

# C Mass Audubon *Protecting the Nature of Massachusetts* Connections

APRIL–JUNE 2015

A NEWSLETTER FOR THE MEMBERS OF MASS AUDUBON

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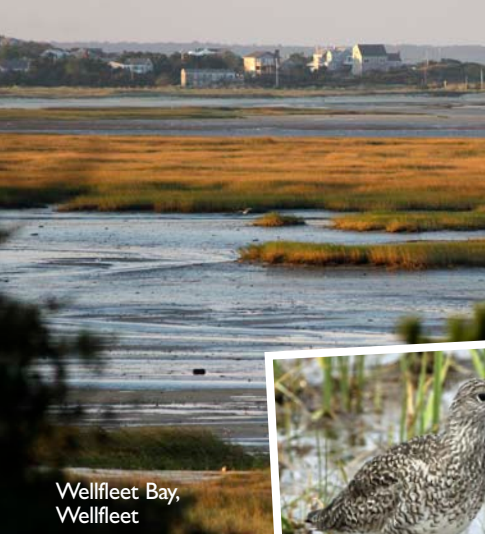
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## Stories from Our SALT MARSHES



Saltmarsh Sparrow, Brewster





Wellfleet Bay, Wellfleet



# Stories from Our SALT MARSHES

By Robert Buchsbaum

Head along the Massachusetts coast and you're bound to encounter a salt marsh. Washed by the tides, these wind-tossed, grassy expanses support unique salt-tolerant plants and animals found nowhere else. They're also a key part of New England's economy, ecology, and culture. Many commercially and recreationally important fisheries depend on the tremendous productivity of salt marshes, where young fish come to feed. They serve as buffers against storms and flooding for our coastal infrastructure. They also help keep our coastal waters cleaner by filtering pollution.

Lucky for us, salt marshes have been taking care of themselves in New England for millennia. Sea levels have been rising slowly since the glaciers' retreat about 10,000 years ago. These conditions are ideal for the expansion of marshes, which trap sand and silt brought in at high tide and anchor it with a dense network of stems and roots. But as average global temperatures have increased, the rate of sea-level rise has roughly tripled over the past century—and continues to climb. How will salt marshes respond to these changes?

In order to learn more, Mass Audubon staff and volunteers have been monitoring marshes at three Mass Audubon wildlife sanctuaries: Allens Pond in Dartmouth, Wellfleet Bay in Wellfleet, and Rough Meadows in Rowley. The result has been a fascinating glimpse into the ups and downs of salt marshes, and their fragility and tenacity.



Rough Meadows, Rowley

## Flooding and Survival at Allens Pond

In 2003, we began monitoring the salt marsh at this wildlife sanctuary on the South Coast. Our efforts were part of a project to reduce the impact of another major threat to salt marshes: the invasive common reed, which crowds out native plants. At the same time, we kept an eye on the special birds that breed here such as saltmarsh sparrows, seaside sparrows, and willets.

Then, in the spring of 2008, the habitat dramatically changed. Naturally shifting sands sealed off the inlet that connects Allens Pond to Buzzards Bay. This dam raised the water level in the marsh, submerging the plants for several months. Eventually, a dredging project restored the connection between inlet and sea. But by then the landscape had changed: most of the marsh grasses were gone.

Since we already had monitoring in place, we were in an ideal position to learn how quickly a salt marsh recovers from such complete tidal inundation. This information would give us clues about the future, which will bring higher tides and more intense storms. In the early years, recovery was slow. Only one plant, glasswort—an annual known as sea pickle because of its briny flavor—colonized the area laid bare by the flooding. Gradually, saltmarsh cordgrass, a relatively flood-tolerant perennial plant, regained much of its initial cover. This success was balanced by the loss of the less-flood-tolerant salt marsh hay. Providing key nesting habitat for birds, it currently occupies less than 20 percent of its preflood territory.

The three species of salt marsh birds declined substantially in the first three years after the flood. Fortunately, their populations have been slowly trending upward. Overall, it took five years for the marsh to substantially recover its vegetation cover and birdlife.

## Hungry Crabs at Wellfleet Bay

In 2005, we began monitoring plants at this wildlife sanctuary off Cape Cod Bay in response to vegetation loss caused by the rapid increase of a plant-eating creature, the squareback marsh crab. The reasons for this species' northward expansion are not yet clear (though climate change may be a factor). After several years during which these crabs chewed through marsh plants, their numbers declined for unknown reasons.

Once the crabs' numbers started to decline around 2008,

plants returned in abundance—but the configuration of vegetation was different. Saltmarsh cordgrass spread into the area formerly occupied by salt marsh hay. As at Allens Pond, this could spell trouble for saltmarsh sparrows and other creatures that prefer to nest in the hay.

## Hope at Rough Meadows

In the mid-1990s, long before the land was an official Mass Audubon wildlife sanctuary, our scientists began monitoring vegetation on this piece of the Great Marsh, the largest continuous stretch of salt marsh in New England.

