 18, 9 a.m. - 1:30 p.m**
**Wednesday, September 22, 6 - 9 p.m.**

Adults
New England shrubs display a wide variation in size, shape, color, and characteristics of their bark, flowers, and fruits. This course taught by Chris Mattrick, Forest Botanist, White Mountain National Forest, introduces students to about 50 species growing in this region and will emphasize identification. Participants will also become familiar with family characteristics and historic uses through off-site field trips.

**Cost: $195/member; $225/non-member**

**This series is co-sponsored by New England Wild Flower Society**
Special Events

Kirkwood Gardens Day

Saturday
June 12, 2010
9:00 a.m. to 1:00 p.m.

Gain inspiration from Kirkwood Gardens and find beautiful additions for your own

- Fine perennials from a prestigious New England nursery
- Silent Auction of desirable plants and garden-related items
- Plants from knowledgeable local gardeners
- Garden collectibles and treasures
- Expert opinions and advice
- Drinks, sandwiches, and baked goods available
- Exceptional vendors, including: South African handmade table linens, Wooden bowls, Bird carvings, Pottery, Herbs, Earth Jewelry

TO BENEFIT THE KIRKWOOD GARDENS established 1995

Come Play the Wild Animal Way!

Animal Enrichment Day

Wednesday, July 14 • 9:30 a.m.–4:30 p.m.

Have you ever wondered what a paper towel tube, cinnamon, and a skunk have in common? Find out at this fun-filled day focusing on animal enrichment. Live animal presentations and demonstrations will be held throughout the day. And, don’t miss the special sale of art created by some resident animals. Sponsored by Tootsie Roll Company.

Cost: free/member; $13/adults, $9/youth, age 2 and under free/non-member

Autumn Festival

Saturday, September 25
9:30 a.m. - 4:30 p.m.

Enjoy live animal presentations and crafts for children at this enjoyable, family festival. Kids of all ages will enjoy the program “By Wings and Fins and Padded Feet” by award-winning author, storyteller, musician, and educator Michael Caduto (www.p-e-a-c-e.net). Michael will sign his books following the program. Volunteer docents will be on hand with live animals and demonstrations. Lunch available for purchase from Longhaul Farm.

Cost: free/member; $13/adults, $9/youth, age 2 and under free/non-member

Autumn Festival is sponsored by

Generously sponsored by:

Belknap Landscape Company
25 Country Club Road, Unit 302
Gilford, NH 03249
603-528-2798
www.belknaplandscape.com
Celebrate the wonders of the natural world at **Wild Encounters** – this year’s Annual Meeting and Summer Gala Dinner on Saturday, August 14, 2010.

The evening will begin with a quick Annual Meeting to elect Officers and Trustees, recognize employee service, and honor retiring board members. Next will be a series of close up encounters with Science Center ambassador animals accompanied by staff naturalists, followed by a natural history contest with prizes. Cash bar and hors d’oeuvres, piano tunes by David Conver, and dinner by the Common Man Family wrap up the event. Proceeds will support the Science Center’s education programs. Watch for your invitation in July.

**OFFICER AND TRUSTEE ELECTION SLATE**

- The Board of Trustees is pleased to announce the slate of Officers nominated to serve a one-year term, commencing with election.
  - **Chairman** - Laurie Beeson, Holderness
  - **Vice Chairman** - Nancy Beck, Holderness
  - **Treasurer** - Bruce Whitmore, Holderness
  - **Secretary** - John Fernandes, Ashland

- The Board of Trustees is pleased to announce the slate of trustees for re-election to serve a three-year term, commencing with election.
  - **Nancy Beck**, Holderness
  - **Laurie Beeson**, Holderness
  - **Andrea Eaton**, Ashland
  - **Alan English**, Holderness and Summit, NJ
  - **John Fernandes**, Ashland

- The Board of Trustees is pleased to announce a slate of three new candidates for trustees nominated to serve a three-year term, commencing with election.

**Margaret Mathieson Conver, CPA**

Peggy has spent more than 30 years in the financial and institutional management field; the last 20 in independent primary, secondary, and post secondary education. She graduated from Bucknell University in Lewisburg, PA with a B.S.B.A. in Accounting & Management and was certified in the Commonwealth of PA shortly thereafter. Peggy retired in 2009 from Chestnut Hill Academy in Philadelphia, a private boy’s school with a $12 million budget and $33 million endowment. As Business Manager and Assistant Treasurer, Peggy managed all financial operations of the school as well as the construction and renovation of almost all of the buildings on campus, culminating with the design and construction of a LEED-certified Science & Technology building. She also oversaw the replacement of all administrative computer systems, investment advisory services, negotiated contracts for food services, cleaning services, and business and employees insurances. Peggy developed short and long term financial plans and models and participated in several strategic planning processes as well. Peggy’s has volunteered as a Director for the Philadelphia Area Independent School Business Office Association, a member of the Bucknell University’s National Alumnae Association board, and Ellis School Alumnae Advisor and Class Gift Chair. She is also a current trustee of the school and serves on the session of her church. Peggy and her husband David and daughter CC reside in Flourtown, PA and summers in Holderness with her mother, Helen Mathieson.

