



BALD EAGLES CHALLENGE WINTER

By Margaret Gillespie

What image comes to your mind when you picture a Bald Eagle? Perhaps you see a majestic bird, perched on an open branch surveying the surrounding calm lake waters, white head shining in the sun. It's a comfort in colder weather to know that the "bald" part of its name comes from "piebald," meaning white-headed rather than a lack of feathers. Their scientific name, *Haliaeetus leucocephalus*, translates as white-headed sea eagle. The Bald Eagle is a strikingly large bird, which certainly turns heads in its direction. Given sufficient open water for fishing, Bald Eagles will generally stay year-round in the same location. How challenging is life for an overwintering eagle?

One attribute which doesn't change with the seasons is the agility and strength it takes for a Bald Eagle to steal food from other eagles and predators. A few years back when gray squirrel populations skyrocketed in the fall, I watched with amazement as a Bald Eagle swooped down and snatched a swimming gray squirrel out of the water in one of Squam Lake's quiet bays. The best in aerobatics was yet to come. Another Bald Eagle emerged from nowhere to dive bomb the laden eagle, forcing it to drop the squirrel. The intruding eagle then successfully snatched the prize from the water and sped away.

As talented as eagles are as hunters, scavenging for food is certainly not below our national symbol. Carrion is a major nutrition source for them in winter with roadkill an important part. What live items might also be on the menu? Fish remain a staple in their diet. They also prey upon ducks, geese, and muskrats, and will venture over land in search of other small mammals.

How do Bald Eagles keep warm on frigid winter nights? One way is to find a microclimate of warmer air often provided by coniferous trees like white pines. A number of eagles will roost together in these sheltered spots. The clusters of needles slow radiational cooling and reduce wind speed. Another way is for eagles to lower their individual temperatures. At night a wintering Bald Eagle's body temperature drops by 1.8°C. Although Bald Eagles may appear to be sleek and trim, it is not true on a cold winter night. They use their approximately 7,000 feathers, mostly insulating down, to keep out the cold by fluffing out these feathers to create a thick barrier sealed by their contour feathers. Tucking in head and feet completes the insulating theme.

Nesting season begins early for Bald Eagles. Constructing a new nest or repairing an existing

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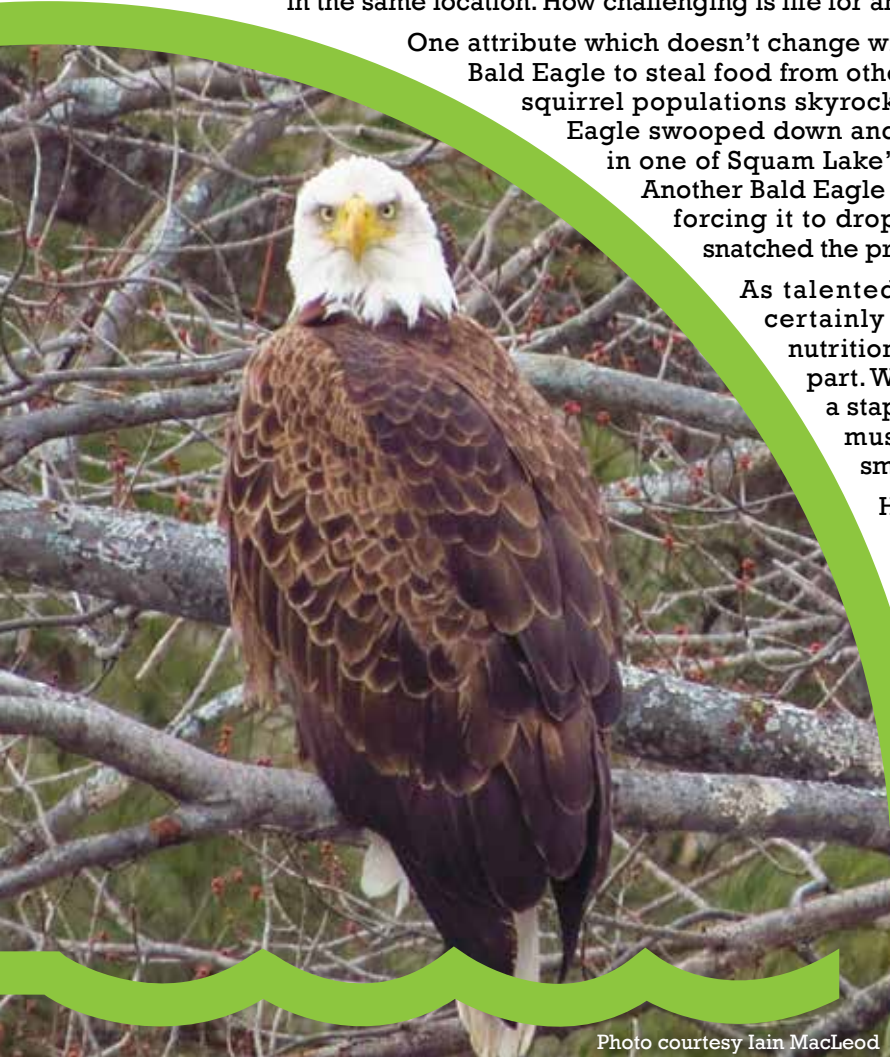