We had several goals in mind. We wanted to track long-term trends related to climate, to figure out whether the invasive common reed was expanding, and to study the traditional practice of cutting salt marsh hay. In 2004, we also began monitoring birds.

Since there have not been any major disturbances during the time of our observations, the marshes at Rough Meadows have been more stable. Common reed persists but has not expanded at Rough Meadows (although it has expanded elsewhere in the Great Marsh). Even salt marsh hay, the grass most vulnerable to sea-level rise, is holding its own. Also, the saltmarsh sparrow population has remained relatively constant.



Studying Salt Marshes



Seaside Sparrow Nest

## The Future of Salt Marshes

Our two decades of observing these marshes have shown us their strengths and vulnerabilities. After disturbance events, salt marshes display a remarkable ability to recover, but they also return changed in ways that may make them less hospitable for rare bird species. As our planet continues to warm in the coming decades, salt marshes face an uncertain future. By protecting, restoring, and monitoring these wetlands, and by controlling carbon emissions, we take important steps

toward safeguarding this essential part of the Massachusetts landscape and the many services it provides.

*Robert Buchsbaum is Southeast, Cape, and Islands Regional Scientist.*

## Salt Marsh Science Project

Since 1996, students in grades 5 through 12 on the North Shore have been working with Mass Audubon scientists to learn about salt marshes and common reed (*Phragmites australis*), an invasive plant that grows in the marshes. The information collected helps scientists advise local, state, and federal agencies on how to protect and restore these habitats. Learn more about this project at [massaudubon.org/saltmarsh](https://massaudubon.org/saltmarsh).



## Mass Audubon Welcomes Two New Wildlife Sanctuary Directors

By Michael P. O'Connor

Two new directors, both familiar faces to Mass Audubon, are now managing three of Mass Audubon's south-of-Boston wildlife sanctuaries. Karen Stein, longtime administrative/operations manager at Drumlin Farm in Lincoln, is sanctuary director at Moose Hill in Sharon. Lauren Gordon, who served as education coordinator/camp director at Blue Hills Trailside Museum in 2012, is overseeing Oak Knoll and Attleboro Springs, located in Attleboro.

Both bring deep experience in nature-based education and community engagement. Before joining Mass Audubon almost a decade ago, Karen focused on museum-based education, most notably at The Discovery Museums of Acton. Lauren was assistant primate keeper and camps program supervisor at Zoo Atlanta before returning to New England and joining Mass Audubon as a member of the Blue Hills Trailside Museum staff.

"I'm looking forward to Moose Hill's 100th anniversary," Karen said. Echoing that enthusiasm, Lauren remarked, "We're hard at work on innovative educational programming, including an interactive nature center that will include exhibits that teach kids about animals. And personally, I'm excited to be part of the Mass Audubon family once again."

Read all about these wildlife sanctuaries at [massaudubon.org/moosehill](http://massaudubon.org/moosehill), [massaudubon.org/oakknoll](http://massaudubon.org/oakknoll), and [massaudubon.org/attleborosprings](http://massaudubon.org/attleborosprings).

Michael P. O'Connor is Public Relations Manager.



Karen Stein



Lauren Gordon

## Downed Trees at Graves Farm Have an Upside for Wildlife

By Tom Lautzenheiser

Early last summer during a storm at Graves Farm in Williamsburg, a strong gust toppled scores of trees in patches clustered along a rough line nearly a quarter mile long—a process called windthrow. Eastern hemlocks, maples, white ashes, and American beeches had fallen, but most of the downed trees were prime northern red oak. With oak's recent favorable market prices, these trees would potentially have high commercial value. Mass Audubon was faced with a decision: should we salvage and sell the timber or leave it on the ground?

The sale of this material could support critical ecological management actions elsewhere on the wildlife sanctuary. However, when logs molder on the forest

floor, many forms of life—from fungi to ants to bacteria to mosses—grow and thrive on the energy contained in the wood. Sunlight on the forest floor promotes a flush of brambles and tree regeneration; perhaps the song of the chestnut-sided warbler will be heard from the thicket. Carbon from the trees returns to the soil, nourishing the ecosystem for centuries. That's why, after much discussion, we decided to leave the logs in place. The effects of this windthrow will yield a windfall of forest biodiversity.

Discover more about this wildlife sanctuary at [massaudubon.org/gravesfarm](http://massaudubon.org/gravesfarm).

Tom Lautzenheiser is Central/Western Regional Scientist.



Sanctuary Director Jonah Keane Examines the Windfall

## Ipswich River Wildlife Sanctuary Announces New Nature Preschool

By Karen First

Ipswich River Wildlife Sanctuary is proud to introduce a nature preschool for 3 to 5 year olds. Located at Endicott Wildlife Sanctuary in Wenham and opening in September 2015, the Ipswich River Nature Preschool will offer a variety of opportunities for investigation, observation, and discovery. Teachers with backgrounds in early childhood and nature education will spend a substantial amount of time outdoors with children, where hands-on science activities, nature walks, and gardening foster curiosity and creativity. Inside, two spacious classrooms will host more nature-themed explorations into literature, music and movement, cooking, blocks and building, and art. The program will also feature seasonal field trips to Ipswich River Wildlife Sanctuary in Topsfield for activities such as maple sugaring and ponding.