**David F. Martin**

Dave and his wife Joan purchased a cottage on Squam in 1984 after renting on various lakes in the region for the previous 15 years. In 2008 they completed construction of a more permanent home where they spend six months each year. Dave retired from KPMG in 2008 after a 39 year career with the firm. During his years as a partner with KPMG he served a wide variety of public companies in four offices: Philadelphia, New York, Pittsburgh, and Minneapolis. He was a Professional Accounting Fellow at the Securities and Exchange Commission for two years in the early 1980s. During the last three years with KPMG, Dave was assigned to the Executive Office in New York where he led a team that analyzed enterprise risk and corporate governance matters. Over the years, Dave has volunteered and/or been elected to boards of a variety of not for profit institutions including libraries, churches, and civic organizations. Most recently he chaired the audit committee of the board of the Pennsylvania Economy League. During the summer of 2009 Dave became a Tour Boat Captain for the Science Center and joined the Finance Committee and the Governance Committee as aContinued on page 10
What are some tricks of the bumblebees’ trade? Sometimes pollen is difficult to extract from plants like tomatoes and blueberries, but bumblebees are experts with a technique known as “buzz pollination” or sonication. By vibrating their flight muscles while holding onto the flower (and thus making a really loud buzz), bumblebees shake the flowers enough to release pollen. Bumblebees also scent mark flowers so they can tell which ones have been recently foraged. Some plants like lady’s slippers depend upon bumblebees for pollination – these heavy, powerful insects may be the only ones strong enough to enter their flowers. Another way that bumblebees benefit flowers results from an electrostatic charge that builds up in a flying bumblebee. When the insect lands on a flower, pollen is attracted from the grounded flower to its fuzzy body. At the next flower, the pollen carried by the bumblebee is still charged and transfers to the most grounded part of the flower – yes, the stigma. Pollination happens!

As I write this article in early spring, queen bumblebees are searching for nesting sites. I hope one settles in an old rodent nest or hole or perhaps in a grassy mound close to where I live so that I can keep track of the colony’s progress. Once situated, the queen will forage for nectar and pollen and then begin to lay eggs. These fertilized eggs develop into female workers which take over housekeeping and foraging duties. By mid-summer the colony will be at its height which may be only 50 bees. As summer wanes, the colony enters its final stage when the queen lays unfertilized eggs that develop into males. She also lays fertilized eggs that receive extra food and care, resulting in new queens. Males soon leave the colony and find shelter at night in and under flowers. Look for their dew-covered, lethargic bodies in the early morning! By scent marking certain areas, males attract the new queens. Once mated, males die while queens search for hibernating spots. These new queens are the only ones to survive the winter. Next spring they will be ready to start their own colonies.

Would you like to follow a bumblebee? First, listen for the buzz which leads you to a busy bumblebee on a flower. Is she carrying pollen? What kind of flowers does she prefer? How is she collecting the nectar and pollen? Are you getting too close? She may raise her central leg in your direction to let you know you are in her space. Then, zoom, off she buzzes, leaving you with the gift of having shared a few moments in the life of a bumblebee.
NEWSBRIEFS

♦ Longtime member, volunteer, and supporter Ellen Bennett, 80, passed away in April at her home “Overlook Farm” in Center Harbor, after a battle with cancer. Ellen was a strong supporter of Kirkwood Gardens, in particular, and devoted many volunteer hours there. Ellen’s photo here shows her as fellow garden volunteers honored her in November to mark her 80th birthday, following the annual fall work day to put the gardens to bed for the winter.

♦ The 2010 New Hampshire Environmental Educators Conference was held here on March 10. Over 70 educators from across New Hampshire attended sessions on collaborative partnerships, community gardening, and students as scientists. The theme was “Locally Grown Learning: Education Using Your Community Resources” with Dr. Libby McCann of the Department of Environmental Studies, Antioch New England as keynote speaker. The conference included dinner sponsored by Uncommon Catering and ended with night excursions, including an owl prowl led by Iain MacLeod.