Photo courtesy Iain MacLeod

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WINTER PROGRAMS

- Wild Winter Walks
- Mt. Fayal Winter Hike
- Intro to Ice Fishing
- Exploring Animal Survival in Winter
- Homeschool Series

Program and event tickets available at nhnature.org.

FORGING TRAILS: HAWK MIGRATION: BEING IN THE RIGHT PLACE AT THE RIGHT TIME



I've been fascinated by raptors since childhood and have been studying hawk migration for decades; spending countless hours sitting on top of mountains counting specks in the sky and trying to make sense of their movements and trends. It's an annual addiction. Most of my recent watching has been at the Pack Monadnock Raptor Observatory near Peterborough – an official migration station I founded in my NH Audubon days.

The Science Center has its own annual hawk count at the Interlakes Elementary School in Meredith, which was started by former Senior Naturalist Dave Erler in 1980. Every year since, our education staff has taught all 4th grade students about hawk migration through live raptor programs, in-classroom instruction, and in-the-field observation from the grounds of the school.

The count at Interlakes is timed to coincide with the peak migration of the Broad-winged Hawk. Although raptors are migrating through New Hampshire from August through the end of November, the Broad-wings head south in huge numbers over a short window in mid-September. This year, the two field days were September 16 and 17 and Audrey invited me to join naturalists Eric, Jeremy, Tiggy, Josh, and Kyle to help with the count. We were in for a treat.


Right from the start, conditions were perfect—light winds and high clouds mean good thermals and that's what Broad-wings are waiting for. They seek those rising columns of air and hitch a ride on the elevator as high as it will take them, then glide to the next one . . . and the next one. When your final destination is Panama or Brazil and you have to get there under your own steam, you need thermals and favorable weather to make it there.

Obviously all the Broad-wings got the memo that it was time to head south. On September 14, over 5,000 were counted at Greenlaw Mountain in New Brunswick, 240 miles north-northeast and the same day 6,000 Broad-wings were counted at Clarry Hill in Maine, 115 miles northeast, so we knew there were huge numbers of birds headed towards New Hampshire. Would we be in the right place at the right time? Subtle wind variations can push the birds north of, south of, or right through the Lakes Region. We got the latter. Between 8:30 a.m. and 5:30 p.m., on the 16th we counted 5,802 Broad-winged Hawks over Meredith and 85 other raptors including 20 Bald Eagles and a mega-rare Swainson's Hawk. They came through in squadrons of hundreds at a time and stopped to catch a thermal wherever they could – sometimes right above us over the athletic field. It was a historic count.

The students were all treated to the show. The shouts of "I see them, I see them" or "Awesome!" echoed throughout the day. Their young eyes are so good at spotting the specks overhead. I hope this special experience sparked a deeper interest for a few of them. Maybe one will be a hawk migration researcher in the future. At the very least, they all got an appreciation for bird migration and a tangible demonstration of it right over their school.

The next day, the push continued and we tallied an additional 1,467 hawks moving through. Our grand total for the two days was 7,354 hawks. On September 18, the Putney Mountain hawk watch in Vermont (70 miles southwest) counted over 6,600 hawks . . . almost certainly some of the same birds we counted.

I'm glad I accepted the invitation to count at Interlakes this year. My pals at Pack Monadnock were socked in by low clouds on September 16 and 17 and only saw 23 hawks! It's all about being in the right place at the right time.


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Squam Lakes Natural Science Center is a non-profit educational institution incorporated in 1966 as a charitable organization under statutes of the State of New Hampshire with its principal place of business in Holderness. Its mission is to advance understanding of ecology by exploring New Hampshire's natural world.

