Winter Sweetness
All about maple syrup.

Home Heating Tips
Save money—and the planet.

Vacation Weeks
Spend school break with us!

Lichens
Meet Massachusetts species.
This past fall, the Mass Audubon Board of Directors appointed me President after I had served as acting president since June.

I am truly grateful to the Board for its faith in me to lead this great organization created by the vision and energy of our founding mothers and sustained by your dedication and support of our conservation values and priorities.

Before assuming the role of President, I served as Vice President for Conservation Programs. My role included expanding our land conservation efforts and the stewardship of our statewide network of wildlife sanctuaries; growing our presence in urban centers; increasing access for all; educating the next generation on the wonders of nature; advocating on behalf of the environment; and leading by example in the face of sprawling development and a changing climate. I’ve also previously held leadership roles in a variety of state environmental public policy positions.

I am excited to work with our Board, staff, members, and partners in pursuing new strategic conservation priorities with respect to land, wildlife, education, and advocacy. And, given the opportunities and challenges we may face, I look forward to all that we will accomplish together.

Sincerely,

Gary Clayton, President
Moose Hill’s Centennial

In 1916, biologist and conservationist George Wilton Field, PhD, had 300 acres in Sharon and a mission: to manage land for birds and bring people from the city to the bucolic suburb to explore the natural world. He called the 300 acres Moose Hill Bird Sanctuary. Managed in collaboration with Mass Audubon, the property became the organization’s first wildlife sanctuary. Today, Mass Audubon has 56 wildlife sanctuaries across the state for the public to enjoy. And Moose Hill Wildlife Sanctuary is as active as ever, with a summer camp; programs for schools, groups, families, and adults; a Community Supported Agriculture (CSA) program; special events; and lots of volunteers. Find all the ways you can join us in celebrating Moose Hill’s 100th anniversary at massaudubon.org/moosehill.

1,971 acres, with an additional 302 acres held in conservation restriction, making Moose Hill one of Mass Audubon’s largest wildlife sanctuaries.

11 years of an organic Community Supported Agriculture program at Moose Hill, with 400 families now enjoying our fresh produce.

1,100+ eastern red-backed salamanders counted by volunteers in our coverboard surveys since 2008.

6 natural communities considered priorities for conservation by the Massachusetts Natural Heritage & Endangered Species Program (NHESP), such as an Inland Atlantic White Cedar Swamp.

0 net electricity use, a result of our conservation efforts and investment in solar arrays. We are leading by example, advocating for change, and producing more electricity than we use!

75 years, the cumulative number that the current seven full-time staff have worked at Moose Hill.

44 years of maple sugaring—from programs to events and producing maple syrup. What a sweet tradition!

66 years of camp at Moose Hill, and camp has grown from 6 to 11 weeks a year.

7 seasons of northern saw-whet owl banding, with 302 owls banded to date. These efforts help researchers study and protect our smallest owl species.
Winter Sweetness
All About Maple Syrup

By Tia Pinney

Maple sugaring—collecting and boiling maple sap to make syrup and other sugary products—is a beloved late-winter activity in Massachusetts. Dip into the history and science of this sweet treat.

A Long-standing Tradition

Native Americans were the first to make maple sugar. Perhaps inspired by animals licking sweet sap from the trees, they began collecting it and boiling it down to concentrate the sugar. They taught this process to European colonists, who enthusiastically adopted it; nearly every farmer had some maple trees for tapping. Over time, most producers shifted their focus from sugar to syrup, in part because the introduction of canning at the end of the 1800s made it possible to preserve maple syrup.

It Starts with Sap

Maple syrup and sugar come from concentrated sap, which consists of water with sugars and other nutrients. In deciduous trees—those that lose their leaves every fall—this sap travels up from the roots to feed the opening buds before the leaves are large enough to make their own food. All maples produce sap that can be used for syrup, but the quantities, flavor compounds, and sugar content vary. The sugar maple (Acer saccharum) yields sap with the most sugar and best flavor.