♦ In April, Animal Caretaker Lauren Moulis attended the Animal Behavior Management Alliance conference held in Pittsburgh, PA. In addition to workshops and presentations ranging from aggression management to training raptors using positive reinforcement, Lauren visited the Pittsburgh Zoo and PPG Aquarium and the National Aviary. Under the guidance of Ken Ramirez, VP of Animal Collections and Animal Training at Chicago’s Shedd Aquarium, and Lee Nesler, Executive Director of the Western PA Humane Society, she visited the Humane Society and helped to train dogs to make them more adoptable.

♦ We are pleased to welcome a new Lake Cruise Tour Captain this season. Bev Lapham of Meredith will join the returning Lake Cruise staff. We also welcome back all of last year’s Admissions and Howling Coyote Gift Shop, Kirkwood Café, and Finance staff this year.

♦ Education Program Interns will soon be here. Sarah Beebe hails from the Sunflower State where she attends Kansas State University and will graduate in December with a B.A. in Park Management and Conservation with specializations in Law Enforcement and Interpretation. She has presented interpretive programs for the Sunset Zoo, Topeka Water Festival, and on behalf of the U.S. Fish and Wildlife Service. Other work experiences include serving as a Clerk for the U.S. Fish and Wildlife Service, as a junior zoo keeper and explorer at the Sunset Zoo, and running a pet sitting service. Dan Kemp has been associated with the Science Center since 2005 as a volunteer and docent; you might have seen him presenting at the trailside amphitheatre with the Broad-winged Hawk or Peregrine Falcon. Dan has a degree in history from Harvard, served with the U.S. Air Force as a Communications and Electronics Officer, and worked in the private sector as a computer programmer analyst, systems architect, project manager, and senior partner, founder and vice president of several computer and software businesses. Currently Dan is pursuing an M.S. in Environmental Studies at Antioch New England. Laura Soder completed her sophomore year at Delaware Valley College in Doylestown, Pennsylvania where she is working towards a B.S. in Conservation and Wildlife Management. Previously she interned at the Nixon County Park Nature Center and has been a teacher’s assistant at the Hartford Glenn Environmental Education Center. Other experiences include traveling to Peru with the National Zoo’s Eco Explorers, working as a kennel attendant, and coaching a children’s soccer team.

♦ Look for a new exhibit this summer focusing on New Hampshire geology and geologic time, which will be located near the Wetlands Walk boardwalk. Large boulders representing New Hampshire’s major rock types were gathered from across the state and will be arranged to encourage exploration. Interpretive panels will explain metamorphic, igneous, and sedimentary rock and a “walk through time” will illustrate significant moments in Earth history. This exhibit is funded by a generous gift from trustee John Gephart and his wife Monica Hargraves, in memory of Monica’s father Robert, who was a distinguished geologist. Another component of the new exhibit will be a granite bench recognizing the enormous financial support over many years by the Edwin S. Webster Foundation.

♦ Squam Lakes Natural Science Center continues to be active in a collaborative partnership, Sea to Lake, Summit to Sky Initiative, with Seacoast Science Center, Mount Washington Observatory, and McAuliffe-Shepard Discovery Center. Funding in support of this distance learning and outreach project is from the New Hampshire Charitable Foundation. This spring, the collaborative prototyped an innovative, framework-aligned science curriculum with seventh graders at Timberlane Middle School. With additional funding, we hope to grow this program statewide.

♦ In March, Marty and Joyce Briner of Elkins, NH, made a gift of a truly unique and special collection of hand-carved and painted birds, consisting of 236 pieces. We plan to create a space where the entire collection can be displayed, but for now the carvings are safely stored.

♦ Clean Up Day, on April 24, brought together 122 volunteers and staff to prepare the trails and grounds for the season. Jobs included raking trails, cleaning exhibits, staining buildings, and more. Several community groups participated: Beckett House, Rumney; Cub Scout Troop #86, Plymouth and Rumney; Daisy Scouts, Gilford; Junior and Senior Friends Program; NH Hugh

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O’Brian Youth Leadership; Plymouth State University Volunteers; and University of Michigan alumni. We thank Bob’s Shurfine Market, Ashland; Dunkin Donuts, Ashland; Golden Pond Country Store, Holderness; Hannaford Supermarkets, Plymouth; Hart’s Turkey Farm Restaurant, Meredith; Lakes Region Coca-Cola Bottling Company; Shaw’s Supermarket, Gilford; Stonyfield Farm Yogurt; Tootsie Roll and several volunteers for in-kind donations to provide lunch.

♦ New Hampshire Day on May 1 was generously sponsored by the Dead River Company with additional support from the New Hampshire Electric Co-op Foundation. Representatives from Dead River Company were on hand all day showing an energy efficiency display to over 1,500 visitors on a sunny, but cool day.