Tracks & Trails is a regular publication of Squam Lakes Natural Science Center distributed to members and contributors. Comments are welcomed by newsletter editors Janet Robertson and Amanda Gillen.

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STAFF PROFILE

AUDREY EISENHAUER



When people ask me what my favorite part of my job is, several things come to mind. Like the great team of staff I get to work with, or that no two days are ever the same, or how much I enjoy the opportunity to work with wild animals. But my absolute favorite part of my job is whenever I can help someone have that

moment of being in awe of nature. Whether it happens when walking down a trail with a bunch of preschoolers and having a three year old say, “Audrey Autumn (*my nature name*), it is a beautiful day. The sun is shining and it feels good.” (You have to love a three year old with the ability to express gratitude for being outside on a beautiful day!) Or whether it happens when a particularly active fourth grader pulls their net out of the pond to find a giant water bug crawling across it and they run excitedly to put it in our collection tray. Then they stand for several minutes in silence watching it, having no idea before that moment that such a creature existed. Sometimes that moment happens on a guided hike when an adult learns that the mushrooms they have always seen on the forest floor are only the fruiting body of that organism and most of it is unseen underground and essential for the health of the forest.

I had a particularly impactful experience as a high school student, that unbeknownst to me at the time, directly

influenced my career path. I had the best science teacher in high school. He really got me hooked on science and provided his students with opportunities outside the classroom to explore and learn about the world around us. He took our AP Biology class to the Yosemite Institute for a week. This is a residential environmental education program in Yosemite National Park. We stayed for a couple nights in cabins on the valley floor and a couple nights in cabins in the high country. A guide accompanied us each day on our hikes and directed our explorations. He seemed to know everything – the names of all the trees, the birds, the animals, the insects, and the mountains. I decided during that trip I wanted to be like our guide; I wanted to know all my wild neighbors. I went on to pursue a degree in Wildlife Biology.

It wasn't until a few years into my undergraduate degree that I discovered environmental education. My experience as a high school student at Yosemite Institute came full circle. It didn't take me long to realize helping others to have those experiences and make those meaningful connections with the natural world was what I wanted to do as a career. I feel lucky I had so much time in nature growing up and lucky I've gotten to spend my career inspiring others to do the same.

Audrey Eisenhauer has been Education Director since 2014. She also served as Volunteer Coordinator from 2003 to 2007. She received her BS in Wildlife Biology from Humboldt State University in California, her MS in Natural Resource and Environmental Education from Utah State University, and a MEd in Elementary Education from Plymouth State University.

NEWSBRIEFS

- We said farewell to Animal Care Training Coordinator Aubrey Voelker at the end of October. During her five and a half years on staff, Aubrey provided enrichment to our ambassador animals along with her other duties. Her cheerful attitude and steady patience will be missed. We wish Aubrey the best in her new position as the Salt Reduction Program Coordinator at the NH Department of Environmental Services (see Green Tip on page 8). We look forward to seeing her when she returns to volunteer.
- After two years as a naturalist and animal care trainer, Josh Flagg left on October 15 to take a new job at Natural Encounters in Winter Haven, Florida. We will miss him but are happy for him to be able to focus on his love for training animals.
- The final phase of the Hidden Stories Trail Camera Project is underway. We are testing a pilot program with Grade 5 to 8 teachers. They will use trail cameras to ask and investigate their own scientific questions about the natural world with their students.
- We are grateful to Heart & Hands, a nonprofit thrift shop run by three local churches in Meredith, for their recent grant to fund a new automatic external defibrillator.
- Naturally Wild Halloween was enjoyed by almost 600 trail visitors on October 31. The day featured “Creatures of the Night” Pop Up Animal Encounters along the trail. Welcome Center staff dressed in costumes to greet costumed visitors. Special thanks to Tootsie Roll Industries for supplying candy.
- The live animal exhibit trail closed for the season at the end of the day on Monday, November 1. We had a wonderful season with just over 64,000 members and visitors on the trail and almost 7,000 lake cruise passengers. We are grateful for your support.
- We are starting to work on a new Strategic Plan to help guide us into the future. You may have received a survey in your email asking for your feedback about your experiences when you visited. Thank you for your help.
- The first part of a pollinator garden was installed adjacent to Blue Heron School classrooms this fall thanks to support from Asquam Gardens, the Helen Clay Frick Foundation, KidsGardening.Org, and the NH Partnership for Schoolyard Action.