The Climate Connection

Maple sap can only be collected in useful quantities when conditions are right. Producers need a several-week-long period of cold, followed by daytime temperatures at or above 40°F and nights that are below freezing. These conditions cause a steady flow that may last for several days. The sap can be gathered until nighttime temperatures are consistently too warm. Traditionally, the sugaring season in Massachusetts took place between February and early April, but it has been getting earlier and shorter over the years as the climate has changed. With the continued shift in climate, there may come a time when sugaring is no longer feasible in Massachusetts.
Making Syrup

Once the sap has been collected, it must be boiled down to remove water, concentrate the sugar, and enhance the flavor compounds. Maple sap contains just 1.5 to 3 percent sugar, but maple syrup is 66 to 67 percent sugar; it takes at least 40 to 50 gallons of sap to make one gallon of syrup! The traditional method of boiling has long been suspending a large open pan over a wood fire. Most commercial sugar houses now use modern, specially designed equipment, such as reverse-osmosis machines that remove water efficiently.

Make Your Own

Ready to try tapping your own trees? Here are the basics; visit the Audubon Shop in Lincoln for books that provide detailed instructions. You’ll need a drill, a spile (the spout that fits in the hole), and containers to collect the sap. To minimize impact on the tree, use the newer small-diameter (5/16 of an inch) spiles. Hang a clean container on the spile and empty it at least once a day. Like milk, sap will spoil if it is left out, so store it in a cold place and boil it as soon as you can. Remember, you’ll need 8 to 10 gallons of sap to make one pint of syrup.

When you’re ready to boil the sap, you’ll need a large pot or pan and a candy thermometer. Calibrate your thermometer by testing it in boiling water—this will usually be 212°F. Boil the syrup until it’s 7°F above the temperature of the boiling water. Strain it through several layers of cheesecloth or a paper coffee filter, place it in clean jars or bottles, cover it, and store in the refrigerator.

Once you’ve achieved sweet success, you may want to try making other products such as maple butter or hard candy. Or perhaps you’re just ready to sit down with a plate of pancakes. Either way, you’re taking part in a rich, sweet tradition.

Tia Pinney is Naturalist at Drumlin Farm.

Maple Sugaring Activities

We offer many events and programs to sweeten the season. Here are a few of them; get more details at massaudubon.org/maplesugaring.

Blue Hills Trailside Museum in Milton offers Maple Sugar Days at Brookwood Farm in Canton on March 19 and 20. Learn how maple sugar was made through the ages and sample some delicious syrup.

Drumlin Farm in Lincoln gives visitors the opportunity to get an up-close view of a working maple syrup evaporator. The wildlife sanctuary offers related programs such as Backyard Sugaring on January 30, an introduction to making your own syrup. Plus, tuck into a hearty meal at the Sap-to-Syrup Farmer’s Breakfast on March 12 and 13.

Ipswich River in Topsfield presents sugaring-off tours in February and March and other programs that show how the sweet stuff makes it from tree to table. Don’t miss the annual Spring Flapjack Fling on March 19—eat a pancake breakfast, go on a sugaring tour, or do both! Plus, here’s a unique gift opportunity: rent a sugar maple bucket and enjoy perks such as tickets to the Flapjack Fling and a bottle of syrup at the season’s end.

Moose Hill in Sharon throws a Maple Sugaring Festival on March 13, 19, and 20. Take part in fun activities and go on a guided walk to discover the history and process of turning sap into syrup.

North River in Marshfield has a Maple Sugaring Celebration on March 19. Participate in outdoor stations that explore maple trees and tree tapping throughout history, tap a tree, and sample different grades of syrup and maple sugar with silver dollar pancakes.

Ready to make your own maple products? The Audubon Shop at Drumlin Farm in Lincoln sells sap buckets, lids, taps, and how-to guides. You’ll also find books with maple sugar history, science, and recipes.
Vacation Weeks:
Spend School Break with Us!