A dedicated committee of staff and volunteers from Ipswich River Wildlife Sanctuary in Topsfield began working on a vision for the preschool one and a half years ago. They researched nature preschools, visited other programs, created trails and outdoor play areas, and worked with the newly hired director to prepare the classrooms for a series of Open Houses. The program will be licensed by the Massachusetts Department of Early Education & Care. For more information and a list of upcoming Open House dates, visit [massaudubon.org/ipswichpreschool](http://massaudubon.org/ipswichpreschool).

Karen First is Ipswich River Nature Preschool Director.

## Nature Play Area for Pleasant Valley

By Becky Cushing

In early June, Pleasant Valley Wildlife Sanctuary in Lenox will unveil a new attraction: a nature play area. Unlike traditional playgrounds, these spaces give children of all ages the opportunity to solve problems and construct their surroundings using natural elements. At Pleasant Valley, the nature play area will include simple logs, stumps and boulders, a mock beaver lodge, and more. A short level path will provide access for strollers and wheelchairs.

The project is a real team effort. A dedicated volunteer committee researched nature play areas and developed the plan. Funding from the Coolidge Hill Foundation supported the work of Kara Curtin, a high school student who is visually impaired, and Betsy Baczek, her college student mentor, who developed interactive structures that appeal to different senses. Their work ensures that the play area will be all-persons accessible. We're profoundly thankful for the generous private donation made in memory of Hope and George Adams that covered construction costs and materials. We're also deeply grateful for the incredible team of volunteers who did the bulk of the installation.

Join us for the nature play area's grand opening on Saturday, June 6, during Pleasant Valley's free Family Fun Day. For more information, visit [massaudubon.org/pleasantvalley](http://massaudubon.org/pleasantvalley).

Becky Cushing is Berkshire Sanctuaries Director.



Mass Audubon

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GRAND  
PRIZE

## Photo Contest Winner Finds Uncommon Beauty in a Common Bird

By Hillary Truslow

Sometimes you need not look beyond the ordinary to create something extraordinary. Case in point: Arindam Ghosh's photograph of a male mallard duck. The stunning image was awarded Grand Prize in Mass Audubon's 2014 Photo Contest.

Mallards are Massachusetts staples, and they're seen everywhere from inner-city parks and suburban swimming pools to wildlife refuges. In fact, according to the *Massachusetts Breeding Bird Atlas 2*, they're the most abundant waterfowl in Massachusetts (and in the United States).

Yet, despite their ubiquity, it was a mallard that captivated Ghosh during a visit to Ipswich River Wildlife Sanctuary in Topsfield. The 30-year-old former Framingham resident affixed his focus on the bird floating on the aptly named Waterfowl Pond and started snapping. "I got several shots of the duck as it rose up to shake off water," Ghosh said.

The result was a striking display of form and function. Showing the bird's wings outstretched and frozen in time, the photograph enables us to examine the complex array of flight and contour feathers. The image's strong symmetry makes it all the more captivating.

Ghosh's winning photograph was in good company. Among the additional 11 winners chosen from the more



than 2,000 entries were photographs of a deer silhouetted by a golden sunrise by Mark Gilbert, a fall foliage scene at Quabbin by Debbie Stone, and a close-up of a robber fly by Sarah Keates that highlights the delicate nature of both foliage and insect with perfect crispness.

We can't get enough of these wonderfully diverse images that capture the nature of Massachusetts. That's why we're so excited to announce that the 2015 Photo Contest has officially begun.

New this year: a Travel category. If you're one of the thousands of people who have joined a Mass Audubon-led trip in the last five years, domestic or international, we want to see your photographs! Visit [massaudubon.org/picturethis](http://massaudubon.org/picturethis) to learn more about this category as well as all of the others. Until then, happy snapping!

*Hillary Truslow is Assistant Director of Marketing and Communications.*

Mass Audubon Photo Contest

**Picture This:**   
*Your Great Outdoors*



## The Power of Partnerships

By Bob Wilber

For many years, most land conservation organizations functioned as "Lone Rangers"—pursuing land conservation projects on their own and competing with one another for land and financial support. But collaborations have become increasingly common, and at Mass Audubon they're now the norm.

Nearly all of the projects that we have completed in the last decade involved at least one government or private land trust partner. Why have we fully embraced the concept of partnerships? Working with good conservation partners can be a powerful way to ramp up the pace and magnitude of land protection. Partnerships enable each participant's limited resources to be stretched farther through cost sharing and expanded prospects for fundraising.