NATURALIST'S CORNER

WINTER BROOK TROUT

By Jeremy Phillips

Brook trout (*Salvelinus fontinalis*) are one of my favorite species of fish. They have sleek bodies for moving swiftly, even in strong currents. Their perfect camouflage allows them to hide from predators and prey alike, blending in with the stony bottom. They emerge from beneath boulders and use their sharp teeth to grab unsuspecting insects.

But what do they do in winter?

Native brook trout live mostly in small tributaries that run into larger bodies of water. Winter poses a harshness not seen in larger bodies of water. Ice freezes, thaws, and breaks apart to create an ever-changing landscape for brook trout trying to find places to survive. Finding food and respite are their biggest challenges.

Locating the best place to stay in these small bodies of water is important. Moving downstream may offer a flatter, less fluctuating space with more water. A large boulder holding up the water's flow or a fallen tree slowing the water creates a deeper pool that can be just the spot for a trout. Beaver ponds are an especially good find for brook trout. These larger pools usually provide stable frozen ice as opposed to locations where the ice breaks up more often. If ice breaks up, there are larger temperature swings along with the changing landscape of ice flows. Then fish could need to move in a hurry to unknown territory causing direct mortality from stress or expending too much energy.

What do brook trout eat? Because of winter's colder temperatures, trout have adapted by slowing their metabolism, which allows them to survive longer with less food. They also position themselves to keep an eye on areas where drifting insects may pass by without requiring them to move much. On warm winter days and at the beginning or end of winter, localized hatches may provide abundant small midges or mayflies.

While lower metabolism is great when it comes to needing

less food, it also slows the trout's mobility. Predators can take advantage of these sluggish fish in deep overwinter pools. Animals such as mink and otter love to find an opening in the ice nearby.

Winter's harsh effects on brook trout is exacerbated because of climate change. Increasing temperature fluctuations cause ice formations to change more rapidly. Heavier rainfall events (any time of year) change sediment types in streams quickly, decreasing habitat quality. General temperature increases also cause issues year round for brook trout, because

they require cooler temperatures in the summer.

The good news is that many agencies are working to enhance brook trout habitat across New England. Extensive studies of the nearby Beebe River's tributaries led to restored stream crossings to reconnect fish access to nearly six miles of spawning and rearing locations, reduce water temperatures for cold-water fish, and link 15 miles

of aquatic habitat. For more information, see <https://www.conservationfund.org/projects/beebe-river-nh-reconnecting-a-river-wildlife-and-a-community-s-favorite-place>.

Locations across the state are doing single tree cuts where restoration crews selectively cut trees to strategically fell them into streambed locations. This helps to restore the natural function of the stream and improves habitat. Trout use the logs to hide from predators and take refuge out of the sun and fast current. Single tree cuts increase biomass in and around the stream, which has been shown to increase not only brook trout populations, but insect and bird populations.

Winter is a difficult time to live underwater. Brook trout are well-adapted to handle most changes. But climate change and other changes caused by humans make survival more difficult. Through careful stream management, we can bring back better habitats for these amazing fish. Look closely the next time you walk near a small stream. Maybe you will see the ripples of a trout surviving beneath the surface.



WISH LIST

For Animal Care - newspaper, clean bath towels, hand pruners, 10-gallon fish tank, milk crates

For Blue Heron School - children's shovels/rakes/any sort of tool; milk crates; 10x10-foot tarp

For Facilities - chain saw vice; loppers and pruners for invasive species removal

For Kirkwood Gardens - 1-quart, 2-quart, and gallon pots, stakes and staking supplies

KIRKWOOD GARDENS PLANT SPOTLIGHT

By Brenda Erler

Species Tulip

Tulipa praestans 'Shogun'

Culture: Easy to grow in average, medium moist, well-drained soil in full sun.

Bloom: late April

Height: 10 to 12 inches

Species tulips originated in the Mediterranean, the Caucasus, and Asia Minor. This particular variety is native to Tajikistan. They "return" more reliably from year to year, and are great for rock gardens and naturalized drifts. Plant bulbs 5 to 6 inches deep in fall. Remove flower stems promptly after bloom.