♦ There will be a series of special days this year, including Mother’s, Father’s, and Grandparent’s Days with discounts, Black Bear Day on May 16 featuring a program by author and bear biologist Ben Kilham at 2:00 p.m., Get Outdoors Day on June 12 with discounted admissions for children, Fisher Day on June 26, and Coyote Day on August 21. Don’t forget that five daily Up Close to Animals presentations will resume July 1 through August 31 at the amphitheater; River Otter enrichment is every Monday, Wednesday, and Friday at 11:30 a.m.; and Turtle Talks are every Tuesday in July and August at 10:30 a.m. Visit our website, www.nhnature.org for details.

♦ We are partnering with the McAuliffe-Shepard Discovery Center in Concord again this year. Science Center members will enjoy one free visit to
Rosa rugosa is not native to North America. It originated in East Asia - in Japan, China, and Korea. In 1736 collectors sent the first specimens to Europe, but it was not until the mid 1800s that it became popular as an ornamental garden plant. By the early 1900s Rosa rugosa had escaped from coastal gardens and was growing in abundance on the coastal dunes of Europe where, in some countries, it is now listed as invasive; this has yet to happen here in North America.

Unfortunately, as with everything, there are a few drawbacks. The first is suckering, for these roses put out underground stems that pop up here and there to produce new shrubs. You can cut them off with a spade if they’re heading in an unwanted direction but if you’re like me, you may forget, and next thing you know they are growing in the grass or amidst a favorite groundcover. They also have very prickly stems so you need to wear gloves if you’re pruning. And finally, there are Japanese Beetles, which like them just as much as the bumblebees do, but which eat the buds, flowers, and leaves, and then stay around to sleep. The best answer for this is to go out with a small pail of soapy water, preferably early in the day before they start moving around. Catch them unaware and knock them into your pail.

Make a visit to Kirkwood Gardens when the roses are in bloom and look for the bumblebees gathering pollen. Then, in July, come again on a Thursday morning when the garden volunteers are at work - you may see them with their containers of soapy water hunting down those Japanese Beetles!

When you see a lovely green grass lawn, you might not think of air pollution and climate change. But if you use a gas-powered lawn mower maybe you should consider trading it for an electric mower or a reel mower powered by muscle power. According to the Environmental Protection Agency, gas mowers are responsible for nearly five percent of our nation’s total air pollution. Over 800 million gallons of gasoline are used mowing lawns every year in the U.S. SafeLawns.org says: “Small gasoline engines, the ones associated with lawn mowers, weed whackers and hedge trimmers, are some of the worst offenders in terms of air pollution and so-called greenhouse gases that warm the atmosphere."

For more information, see:
http://safelawns.org/tips/Grass_off_Gas.pdf
http://www.epa.gov/otaq/consumer/19-yard.pdf
WHY SHOULD I PLAN MY ESTATE?

Do you wonder why the Science Center often talks to our members and donors about writing a will? It is because most Americans do not have wills. If you are one of them, here are a few considerations that may encourage you to do some estate planning. The benefits of having a will include:

• You can take care of your family, loved ones, and favorite causes beyond your lifetime.
• You determine what happens to your estate.
• You may avoid estate taxes.
• You gain peace of mind.

An estate plan is simply a list of your assets and a plan for what you want to happen to those assets. Here are some things to take into account when you plan your estate:

• What people are important to you?
• Who depends on you now and will need help in the future?
• What personal items do you especially value?
• What charities and causes are important to you?
• What other assets do you own?
• Who do you want to handle your estate?
• Where do you want to keep your will?
• Where will you leave critical information, such as bank account numbers, passwords, and other details so that a trusted relative or friend can find them?
• What decisions have you made regarding end-of-life care?
• Who do you want to make decisions for you if you are unable to make them yourself?

Those who complete an estate plan often find it to be quicker and easier than they imagined. And those who do include charitable giving in their plans gain a sense of satisfaction and happiness. While no one knows what the future holds, estate planning is one way to create a secure future for you and your loved ones and to leave a lasting legacy. Please consider making a lasting contribution to environmental education by writing a will and remembering Squam Lakes Natural Science Center in it.

We are grateful for these memorial and honorary gifts received from January 1 through March 31, 2010:

In memory of Shirley Chick
Nancy and Bill Dailey

In memory of Robert and Madeleine Cloutier
Jill and John Hare

In memory of Cynthia Lathrop
Jeffrey Lathrop
Palmer & Pike Conway Dahl
Insurance Agency

In memory of Elmer M. Morrison
Val and John Scannell

In memory of Brianna Paul
Dave Berman
David Paul
Melinda Paul

In memory of Betty Schoonmaker
Natalie Parsons
Janet and Gary Robertson
Susan and Tom Stepp
Joe Thompson
Bonnie and Bill Webb

In memory of Greg Smith-in honor of his 22nd birthday
Frances Chalmers and Gail Smith

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.