By Heather Cooper

It’s that time of year again: school vacation looms and you are wracking your brain for a way to keep your children happy and engaged (that doesn’t involve them being glued to a screen).

Mass Audubon has you covered. Our wildlife sanctuaries around the state offer Vacation Week programs packed with hands-on activities and outdoor exploration.

Added bonus: Through investigation, observation, and some good old-fashioned fun, we spark a curiosity for and a love of nature.

February & March Vacation Programs
The cold doesn’t bother us! We have all sorts of strategies for staving off cabin fever. We search for tracks and other signs of coyotes, foxes, deer, and turkeys; we investigate cold-weather adaptations of native animals, such as wood frogs; and we observe owls and other winter birds. We also create wildlife sculptures out of snow and venture out on snowshoe treks.

April Vacation Programs
Spring is the perfect time to experience life cycles up close. Participants in our programs may visit vernal pools to see salamander and frog egg masses. Other activities include observing migrating birds, making feeders, and learning birdsongs. We flip over logs and rustle up fallen leaves in search of insects, and we learn about native plants. And, of course, we go on hikes around the wildlife sanctuary.

Learn more and sign up for a vacation week program near you: visit massaudubon.org/vacationweek.

Heather Cooper is Marketing Manager.
Fifty orange safety vests, four tubes of caulk, a dozen steel emblems, and two scrub brushes are not on the usual shopping list for a field trip. But those items, along with Tisbury seventh graders, were just the things needed for a public education campaign to protect the waters of Martha’s Vineyard.

The Vineyard is known for its beautiful harbors and beaches. Tisbury Waterways, Inc. (TWI), a local nonprofit that advocates for initiatives to improve and maintain the quality of water in Tisbury, partnered with Felix Neck Wildlife Sanctuary in Edgartown to launch a unique program that empowers students to educate their community.

The seventh-grade Storm Drain Education Project teaches students about watersheds and water quality and the interrelationship between their actions and their environment. Students use a watershed model to follow the path of water, test ponds for water quality, and install metal emblems on Main Street storm drains to help people make the connection between what goes down sewers and water quality in local watersheds. Connie Alexander, a teacher at Tisbury School, calls the program “a top-notch, hands-on, real-world application focused on an Island-wide concern tailored to our own backyard of Main Street in Vineyard Haven.”

Find out more about Felix Neck at massaudubon.org/felixneck. 

Suzan Bellincampi is Sanctuary Director at Felix Neck.
Lichens
By Rosemary Mosco

It’s likely that you often walk past lichen without giving it a second thought. But next time you pass by a patch of crust, leaf-like flakes, or tufts growing on stone, trees, or the ground, take a closer look. Is it a fungus? Or maybe a plant? If you’re having trouble deciding, you’re actually on the right track. Lichens are more than just one life-form—they’re an intimate relationship between two, or sometimes three, types of living things.

One partner in this relationship is a fungus. It creates the lichen’s durable structure. Interwoven with the fungus are other partners: an alga, a cyanobacterium, or both. These organisms can make food from sunlight, and the fungus takes a share of the nutrients they produce. In return, it protects its sensitive companions from the dangers of UV rays and desiccation.

This unusual strategy has proven to be enormously successful. Lichens are found on every continent—even in the most desolate barrens of Antarctica. They play important roles in ecosystems, serving as food for creatures from moose to mites, or as nesting material: the ruby-throated hummingbird builds her nursery from lichen pieces and spider silk.

Lichens are valuable to people as well. Cultures around the world use them in medicines, dyes, food flavorings, and much more. The famous litmus test, which checks a substance’s acidity, uses pigment from them. Lichens are also a litmus test for the health of our environment since many are highly sensitive to pollution. A landscape rich in lichens is one that’s good for people.