Kirkwood location: Sedum bed across from red barn.



flickr/Flora

Winterberry

Ilex verticillata 'Red Sprite'

Culture: Prefers moist, acidic, organic soil, but is very tolerant. Winterberries are dioecious, meaning they have separate male and female plants. One male shrub can pollinate 6 to 10 female plants for good berry production. Prune in early spring just before new growth appears.

Bloom: early summer, inconspicuous blossoms

Height: 3 to 4 feet tall and wide

This deciduous holly is native to eastern North America where it commonly grows in swamps, low woods, and along ponds and streams. Its showy berries will persist throughout the winter and are attractive to birds. Use in shrub borders, foundation plantings, or as accents in the garden.

Kirkwood location: on bank next to garden driveway between the large white pine and compost bins.



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



FROM THE HERON'S NEST

By Laura Mammarelli

Children and teachers at Blue Heron School made the most of the glorious fall weather in September and October. They played in the Pine Grove, explored with the naturalists, practiced counting and letter sounds, and built with blocks, stone and sticks. Everyone is happy to be back in school and together in our community.



Blue Heron School is a nature-based Montessori school for children ages three to six. For more information please visit nhnature.org/programs or contact Laura Mammarelli, Blue Heron School Director, at 603-968-7036 or blueheron@nhnature.org.

CALENDAR OF PROGRAMS & EVENTS



To help keep everyone healthy, programs have limited capacity and other restrictions. Visit nhnature.org/reopen for Know Before You Go information.

Program tickets must be reserved and paid for online in advance for all events.

Tickets are available at nhnature.org.

HOMESCHOOL SERIES: MONTHLY THROUGH APRIL

This year our monthly homeschool programs are a series of a one-hour, in-person programs held outdoors, followed by a 30-minute virtual wrap-up the following week featuring a live animal.

10:00 to 11:00 a.m. - In-person Outdoor Program: First Thursday of the month

10:00 to 10:30 a.m. - Virtual Wrap-up: Second Thursday of the month

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

An adult must participate with children at no additional cost. Each additional adult pays child fee.

All About Series (Ages 4 to 6)

January 6 and 13: Skunks

February 3 and 10: Groundhogs

March 3 and 10: Owls

April 7 and 14: Turtles

Join us with your child to learn all about New Hampshire wildlife. Each month considers a different group of living things through activities, hands-on experiences, and a meeting with a live animal.

Get HAPI! (Ages 7 to 10)

January 6 and 13: Interrelationships

February 3 and 10: Populations

March 3 and 10: Habitats

April 7 and 14: Ecosystems

Join us to increase your understanding of these four concepts of community ecology: Habitats, Adaptations, Populations, and Interrelationships (HAPI). Through activities and investigations, we will explore these topics in-depth.

WILD WINTER WALKS: 10:00 to 11:30 a.m. | Ages 6 and up

Saturday, January 8, 2022

Saturday, January 15, 2022

Saturday, January 22, 2022

Saturday, January 29, 2022

Saturday, February 5, 2022

Saturday, February 12, 2022

Saturday, February 19, 2022

Saturday, February 26, 2022

Wednesday, March 2, 2022

Saturday, March 5, 2022

Saturday, March 12, 2022

Saturday, March 19, 2022

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

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

MT FAYAL WINTER HIKE: 9:30 to 11:30 a.m. | Ages 12 and up

Saturday, January 15, 2022

Tuesday, March 1, 2022

Saturday, March 12, 2022

Enjoy the view of Squam Lake in winter from atop Mt. Fayal on this guided hike. We will look for and identify animal tracks and signs and brush up on our winter tree ID along the way. If needed, snowshoes are available at no extra cost or bring your own. Dress in layers, wear insulated snow boots, hats, and gloves. Bring water and a snack. Children must be accompanied by an adult.

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

INTRO TO ICE FISHING: 7:00 to 10:30 a.m. | Ages 9 and up

Saturday, January 22, 2022

Saturday, February 26, 2022

Beneath the snow and ice is a wondrous world of peril: oxygen starts to deplete, food is scarce, and water temperature is barely above 37°F. Join us in search of fish that remain active under these conditions. Try to entice fish to the end of your line using lures and jigging techniques that mimic their natural food. Learn about fish adaptations by observing fish colors, fins, and mouthparts. Whether you fish for food, to join in a social gathering, or to be out in the elements, ice fishing is a great activity to foster your love for nature. All fishing instruction, equipment, and bait will be provided at no extra cost.