In a good partnership, the value of the whole is greater than the sum of its parts. A partnership should consist of organizations that have complementary, rather than redundant, skills and strengths. That's why private/public partnerships work so well, and why collaborations among organizations operating at different scales—such as statewide and local—have such great impact.

The Great Neck Conservation Partnership is a terrific example of a collaboration with impressive collective capacity. The Wareham Land Trust provided essential local connections with landowners and municipal officials as well as immediate credibility at town meetings. Mass Audubon brought land conservation, stewardship, and fundraising expertise. The state Department of Conservation and Recreation served as the required government applicant for the \$2 million grant that was essential for financing. This "high-octane" partnership achieved protection of nearly 300 additional acres of land along the coast.

Conservation partnerships allow each participant organization to think bigger thoughts—to conceive, pursue, and complete projects of greater size, cost, and complexity than it would have by working individually. That's why going solo has now become the exception.

Read more success stories at [massaudubon.org/land](http://massaudubon.org/land).

*Bob Wilber is Director of Land Conservation.*



LAND



### Birds migrate—and members can, too!

Time to renew your membership? Consider "migrating" to Explorer level or higher. Provide additional support for habitat and wildlife, and enjoy more benefits, such as:

- Admission for a guest—or two—at our wildlife sanctuaries.
- Complimentary outings with our expert naturalists.
- A free gift membership for a friend or neighbor.

Visit our website at [massaudubon.org/membership](http://massaudubon.org/membership) for details.



### Spring Optics Sale April 3–12

Members will receive a special 15% discount\* on binoculars and spotting scopes!



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\*Cannot be combined with other offers  
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February 11–27, 2016

**Galápagos Islands Cruise**  
February 16–25, 2016

**South Africa**  
February 18–March 3, 2016

For more tours and itineraries, visit [massaudubon.org/travel](http://massaudubon.org/travel).  
Email [travel@massaudubon.org](mailto:travel@massaudubon.org),  
or call 800-289-9504.



## Wachusett Meadow's Bob Paulson



By Cindy Dunn

At a busy place like Wachusett Meadow in Princeton, every day brings a wide variety of projects that could use a helping hand. So it's not surprising that

longtime Princeton resident Bob Paulson began his volunteer career in an unusual way: lacing and varnishing the wildlife sanctuary's collection of snowshoes. It was the start of an incredible 14 years (and counting) of volunteer work.

Bob joined the wildlife sanctuary's volunteer corps in 2001, shortly after retiring from his work in lumber and wood product sales. He immediately put his broad set of skills to use, helping to found a weekly work crew that tackled any task large or small, including maintaining trails and equipment, monitoring wildlife, preparing for programs, caring for the buildings and grounds, and much more. Bob often returned for a second or third day to assist with educational programs or special events, serve on Wachusett Meadow's Advisory Board, or just help to finish a project that required more time. He also helped property staff at Wildwood, Mass Audubon's overnight camp.

"Bob is incredibly willing and accommodating," says Sanctuary Director Deb Cary. "He is great at greeting visitors who come to the sanctuary, he welcomes and encourages other volunteers, and he makes it fun for everyone who works with him."

"It gets me outside," says Bob, with characteristic modesty. "I come for the friendships I have here, and it feels good to me to contribute to a beautiful place and a wonderful organization in my hometown." Because of that very genuine connection, and Bob's friendliness and easy rapport with people of any age, he is also the perfect ambassador for Wachusett Meadow and Mass Audubon—not just when he's at the sanctuary but within the Princeton community and beyond.

For more about volunteer opportunities at Mass Audubon, visit [massaudubon.org/volunteer](https://massaudubon.org/volunteer).

Cindy Dunn is Teacher-Naturalist at Wachusett Meadow.



## Reconnecting Streams

By Christina McDermott Wiseman and E. Heidi Ricci

Across Massachusetts, our rivers and streams are in need of a makeover. Thousands of outdated dams and culverts (pipes that allow water to flow under roads) create barriers that prevent passage of fish and other wildlife, impair water quality, and increase flood hazards. To help tackle this problem, Mass Audubon is working with the University of Massachusetts-based River and Stream Continuity Project, which has developed a method to measure culverts and focus efforts on restoring waterways statewide.

One area in need is the Taunton River watershed. Over the past two years, Mass Audubon staff and interns have measured 160 culverts and other structures. This information and data from other partners can be used to prioritize culverts for possible upgrading to more open crossings such as bridges.

The Taunton River watershed is also the focus of several dam-removal projects, including the Carver Cotton Gin Mill Dam in East Bridgewater on the Satucket River. Once the dam is gone, fish such as alewives and shad will be able to swim 40 miles from the mouth of the Taunton River nearly to the headwaters. Plus, the river will be more resilient in the face of climate change impacts such as severe storms. Both wildlife and people benefit when streams flow freely.

Learn more about these projects at [streamcontinuity.org](https://streamcontinuity.org) and [massaudubon.org/advocacy](https://massaudubon.org/advocacy).

Christina McDermott Wiseman is Assistant to the Director of Public Policy and E. Heidi Ricci is Senior Policy Analyst.