Beard Lichen
(Usnea sp.)
These lichens grow in greenish tufts or long skeins on tree branches, and their appearance inspired their common name, old man’s beard. One of our most colorful warblers, the northern parula, creates its nest by simply hollowing out a patch of this lichen and sometimes lining it with a bit of grass or other soft material. Usnea species tend to be especially susceptible to air pollution, so their presence is good news for your lungs.

Elegant Sunburst Lichen
(Xanthoria elegans)
Visitors to the coast may notice this bright lichen thriving on barren rock. It typically occurs in areas where birds perch or nest, deriving nutrients from their droppings. This tenacious species can survive in the Arctic, Antarctic—and even in space. Samples were attached to the outside of the International Space Station for 1.5 years. Upon their return to Earth, most could be successfully revived.

Common Greenshield
(Flavoparmelia copulata)
You’ve probably seen this lichen decorating all sorts of street trees. When air pollution wipes out lichen in an area, greenshield is often the first to return. People frequently ask whether lichen harms the trees it inhabits. In fact, it’s a harmless growth, and a positive sign that this area receives less pollution.

British Soldiers
(Cladonia cristatella)
This lichen’s common name evokes British soldiers in their red coats standing at attention. It grows on the ground on soil or rotting wood, and has a raised growth pattern, almost like a small shrub. Like all lichens, its scientific name refers to the fungal partner.

Common Toadskin
(Lasallia papulosa)
The species name papulosa (“covered with pimples”) describes the blistered surface of this species. Like the rest of the family Umbilicariaceae, it grows in large leathery flaps connected to a rock at a single central point—likened to an umbilical cord. Members of this family were dubbed “rock tripe” and eaten by intrepid adventurers, but they weren’t considered to be especially appetizing!

Rosemary Mosco is a Naturalist and Marketing Coordinator.
Home Heating Tips that Save Money—and the Planet

There’s no getting around it: Massachusetts winters are cold, and home heating is a necessity. But keeping your house comfortably warm can use a great deal of energy—and cost a lot of money. Here are a few ways you can stay toasty while saving money and reducing carbon emissions to help combat climate change.

**Tighten Up**
Even if your furnace is in tip-top shape, you may be losing a great deal of heat through air that escapes your home. Reduce those losses by adding insulation and sealing any leaks.

**Tune Up**
Is your heating system running as efficiently as it could be? They tend to degrade over time, so an annual tune-up will help keep yours in good condition.

**Tweak the Temperature**
Switch to a programmable thermostat. According to Union of Concerned Scientists, you can save 15% or more on your heating and cooling costs—and lower your carbon emissions by more than half a ton annually—by using a programmable thermostat to adjust your home’s temperature during the night and while you are away at work during the day.

**Upgrade**
Consider switching to high-efficiency heating methods such as cold-climate heat pumps (air-source heat pumps), geothermal heating (ground-source heat pumps), or wood pellet boilers. The efficiency of heat pumps has dramatically improved in recent years.

You can learn more about these methods through Mass Save, a program that is jointly administered by Eversource, National Grid, and several other gas and electric utilities. They offer home energy assessments, rebates on air sealing and insulation, and incentives for high-efficiency heating systems. Discover more at masssave.com.

If you live in a town that is served by a municipal utility, call to find out if it offers incentives. Find out more about Mass Audubon’s efforts at massaudubon.org/climate.

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Be Part of the Climate Change Solution: Make the Switch today! To find out more, visit massaudubon.org/maketheswitch.

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**Are you ready to Make the SWITCH?**

**How it works**
When you use electricity at home, you tap into the power grid that serves your community.

By Making the Switch, you are helping to ensure that more energy comes from local green sources such as wind, solar, cow power, and low-impact hydro (and less from fossil fuels).

**Your Energy When You Make the Switch**
By Making the Switch, your energy could come from

- **solar power**
- **local wind turbines**
- **cow power** (The use of digester gases from cows to produce electricity.)

Currently…
91% of the grid’s electricity comes from oil, coal, natural gas, and other heat-trapping gas-emitting sources.