RENEW YOUR MEMBERSHIP ONLINE AT

www.nhnature.org
In my last two columns I have drawn your attention to the work of the staff and the trustee committees, not to mention the invaluable contributions of you, members, donors, and volunteers, in determining “what the Science Center can do better.” Much of this reminds me of the proverbial duck - frantic paddling beneath the surface while all is calm on the surface. You should see tangible evidence of one of the three initiatives I specified in my winter 2009 Trail’s End, a “walk through time,” as you visit the Science Center this summer (at least to judge from the rocks being moved around now!). A second one, the underwater Squam exhibit, is what brought the duck analogy to mind - lots of planning and staff work is taking place, but you won’t see much tangible evidence of progress before the summer of 2011, if then. Did you know how much mess a beaver makes? Can we show one underwater - can you even see one through their clouds and mud?

But, as you can see from Executive Director Iain MacLeod’s column, Forging Trails, on page one, we are making real and visible headway on a third front, the nature preschool. As his article on the Blue Heron Preschool points out, we are starting off small (and, we cannot launch it until we have all the state permits - which may even be in hand by the time you read this) and using existing facilities, so can always pull in our horns if need be. BUT, we don’t expect to have to. Thanks to Lead Teacher Laura Mammarelli, Education Program Director Amy Yeakel, Iain, the Education Committee, and many other “champions” for getting this initiative off to such a promising start. The preschool promises to change the Science Center for the better, but at this stage it is still an experiment and the Trustees at this stage are rightly “cautiously optimistic.”

This is my last Trail’s End as your Chairman (I think!). By the time you read the next one (the fall 2010 issue of Track & Trails) you will have elected a new Chairperson. I have been very lucky in having Iain as the “laboring oar” throughout my three-year term - as indeed have you - he has made my life very easy. My thanks to him, his magnificent staff, the Trustees, the Committees (and their Chairs), and all the myriad of volunteers. One thing that I am particularly proud of is that, starting this year, 2010, the Governance Committee (most ably chaired by Carol Thompson), with the support of the full Board of Trustees, and voted on by you, our members, in 2009, has introduced term limits for Trustees. This means that, since a Trustee must, for the most part, stand down after three three-year terms (for a total of nine years), you will always have fresh blood, not to mention ideas, on your Board of Trustees (currently limited to 24 voting members); it does, of course, mean more work for the Governance Committee!

On a final note, since I am writing this in April, do you realize that the first Earth Day was celebrated on April 22, 1970? By that time the Squam Lakes Natural Science Center (or, Squam Lakes Science Center, as it was then called), had already been in existence for over three years. Ahead of the game as always.

Trail’s End is written by Peter M. Wood, Chairman of the SLNSC Board of Trustees. You may contact Peter at 603-968-7194 x 27 or peter.wood@nhnature.org.

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the Discovery Center in September. For information about the Discovery Center, visit www.starhop.com or call 603-271-7827. This offer is not valid on special event days and planetarium tickets are not included.

Riley Nolan, a senior at the University of New Hampshire, is conducting research on cyanobacteria toxins in fish tissue with help from Animal Care staff who collected small samples of the fish fed to our River Otters from fish donated by the Meredith Rotary Great Ice Fishing Derby. Cyanobacteria are frequently present in lake phytoplankton populations where increased nutrient levels may allow large blooms of cyanobacteria to occur. This is a project by Dr. James Haney and the University of New Hampshire Center for Freshwater Biology.

This winter one of our Bald Eagles passed away. She was at least 23 years old, having arrived here as an adult in 1992. A new female Bald Eagle was received in April from the Peace River Wildlife Center in Punta Gorda, Florida. She will be on exhibit this season but since she is an immature (approximately two years old) she does not yet display the typical white head seen in adult Bald Eagles.
The Howling Coyote Gift Shop
AT
SQUAM LAKES NATURAL SCIENCE CENTER

Open Daily

See attractive, new inventory at the Howling Coyote Gift Shop including: stainless water bottles, natural gourd bird houses, nature board games and puzzles, science and exploration kits, new t-shirt designs, New Hampshire maple syrup and candies, and many new green items, such as gardening tools, back packs of recycled rice bags, Fair Trade items, great new books, and a colorful selection of tie-dyed t-shirts and dresses.

VISIT ONLINE AT WWW.NHNATURE.ORG