Mass Audubon Staff and Interns Measuring an Attleboro Culvert

## ADVOCACY



Vernal Pool at Habitat Education Center, Belmont



## A Pool of Knowledge

By Loring Schwarz and Robert Buchsbaum

Have you ever stumbled upon a large springtime pool on the forest floor full of wood frogs and fairy shrimp? Then noticed that it dries up come summertime? This unique habitat is called a vernal pool and it's an integral part of woodland ecosystems.

Many creatures rely on these temporary ponds for at least some part of their life cycles. Certain types of salamanders, frogs, dragonflies, clams, and the like can breed here without worrying about becoming fish food—since the pools dry up in summer, they're inhospitable for fish.

Vernal pool organisms depend upon a balance of winter snow, precipitation, and evaporation to thrive. Too much water and the pool will eventually become wet enough to support a fish community. Too dry, they may not have time to complete their juvenile stages.

Already vulnerable to the normal variations in weather, vernal pools are at even more risk from the impacts of climate change. Observations reported by the US Global Climate Change Research Program indicate that annual averages of precipitation and temperature have been increasing over the past 50 years in New England, but winter snow cover has declined.

Studies published by researchers at the US Forest Service suggest that the predicted reduction in winter snow cover and increased periods of drought (even if interspersed with

heavier rainfall) will lead to a cycle of increased drying and reflooding of vernal pools. This would make them less able to support specialized animals, particularly those that need longer time periods in the pool to reach maturity.

### Taking Action

To help mitigate the impacts of climate change, Mass Audubon has been experimenting with creating these pools. At Long Pasture in Barnstable and Ashumet Holly in Falmouth, we have built vernal pools of different sizes and depths, which impact the amount of time the pools hold water. By monitoring these pools, we can determine which combination of size, depth, and setting is optimal for vernal pool organisms.

In addition, Mass Audubon is actively monitoring vernal pools across the state, including performing annual counts of egg masses at over 40 pools on 11 wildlife sanctuaries. Information we gain from these studies can be applied to other wildlife sanctuaries and conservation lands beyond Mass Audubon's.

Learn more about vernal pools, including their benefits, challenges, and inhabitants, at [massaudubon.org/vernalpools](https://massaudubon.org/vernalpools).

Loring Schwarz is Climate Change Program Director and Robert Buchsbaum is Southeast, Cape, and Islands Regional Scientist.



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[massaudubon.org/maketheswitch](https://massaudubon.org/maketheswitch)



# 13 Statewide Volunteer Day

On April 25 Mass Audubon will hold its ninth annual Statewide Volunteer Day. Hundreds of volunteers will help spruce up our wildlife sanctuaries for spring. They'll be restoring trails, weeding gardens, building benches, tidying campsites, and doing innumerable other important tasks, all while having fun. With so many helping hands, we accomplish in one morning what would have taken our wildlife sanctuaries weeks—if not months—to complete!

For a taste of the day, here are some facts and figures from last year's event.





**450**  
volunteers

took part, including individuals & families, school & university groups, community organizations, & scout troops.



**200**  
flowers & shrubs

were planted.



**10**  
truckloads of brush & winter debris

were cleared.

**4**  
turtle nesting areas

were restored.





**112**  
cubic yards of mulch

were spread.



**37**  
cubic yards of compost

were spread.

**4**  
truckloads of invasive plants, including bittersweet, buckthorn, & multiflora rose, were pulled.





**100**  
feet of new trails

were created.

Projects for this year's Statewide Volunteer Day are filling up. Register at [massaudubon.org/workforwildlife](http://massaudubon.org/workforwildlife). Sixteen wildlife sanctuaries will be participating—find one near you!



**Saturday**  
**April 25, 2015**  
**9 am—noon**

- BERKSHIRES**  
Canoe Meadows Wildlife Sanctuary, Pittsfield

**CAPE COD AND THE ISLANDS**  
Wellfleet Bay Wildlife Sanctuary, South Wellfleet  
Felix Neck Wildlife Sanctuary, Edgartown

**CENTRAL MASSACHUSETTS**  
Broad Meadow Brook Wildlife Sanctuary, Worcester

**CONNECTICUT RIVER VALLEY**  
Arcadia Wildlife Sanctuary, Northampton  
Laughing Brook Wildlife Sanctuary, Hampden
- GREATER BOSTON**  
Blue Hills Trailside Museum, Milton  
Boston Nature Center, Mattapan  
Habitat Education Center and Wildlife Sanctuary, Belmont  
Museum of American Bird Art, Canton

**NORTH OF BOSTON**  
Endicott Wildlife Sanctuary, Wenham (sponsored by Ipswich River Wildlife Sanctuary)  
Ipswich River Wildlife Sanctuary, Topsfield  
Joppa Flats Education Center, Newburyport

**SOUTH OF BOSTON**  
Allens Pond Wildlife Sanctuary, Dartmouth  
Attleboro Springs Wildlife Sanctuary (sponsored by Oak Knoll Wildlife Sanctuary), Attleboro  
Oak Knoll Wildlife Sanctuary, Attleboro

## A Snapshot of Seasonal Offerings

Preregistration may be required. Contact the host wildlife sanctuary for details or visit [massaudubon.org/programs](http://massaudubon.org/programs).