Ages 16 and up must have a current fishing license. Adults must accompany children as a registered program participant. Wear insulated snow boots with non-cotton socks. Wear many, many layers of clothing, including non-cotton insulating base layers, a wind-proof outer layer, sunscreen, sunglasses, hat, and gloves. Bring an extra pair of gloves, snacks, a thermos with a hot beverage, hand and toe warmers, and a camp chair. Purchase your fishing licenses through New Hampshire Fish & Game, which helps conservation efforts in our state. (No license required on January 22, 2022, NH's Free Fishing Day).

Cost: \$25/member; \$30/non-member

EXPLORING ANIMAL SURVIVAL IN WINTER: 10:00 to 11:30 a.m. | Ages 5 and up

Friday, March 4, 2022

How do New Hampshire animals survive winter with cold, ice, snow, and shorter days? This outdoor experience combines natural history and active games to demonstrate how animals adapt to the rigors of winter. Meet a live animal to wrap-up our explorations and learn about its adaptations for surviving winter. This program is all outdoors; dress in warm layers with insulated snow boots, hats, and gloves. Children must be accompanied by an adult.

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

Save the Date: 2022 Summer Splash, Saturday, July 23

Join us for this family-friendly event featuring Giant Insects, entertainment, music, food trucks, and more. Details coming soon.



BUSINESSES INVEST IN EDUCATION

The Science Center is fortunate to have the support of many local businesses throughout the year. Business sponsorships, in-kind donations of goods and services, volunteer groups, and business memberships are just some of the ways area businesses support our mission. We are especially grateful for these community partnerships that support environmental education programs through their contributions in 2021. Learn more at nhnature.org/support/corporate_gifts.php.

Please help us recognize and support these businesses that have invested in Squam Lakes Natural Science Center in 2021:

Business Sponsors:

Belknap Landscape Company, Dead River Company, Lake and Island Properties, Meredith Village Savings Bank, MLK & Company, New Hampshire Electric Co-op, New Hampshire Electric Co-op Foundation, Rockywold-Deephaven Camps, Samyn-D'Elia Architects, Christopher P. Williams Architects

Summer Splash UnGala Sponsors:

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Business Members:

Cottage Place on Squam Lake, Holderness Harbor, Pine Shores Real Estate, Stewart's Ambulance Service

Business Volunteer Groups:

Hypertherm, Stonyfield Farm

We gratefully acknowledge all business supporters. Please notify Development Officer Kim Beardwood Smith if any listings are inaccurate or missing. Contact Kim to learn about 2022 sponsorships. Contact Volunteer Manager Carol Raymond for information about volunteering.

GREEN TIP: ARE YOU SALT SMART?

We all know too much salt in our diet is unhealthy. But when we use too much salt on roads, parking lots, driveways, and sidewalks, we create big health problems for our natural ecosystems and ground water supplies.

The most commonly used road salt is sodium chloride. We've all seen rock salt bounce off, be blown away, or washed from the roads. It ends up in streams, rivers, lakes, and groundwater – including our drinking water. Salt also kills roadside plants, damages soil, and harms aquatic life in lakes, streams, and rivers where it is hard to remove. Salt hurts pet paws, crumbles concrete, and corrodes cars.

The NH Department of Environmental Services (NHDES) and their newest employee, Aubrey Voelker, Salt Reduction Program Coordinator, are working to control rising concentrations of chloride from salt applications. According to the DES website, <https://www.des.nh.gov/land/roads/road-salt-reduction>, "In 2008, New Hampshire listed 19 chloride-impaired water bodies In 2020, that number increased to 50." The Green SnowPro Program offered by NHDES provides training and certification for snow and ice management professionals to help reduce salt use across NH.

Here are a few options to help homeowners and businesses:

- Shovel first. Clear snow before it turns to ice. Then use salt only where it's needed for safety.
- Distribute salt uniformly, not in clumps, and use less than you think you need. It takes just 12 ounces to treat a 20-foot-long driveway.

- Remember, salt won't deice when the temperature is below 15°F.
- Consider alternatives such as calcium chloride. It costs more, but you can use less. Or try magnesium chloride, which is less toxic than either rock salt or calcium chloride because it contains less chloride.
- Sand is a low cost option, but use it carefully so it doesn't clog storm sewers.



Image by Jerzy Górecki from Pixabay

VOLUNTEER UPDATE: OUR VOLUNTEER TEAM IS AMAZING!