Climate change is caused by excess carbon dioxide and heat-trapping gases that result from our use of fossil fuels.
By Kris Scopinich

Along the shady edge between a forest and a sun-filled grassy area, 12 elementary and middle school teachers are sitting in an evenly spaced line, capturing the sights and sounds through drawings and field notes. The questions they ask now will turn into a science investigation that they will bring back to their classrooms.

This is just one example of many science-based STEM professional development opportunities that Mass Audubon educators offer to thousands of classroom teachers, schools, and districts each year. Our goal: for teachers to fully participate in and enjoy the excitement of taking science learning outside.

Through our wildlife sanctuary-based school programs, Mass Audubon is annually reaching close to 250,000 students in elementary, middle, and high school. Our programs, which take place either at the school or at a wildlife sanctuary, are aligned with Massachusetts Department of Education Curriculum Frameworks.

We know that these experiences have a big impact. Yet, in order to make transformative changes in the way nature is taught in schools, we need to give teachers the knowledge, skills, and confidence for integrating environmental science and field-based investigations into their curriculum.

This is where our professional development workshops come in. Working with the nonprofit Museum Institute for Teaching Science (MITS), Mass Audubon offers graduate-level courses for upper elementary, middle, and high school teachers at wildlife sanctuaries across Massachusetts. These programs focus on topics such as animal and plant adaptations, watershed ecology, field research and data analysis, and ecosystem response to climate change.

In addition, our wildlife sanctuaries offer ongoing workshops to connect with the teachers in their regions. Boston Nature Center (Mattapan), Endicott (Wenham), Arcadia (Easthampton & Northampton), Drumlin Farm (Lincoln), Broad Meadow Brook (Worcester), and Pleasant Valley (Lenox) have forged deep partnerships with individual schools or entire districts in their community, reaching hundreds of teachers—exponentially increasing the impact of our reach.

One 7th grade science teacher, after taking a workshop, noted: “Thanks for shaking me out of my sleepy drift and giving me a new pair of shiny glasses, everything has been better since our class!”

Learn more about Mass Audubon’s Education efforts and sign up for the It All STEMs From Nature enewsletter for educators at massaudubon.org/education.

Kris Scopinich is Director of Education.

Connecting Teachers to the Nature of Science

2015 Conservation Teachers of the Year

Each year, Mass Audubon and the New England Farm and Garden Association elect three schoolteachers to receive an award and recognition as an outstanding Conservation Teacher of the Year. The teachers, often nominated by Mass Audubon staff who work closely with them, are chosen for their exemplary demonstration of outstanding contributions to conservation and environmental education. The teachers are presented with $1,000 to be used toward their classroom or program.

We are pleased to announce this year’s recipients:

Erik Berg, 2nd Grade Teacher, John D. Philbrick Elementary School, Roslindale, MA

Mary Roy, 5th Grade Teacher, Monomoy Middle School, Chatham, MA

Lori LaFrance, Science Teacher, Ipswich High School, Ipswich, MA

2015 Conservation Teachers of the Year

Erik Berg, 2nd Grade Teacher, John D. Philbrick Elementary School, Roslindale, MA

Mary Roy, 5th Grade Teacher, Monomoy Middle School, Chatham, MA

Lori LaFrance, Science Teacher, Ipswich High School, Ipswich, MA
A Snapshot of Seasonal Offerings

Preregistration may be required. Contact the host wildlife sanctuary for details or visit massaudubon.org/programs.

Wednesday Morning Birding
Every Wednesday, 9:30 am–12:30 pm
JOPPA FLATS, Newburyport
978-462-9998
Enjoy excellent winter birding in the Newburyport/Plum Island area.

Products of the Hive
January 10, 2–3:30 pm
STONY BROOK, Norfolk
508-528-3140
Learn about bees, beekeeping, and products such as beeswax and honey from an experienced beekeeper.