**Full Moon Family Walk at Great Neck**  
April 4, 6-7:30 pm  
ALLENS POND, South Dartmouth  
508-636-2437  
Experience the springtime forest under the light of a full moon with birds, blooms, and more.

**Woodcock Walk**  
April 4, 6-7:30 pm  
BLUE HILLS TRAILSIDE MUSEUM, Milton  
617-333-0690  
Find out about these strange birds and view their fascinating mating displays!

**Amphibians after Dark**  
April 11, 5:30-8 pm  
STONY BROOK, Norfolk  
508-528-3140  
Get excited for the amphibian “big night” with costumed characters, live critters, a presentation, and crafts.

**American Woodcocks at Laughing Brook**  
April 12, 7:30-9 pm  
LAUGHING BROOK, Hampden  
413-584-3009  
Learn about the American woodcock; then listen for and watch the males' amazing courtship display!

**Great Blue Herons and Bald Eagles**  
April 15, 3-6 pm  
ARCADIA, Easthampton and Northampton  
413-584-3009  
View a presentation and visit a great blue heron rookery and bald eagle nest.

**Sustainable Book Club**  
April 29, 5:30-6:30 pm  
FELIX NECK, Martha's Vineyard  
508-627-4850  
Discuss books that examine our relationship with nature. This meeting it's *American Catch: The Fight for Our Local Seafood* by Paul Greenberg.

**Mount Auburn Trees**  
May 2, 9:30-11:30 am  
HABITAT, Belmont  
617-489-5050  
Come and enjoy the many species of trees in all their springtime splendor.

**Spring Wildflowers at Broad Meadow Brook**  
May 2, 1-3 pm  
BROAD MEADOW BROOK, Worcester  
508-753-6087  
Take a gentle walk to look for fiddleheads, dwarf ginseng, and other spring flora.

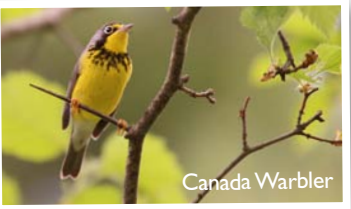
**Getting to Know Your Digital Camera**  
May 9, 9 am-4 pm,  
Field Study Series May 13-16  
LONG PASTURE, Barnstable  
508-362-7475  
Award-winning photographer Laura Gingerich will teach you to take full creative control of your digital camera.

**Wildflowers and Spring Changes**  
May 9, 10 am-noon  
PLEASANT VALLEY, Lenox  
413-637-0320  
Discover the early signs of spring and wildflowers in the woodlands.

**38th Annual Birds and Breakfast**  
May 10, 7 am, 8 am, 9 am, & 10 am  
BROADMOOR, Natick  
508-655-2296  
Take part in one of four bird walks followed by a homemade pancake breakfast.

**Mother's Day Breakfast and Nature Walk**  
May 10, 8 am, 9 am, 10 am, & 11 am  
MOOSE HILL, Sharon  
781-784-5691  
Celebrate Mother's Day with a guided walk followed by a pancake breakfast.

**Bird-a-thon Birds and Breakfast**  
May 16, 7:30-10:30 am  
WACHUSETT MEADOW, Princeton  
978-464-2712  
Support Bird-a-thon, Mass Audubon's annual fundraiser, and join us for a guided walk and a delicious breakfast.



**Wings Over Wellfleet: Bird Festival**  
May 23, 9 am-2 pm  
WELLFLEET BAY, Wellfleet  
508-349-2615  
At this all-ages event, discover the fascinating world of birds through activities and demonstrations.

**Fairy and Troll House Workshop**  
May 30, 10:30 am-noon  
OAK KNOLL, Attleboro  
508-223-3060  
Take a magical wildlife sanctuary tour and build fairy and troll houses from natural materials.

**18th Annual Audubon Nature Festival**  
May 31, 10 am-4 pm  
IPSWICH RIVER, Topsfield  
978-887-9264  
Enjoy live owl presentations, native reptiles and amphibians, a raffle, native plants, walks, crafts, and more.

**Dairy Day**  
June 13, 10 am-4 pm  
DRUMLIN FARM, Lincoln  
781-259-2200  
Celebrate our cows and goats with games, crafts, ice cream, and more.

**Wednesday-Morning Birding**  
Wednesdays, 9:30 am—12:30 pm  
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# A Bounty of Bees

By Rosemary Mosco

Honeybees and bumblebees are some of our most familiar insects, but they're just a small part of the great diversity of bees. Scientists have identified nearly 20,000 species worldwide—more than the number of birds and mammals combined—and many more await discovery.