During the 2021 season, we began to return to some of our traditional volunteer positions and procedures. We were happy to provide Docent and First Guides Training sessions and welcomed 10 new docents and six new First Guides to the volunteer team. We added Greeter opportunities as well. We did not offer Animal Care, Lake Education Assistant, or Volunteer Instructor trainings or opportunities, but hope to do so in 2022.

Annually, we host the Parsons Volunteer Recognition Event to honor and celebrate our wonderful and talented volunteers. In most years, we plan a complimentary awards dinner. In 2021, as in 2020, we offered naturalist-led boat cruises in September and October. In addition, Tracy Girl Ice Cream Truck from Ashland visited the Science Center and gave volunteers complimentary ice cream treats. Both the cruises and the ice cream were sponsored by Meredith Village Savings Bank. Thank you volunteers and thank you MSVB!

During the Parsons Volunteer Recognition Event we usually announce data from the previous year. In 2020, during a pandemic, 175 volunteers donated 4,308 hours of service. With many of the volunteer positions cancelled for that

season, this is a tremendous show of support from our volunteer community.

Many thanks from a grateful staff for all volunteers do to support our work and mission!



First Guide Emma Fullam with raptor props.

“In 2020, during a pandemic, 175 volunteers donated 4,308 hours of service.”



Stonyfield Farm volunteers helped prepare trails to start the trail season.

SCHOOL PROGRAMS - MAKE LEARNING COME ALIVE FOR ALL AGES!

Give your students the opportunity to connect to the natural world. Programs are available for preschool through high school. All programs align to Next Generation Science Standards and New Hampshire Career and College-Ready Science Standards.

Virtually Wild Programs:

These interactive 45 minute live animal programs engage your students with two live animals. Students can join from the classroom or elsewhere. Programs are limited to one classroom per program to facilitate interactivity. All programs include a post-visit activity that students can do at home.

In-person Outdoor Programs at the Science Center or at your school:

These unique and up close encounters give your students the opportunity to discover and connect with nature. Physical distancing and face masks will be enforced.



[Learn more at nhnature.org/teachers](https://www.nhnature.org/teachers)



OPENING A WINDOW TO THE NATURAL WORLD

Going Solar!

The Science Center's current strategic plan pledges "50 by 30" - 50% of our energy usage will come from renewable sources by 2030. We are excited to report that we will soon fulfill this major strategic goal!

Installation of a new 139kW solar PV array that will generate enough power to offset most of our electric needs is underway. Once fully operational, the array's estimated annual savings is \$26,000 in electricity costs and 250,000 pounds of CO2 emissions. It will be paired with educational interpretation to teach our visitors about sustainable, renewable, and solar energies.

Phase one of the \$375,000 project commenced in November with about 20% of the solar panels mounted on the roof of the Early Childhood Education Center (Blue Heron School). The second phase of ground-mounted arrays to be placed around the parking lots will start later this winter if funding is in place and is expected to finish by May 2022. Once construction is complete, staff will design, build, and install educational interpretation to teach about active environmental stewardship and conservation.

We are fully committed to completing this project as part of an important strategic priority. According to Trustee Ken Evans, our past Treasurer and Board Chair, "This solar project will result in the realization of that strategic priority and put the Science Center at the forefront of climate change education."

We are grateful to Hypertherm Hope Foundation - Green Grants, the Samuel P. Hunt Foundation, and Trustee Emily Preston and her brother Andrew Preston for funding we have received to date.

An anonymous donor just made a challenge grant and will give \$75,000 if we raise an equal amount in matching funds within one year. If you would like to donate to this project or learn more, please contact Executive Director Iain MacLeod.

Opening a Window to the Natural World is written by Development and Communications Director Janet Robertson. You may contact Janet at 603-968-7194 x 112 or janet.robertson@nhnature.org.



With apologies, these two tribute gifts were unintentionally omitted from the fall newsletter.

These generous donors made tribute gifts in June 2021:

*In memory of Chaz Ainsworth
Jim and Nancy Ainsworth*

*In honor of Theo Moyse-Peck
Cordelia Moyse*

These generous donors made tribute gifts, which were received between July 1 and September 30, 2021:

*In Memory of Mary Denison
William and Elizabeth Dewey*

*In Memory of Gerald Durrell
Dan Blum*

*In Memory of Caroline "Sue" Eggleston
Retail Control Systems*

*In Memory of Jean M. Lovett
Molly and Mark Brewer
Amos and Barbara Hostetter
Anne Levin*

*David and Carter Rountree
In Memory of Natalie and Don Parsons
Donna Parsons and Charlie Drago
Nancy Parsons and James McDermott*

*In Memory of Greg Smith
Gail Smith and Francie Chalmers
In Memory of Beverly "Bebe" Wood
Anonymous
Susan Vines and John Nikander*

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TRAIL'S END

ADAPTATION



When we were discussing the challenges of the last two years, Iain pointed out how important the ability to adapt is, for not only every living thing, but also for organizations like the Science Center.