Stargazing Parties
January 15, 7–10 pm ongoing/drop in
MOOSE HILL, Sharon • 781-784-5691
Join local astronomers to observe the stars and more through big telescopes.

Hands-on Workshop for Antique Photographic Sun Printing Techniques
Two-day class: January 16, 9 am–5 pm & January 17, 9 am–3 pm
LONG PASTURE, Barnstable
508-362-7475
This immersive course emphasizes bridging the gap between antique and digital photography processes.

The Science of Snow
January 17, 1–2:30 pm
BOSTON NATURE CENTER, Mattapan
617-983-8500
Create some natural ice cream, observe snowflakes up close, and experience a winter wonderland!

Bald Eagles & Snowy Owls Field Trip
January 23, 10 am–2 pm
HABITAT EDUCATION CENTER, Belmont • 617-489-5050
This trip to the Newburyport/Plum Island area will help you learn how to find wintering eagles and owls.

Winter Open House
January 23, 1–4 pm
(Winter date: January 24, 1–4 pm)
WACHUSETT MEADOW, Princeton
978-464-2712
Celebrate the season with sledding, ice cutting, tracking hikes, games, and more.

Wingmasters Presents: North American Birds of Prey
January 24, 11 am–12:15 pm
IPSWICH RIVER, Topsfield
978-887-9264
See live birds of prey up close and discover facts about eagles, hawks, falcons, and owls.

Stew and Brew: Eat, Drink, and Be Merry
February 5, 6:30-9 pm
DRUMLIN FARM, Lincoln
781-259-2200
Join us by the fire for a hearty meal and enjoy locally made beers.

Great Horned Owl Prowl
February 5, 7–9 pm
BLUE HILLS TRAILSIDE MUSEUM, Milton • 617-333-0690
Meet Trailside’s own great horned owl before looking for owls in the wild.

Snowshoeing the Shoreline
February 6, 9–11 am
ALLENS POND WILDLIFE SANCTUARY, South Dartmouth
508-636-2437
Take a morning snowshoe trek (or hike if there’s no snow) to spot wildlife.

Live Owl Shows at the Owl Festival
February 6, shows at 1-2 pm & 3-4 pm
BROADMOOR, Natick • 508-655-2296
Get up close and personal with local owls such as the great horned and eastern screech-owl.

“Bear With It” Presentation & Tracking with Susan Morse in Plainfield
February 5, 7–9 pm & February 6, 9 am–noon or 1–4 pm
Sponsored by ARCADIA, Easthampton and Northampton • 413-584-3009
Learn about bears from an expert tracker, biologist, and photographer; then join her in the field for tracking.

Owls and Omelets
February 20 (Snow date February 27), 5:45–8 am
NORTH RIVER, Marshfield
781-837-9400
Go looking for owls and explore some owl adaptations, then eat a full, delicious breakfast.

Sustainable Book Club: The Human Age by Diane Ackerman
February 25, 5:30–6:30 pm
Sponsored by FELIX NECK, Martha’s Vineyard • 508-627-4850
Read and discuss books that examine our relationship with nature. Sponsored by Felix Neck and all six island libraries.

Helping Wild Turtles
February 27, 10:30 am–noon
OAK KNOLL, Attleboro • 508-223-3060
Meet baby Blading’s turtles, find out how we’re protecting this species, and discover how to help local turtles.

21st Annual Cape Cod Natural History Conference
March 5, 8:30 am–3 pm
Sponsored by WELLFLEET BAY, Wellfleet • 508-349-2615
Presenters from Cape Cod environmental organizations discuss natural history topics, research projects, and conservation efforts.

Bluebird Nest Box Building Workshop
March 19, 1:30–3 pm
PLEASANT VALLEY, Lenox
413-637-0320
Assemble nest box kits, discover where to place them, and take one home.