Bees are most closely related to ants and wasps. Most are fuzzy, and while many are yellow and black, colors that warn potential predators of their sting, there's a species of almost every color. Their lifestyles are similarly diverse. Social bees join forces to maintain a single nest, solitary bees nest individually, parasitic bees lay eggs in the nests of others, and there are shades of gray in between. Also, not all bee species possess those infamous stingers. Of those that do, only females sting, and only if the hive is threatened.

As a group, bees evolved to specialize in eating nectar and pollen, though a few eat other foods such as decaying animal remains. Large-scale farmers of many cultivated plants, from almonds to blueberries, rely on commercially produced bees—primarily European honeybees—to spread pollen and trigger fruiting.

In recent years, European honeybees have suffered from a sharp decline called Colony Collapse Disorder. Less obvious but still serious losses are taking place in native pollinator species due to habitat destruction, pesticides, and introduced diseases and parasites. Protecting their health and habitat is essential for preserving the diversity of our ecosystems and food supply, and for the richness of our outdoor experiences.

Learn more about bees at [massaudubon.org/beesandwasps](http://massaudubon.org/beesandwasps).

Rosemary Mosco is Marketing Coordinator.



**Tricolored Bumblebee**  
(*Bombus ternarius*)

Like other bumblebees, members of this species are social, forming small colonies in the spring; all but the new queen bees die before winter. They help pollinate a number of plants, including raspberry and blueberry bushes. They're covered in thick fuzz that builds up a static charge, attracting pollen grains the way a sweater attracts socks in a dryer.



**Shining Agapostemon**  
(*Agapostemon splendens*)

These jewel-like insects belong to a family known as the sweat bees because they are sometimes attracted to the salt in human sweat. Most are small and relatively slender bodied, and they may be black, green, blue, or purple. They nest in ground burrows, sometimes in colonies, and are important pollinators of asters, goldenrods, and other familiar native plants.



**European Honeybee**  
(*Apis mellifera*)

Introduced from Europe, these familiar insects produce the honey we eat. Unlike other social bees, honeybee colonies survive the winter rather than starting anew each spring. In 2006, scientists dubbed this species' steep population drop Colony Collapse Disorder; with US populations plummeting by about a third each year. Pesticides, diseases, parasites, and even stress have all been implicated in the decline; most scientists now believe that the cause is a perfect storm of several threats at once—most of human origin.



**Dunning's Andrena**  
(*Andrena dunningi*)

This species belongs to the mining bees, a family of largely solitary insects that dig burrows in sandy soil in spring. Females lay their eggs in these nests and provide a ball of pollen as food. Though each bee typically creates her own burrow, she will join forces with her neighbors to repel attacks.



**Spotted Nomad Bee**  
(*Nomada maculata*)

One of many so-called cuckoo bees, this species behaves much like the parasitic bird, laying its eggs on the pollen store that another bee has gathered for its nest. It lacks the pollen-carrying structures of other bees and is wasplike in appearance.

## Spring 2015

By Ann Prince

### APRIL

**1** With slowly warming weather, chickadees sing their sweet *fee-bee fee-bee* as they prepare for nesting season.

**3** Listen for spring peepers in wetlands; the persistent high-pitched whistles of large congregations fill the air after dusk.



**4** Total eclipse of the moon. This astronomical event occurs only at the time of a full moon. Look for a dark reddish sphere when the earth aligns between the moon and the sun.



**10** Tree swallows arrive.

**15** White shadbush, also called serviceberry, blossoms in woodlands.

**24** Wood ducks occupy nest boxes in freshwater inland swamps.



**29** Before the trees leaf out, take a spring wildflower walk to see forest ephemerals such as wood anemone, pink lady's slipper, trout lily, trillium, and Dutchman's breeches.

**30** Eastern towhees, barn swallows, and chimney swifts return.

### MAY



**3** Full moon. The Bright Moon (Celtic).

**9** Northern orioles and gray catbirds return.



**10** Spring azure butterflies appear at forest edges and in garden borders; their three-quarter-inch outstretched wings are light violet blue above and grayish below.

**12** Height of the spring warbler migration.

**14** Look for the four white flowerlike bracts (leaves borne on a floral axis) of bunchberry and the five pink-striped petals of spring beauty on the forest floor.



### MAY (cont.)

**15** Listen for the musical *cheerly cheerly* song of nesting bluebirds in orchards, farmland, pastures, and swamps.

**20** Watch for returning ruby-throated hummingbirds in dooryard gardens.

**21** Painted turtles and snapping turtles move onto land to lay their eggs.



**25** Scarlet tanagers and rose-breasted grosbeaks appear.

**28** Dogwoods bloom.

### JUNE

**2** Full moon. The Rose Moon (Colonial American).



**16** Fireflies appear in grassy areas; each species has its own flash pattern.

**18** Baby birds begin to leave their nests at about this time yet are still well attended by their parents.

**21** Summer solstice. First day of summer and the year's longest stretch of daylight.

**23** Gray treefrogs begin singing; listen also for the nighttime bullfrog chorus at nearby ponds.

**25** Open meadows are graced with the bright faces of yellow black-eyed Susan and white ox-eye daisy.



**30** Daylilies bloom in old gardens and fields.

Ann Prince is Copyeditor.