I think the Science Center has adapted quite well to the challenges of the pandemic. Having closed the books on 2021 trail admissions, I am happy to say that we welcomed the second highest number of visitors the Science Center has ever seen.

Another way the Science Center continues to adapt is how we address the impacts of climate change - both operationally as well as educationally. The Science Center's "50 by 30" pledge calls for us to have 50% of our energy coming from renewable sources by 2030. I am sure you have seen the exhibit on the trail for our highly efficient Garn wood burning furnaces, which provide the majority of our heat. You may also have seen (and perhaps even used!) the two new electric vehicle chargers at the Welcome Center. Now, I am pleased to say the Science Center will also break ground on Phase one of our solar project, which will specifically install solar panels on the roof of our Blue Heron School. All of these help us achieve our "50 by 30" goal but as with the Garns, they also

give our educators real world examples to teach what can be done to help offset humankind's impact on our climate.

One of the hardest ways in which the Science Center must adapt is when one of our wonderful and wonderfully dedicated staff retire. As I sat writing this newsletter article, I received an email from Janet Robertson letting us know that after more than 30 years of amazing service she is going to retire at the end of this year. Earlier in the year, our facilities director Tom Klein retired and at the end of the previous year, Liz Rowe retired. All of these folks have been valuable and such a huge part of our operations that it was and is hard to imagine our Science Center without them. That said, I've long been taught that the ultimate test of an organization's health is its ability to promote from within and in every one of these instances we've been able to do just that - Amanda Gillen will be stepping into Janet's role, Keith Hosking took over Tom's job, and Sharon Warga has taken over for Liz. All of their replacements have come from inside and they all do (or will soon do, in Amanda's case) a wonderful job in their new roles.

Change isn't always easy but it is great to see that our Science Center is healthy and that it can continually and successfully adapt.

Trail's End is written by Justin Van Etten, Chair of Squam Lakes Natural Science Center's Board of Trustees.
You may contact him at justin.vanetten@gmail.com.

BALD EAGLES *continued from page 1*

one begins in earnest in February. "In earnest" is an understatement as these nests are generally five feet in diameter and can weigh as much as a thousand pounds or more. March brings the welcome sight of a Bald Eagle tucked into a huge nest bulging with sticks and likely holding from one to three eggs. Both female and male share incubation duties, each one with a brood patch to keep the eggs warm. Nest duty can include protecting the eggs in a late winter snowstorm. After a 35-day incubation, the eaglets hatch in the order the eggs were laid, giving the first one an advantage if food is limited. By midsummer, these young eagles test their wings in little jumping flights above the nest until a strong breeze carries them over the edge and real flight begins. These youngsters will not get the completely white head and tail of an adult eagle until they are five years old.

You may have more luck spotting Bald Eagles in the winter than at any other time of the year. Think "open water." Cast your binocular's view over water unlikely to freeze in large rivers like the Merrimack or Connecticut or at the outflow of lakes during spring melting. Focus on large pines with openings created by dead branches. We may be inclined to search for the white heads of adults but remember to look too for those camouflaged adolescent birds cloaked in brown. Our national symbol may be elusive but has much to share in all seasons.

Learn more about the history of Bald Eagles nesting on Squam Lake at https://www.nhnature.org/programs/squam_eagles.php.

BALD EAGLE QUIZ

1. How can you tell if a Bald Eagle is an adult or an immature bird?
2. What is the one essential feature which makes it possible for Bald Eagles to overwinter in an area?
3. True or False? Bald Eagle nests can be five feet in diameter and weigh a thousand pounds or more
4. Where is a good place for Bald Eagles to roost on cold winter nights?
5. In what month do Bald Eagles in New Hampshire lay their eggs?
A. January B. March C. May

Answers:

1. Adult eagles have white heads and tails.
2. Some open water
3. True
4. Coniferous trees like white pines
5. B



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