Drawing from Nature: An Introduction to Scientific Illustration
Six classes; first one is March 20, 6–8:30 pm
BROAD MEADOW BROOK, Worcester
508-753-6087
Explore natural wonders and learn drawing techniques through demonstrations, lectures, and more.
Long Pasture’s Hillary Cressey

By Joshua Wrigley

When it comes to horseshoe crabs, Hillary Cressey knows what she is talking about. Wading along banks of slender cordgrass, she keeps a sharp lookout for their telltale shapes crawling along the sand. When she spots one, she jots down in a waterproof notebook the location of the animal and whether it is accompanied by a mate.

Hillary, a volunteer at Long Pasture in Barnstable, has for the past four years organized a scientific survey through the wildlife sanctuary to document declines in horseshoe crab populations. She has a doctoral degree in Community College Education and teaching experience in biology, so these studies are a natural extension of her passion for the sciences. Every spring she leads her intrepid team of volunteers to the shore of Barnstable Harbor to collect data that helps Mass Audubon care for this vulnerable species.

This isn’t Hillary’s only contribution to the wildlife sanctuary. She also wrote the complete text of the Long Pasture Bird Guide, available in the Visitor Center, and she is working on improving and maintaining the sanctuary’s bird garden, a place where visitors can see purple martins and other relatively uncommon species. Hillary’s contributions to so many projects, as well as her unflagging spirit and sense of curiosity, have made her an invaluable asset to Mass Audubon—and especially to Long Pasture’s abundant wildlife.

For more about volunteer opportunities at Mass Audubon, visit massaudubon.org/volunteer.

Joshua Wrigley is Education Coordinator at Long Pasture.
Winter 2016
By Ann Prince

JANUARY

3 From a dark location, after midnight, observe the Quadrantids meteor shower—now at its peak with up to 40 shooting stars per hour.

5 In graceful contrast with the white snow, golden curled beech leaves still cling to branches. This deciduous tree does not shed its leaves until well into the winter season.

12 Springtails, also known as snow fleas, look like peppery specks on the white snow-covered ground. On warming days watch for them springing from here to there at the bases of trees and among the leaf litter.

17 Fragrant green-gray waxy bayberries persist in clusters on scrubby branches. Year-round yellow-rumped warblers, red-bellied woodpeckers, and black-capped chickadees favor the berries and thrive on their high fat content.

24 Full moon. The Wolf Moon (Native American).

30 Breeding season for great horned owls begins about this time. Juniper, beech, and pine are all favored trees for nests. Pairs may roost together near their chosen site before the female lays eggs, which hatch in just over a month.

FEBRUARY

2 Groundhog Day. If Ms. G, the official state groundhog of Massachusetts, fails to see her shadow, according to nature lore, the wintry weather will soon subside. Should a day of sunshine reveal the groundhog’s shadow, the forecast is six more weeks of cold inclement conditions.

7 Search for Mercury low in the eastern sky during the dark hours just before dawn. The planet is most visible now because it’s at its highest point above the horizon.

15 Look for various tracks on snowy fields and in woodlands—prints you may find include those of coyotes, foxes, raccoons, and fishers.

22 Full moon. The Ice Moon (Celtic).

26 Among the earliest of spring migrants, killdeers arrive as early as late February in exceptionally warm years. Listen for their killdee killdee call in fields and pastures, and on playgrounds, lawns, unpaved driveways, beach dunes, and other open areas.

28 Maple sap begins running given the proper weather conditions; an alternating sequence of short warming trends and cold spells is best for sap flow.

29 Leap day. Since it takes the earth 365 days, 5 hours, and 48 minutes to circle round the sun, a Leap Year with one “extra day” every four years is an adjustment that keeps our calendar in synchrony with the planetary cycle.

MARCH

1 The furry light gray flowers of pussy willow burst from their buds.

4 The first of the migrant red-winged blackbirds are returning north. The earliest groups are made up almost entirely of adult males. Look for them perched on high marsh reeds and rushes such as cattails, displaying their bright red and yellow shoulder patches, or epaulets.

14 Great blue herons return to rookeries; they begin nest building and repair almost immediately upon arrival.

20 Vernal equinox: first day of spring. Night and day are of equal length.

23 Full moon. The Fish Moon (Colonial American).

27 Mourning cloaks, among the longest lived butterflies, overwinter as adults in tree crevices and beneath loose bark, and emerge on warm days in early spring.

30 Tree swallows return. Look for them scouting for nest boxes or tree cavities as breeding season begins.
Winter Trees

Winter is a great time to take a closer look at trees. Many of them have lost their leaves, so you have to use other ways to figure out their species—but luckily trees will give you plenty of clues!

Head outside to find a tree, and ask these questions to learn more about it.

**Is it deciduous or evergreen?**

**Deciduous trees** like this sugar maple lose their leaves in the fall and grow new ones in the winter.

**Evergreen trees**, on the other hand, keep their leaves year-round. Many of them, such as this white pine, have thin, needle-like leaves.

**How do its branches grow?**

**Tree branches grow in three patterns.**

- **Opposite-branching trees** have pairs of branches that stick out on opposite sides of a larger branch or trunk. Examples: maples, ashes, horse chestnuts

- **Alternate-branching trees** have branches that stick out on alternating sides. Examples: oaks, birches

- **Whorled trees** have branches that stick out in rings all around the trunk. Examples: pines, spruces, firs

**What does its bark look like?**

If there are no leaves on the tree, take a look at the twigs and buds—they are unique for each kind of tree. Here are two examples.

- This gray birch has smooth, pale bark.
- This white pine has bumpy bark that is broken up into rectangular chunks.

- sugar maple
  - pointy buds
  - opposite-branching twigs

- black oak
  - fuzzy buds
  - clusters of buds at the tip

massaudubon.org/go
Giving Credit for Conservation

By Christina Wiseman

In Massachusetts, about 25 percent of land is protected and 22 percent is developed, which means the other 53 percent is still up for grabs or will be at some point in the future. One powerful tool for ensuring that more of that remaining land ends up protected is the state’s Conservation Land Tax Credit (CLTC).

This credit is available to landowners who conserve their land by donating it outright or by discounting the sale of it, or by donating or discounting the sale of a Conservation Restriction (CR). CRs limit future development by removing some or all of the development potential of the property, without transferring ownership. The transaction can be with a government environmental agency, or with a private land trust, like Mass Audubon, with the involvement of such a government partner. For a land transaction to fit CLTC criteria, it must permanently protect an important natural resource such as wildlife habitat, drinking water, or forested land. Through the program, landowners can receive up to 50 percent of the value of the donation, via a direct tax credit of up to $75,000.

This maximum credit is higher than the previous limit, thanks to legislation that Mass Audubon worked on last session. We are now working to increase the total that the state can spend on the program, from $2 million to $5 million. Our goal is to encourage many more private landowners to conserve their property using this powerful incentive.

Protecting more land isn’t only about conserving valuable natural resources—it’s also about preparing for climate change. Intact natural landscapes such as floodplains and beach dunes provide us with more effective protection from impacts such as increasingly frequent storms and sea-level rise. Conservation plus public safety—it’s a win-win for Massachusetts.

Find out more at massaudubon.org/advocacy.

Christina Wiseman is Advocacy Associate.
Celebrate Winter at a Mass Audubon Wildlife Sanctuary Near You!

Canoe Meadows is a popular cross-country skiing spot. Last winter a skier lost a ski and boot, and both were later recovered—a beaver had incorporated them into its dam!

Mass Audubon has 56 wildlife sanctuaries open to the public year-round. They provide important habitat for wildlife and opportunities for you to enjoy and appreciate nature.

Birdhouse Sale
Members receive 20% off birdhouses, poles, and accessories.*

The entire month of February!

Located at Drumlin Farm • 781-259-2214
Tuesdays through Sundays, 10 am–5 pm
massaudubon.org/shop

*Sale items excluded

massaudubon.org/sanctuaries