# BIRD Sounds

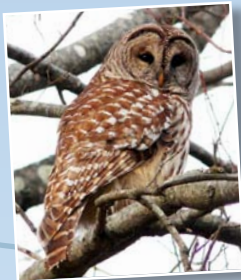
Each bird species makes its own special sounds. Learning them can help you figure out which birds are nearby—even when they're hidden. Some songs and calls sound a bit like words and phrases that people might say. Here are a few of them.

Listen closely: how many can you hear?



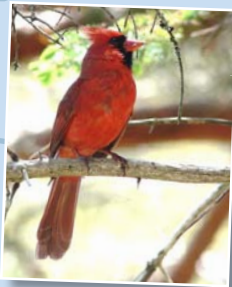
CAROLINA WREN

Teakettle, teakettle, teakettle.



BARRED OWL

Who cooks for you? Who cooks for you all?



NORTHERN CARDINAL

What cheer! Cheer! Cheer!



AMERICAN GOLDFINCH

Potato chip, potato chip, potato chip.

YELLOW WARBLER



Sweet, sweet, sweet. I'm so sweet.

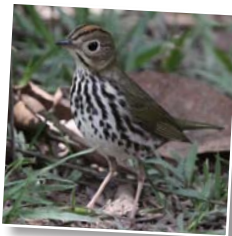


GRAY CATBIRD

Meow! Meow!

## Word Search

These bird names are hidden backwards, forwards, up, down, and diagonally. Circle the words. The leftover letters will spell the song of the OVENBIRD.



CARDINAL  
CHICKADEE  
WARBLER  
TOWHEE  
CATBIRD  
WREN  
SPARROW  
GOOSE  
ROBIN  
OWL  
GOLDFINCH  
CROW

E S O O G T E A C  
H C N I F D L O G  
E E H W O T H R N  
C H I C K A D E E  
E N I B O R R L W  
R T E A C W H B O  
C A T B I R D R R  
E L A N I D R A C  
R S P A R R O W L

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# The Natural Inquirer

By Robert Buchsbaum

## Q. Why do insects devour some plants but leave others alone?

A. If you take a walk in the local woods or even your backyard, you'll notice that the leaves of certain plants are shredded by insects, but others are left intact. Why does this happen? Since plants can't run away to escape hungry caterpillars and other vegetation eaters, many of them produce a broad range of chemical defenses to make themselves distasteful or even toxic.

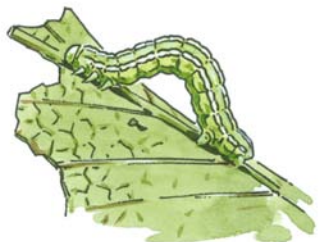
One such plant is birdsfoot trefoil, a member of the legume family. Its leaves release cyanide when they are chewed. The amount of poison in the plant is too small to dissuade larger animals such as cows, but it does repel insects.

Oaks, maples, pines, and hemlocks produce an abundance of tannins, another class of plant defenses. Tannins impart an astringent taste to leaves and inhibit the digestion of proteins, which is why humans have found them so useful for flavoring dry wines and preserving leather. In the natural world, tannins offer powerful protection against insects. However, the defoliation of oaks and maples by winter moths and gypsy moths indicates that at least some have figured out how to overcome this defense.

How do they do it? These insects feed on young leaves early in the season, when plants haven't had enough time to build up their tannin content. It's all part of an evolutionary chess match in which insects and plants develop new strategies to counter each other's adaptations.

Robert Buchsbaum is Southeast, Cape, and Islands

Regional Scientist.



Winter Moth Caterpillar  
(Operophtera brumata)

Have you seen any interesting wildlife? Share your sightings at [facebook.com/massaudubon](https://www.facebook.com/massaudubon).

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Heather Cooper, Kristin Foresto, Jennifer E. Madar, Rosemary Mosco, Rose Murphy, Michael P. O'Connor, Ann Prince, and Hillary Truslow

## The Final Word

We invite your comments, photographs, and suggestions. Please send correspondence to: Mass Audubon Connections, 208 South Great Road, Lincoln, MA 01773, tel: 781-259-9500, or e-mail: [connections@massaudubon.org](mailto:connections@massaudubon.org). For questions regarding your membership, contact: Mass Audubon Member Services, 208 South Great Road, Lincoln, MA 01773, tel: 781-259-9500 or 800-AUDUBON, or e-mail: [membership@massaudubon.org](mailto:membership@massaudubon.org).

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Mass Audubon has 54 wildlife sanctuaries open to the public year-round. They provide important habitat for wildlife and opportunities for you to enjoy and appreciate nature.

 = Wildlife sanctuaries with nature centers

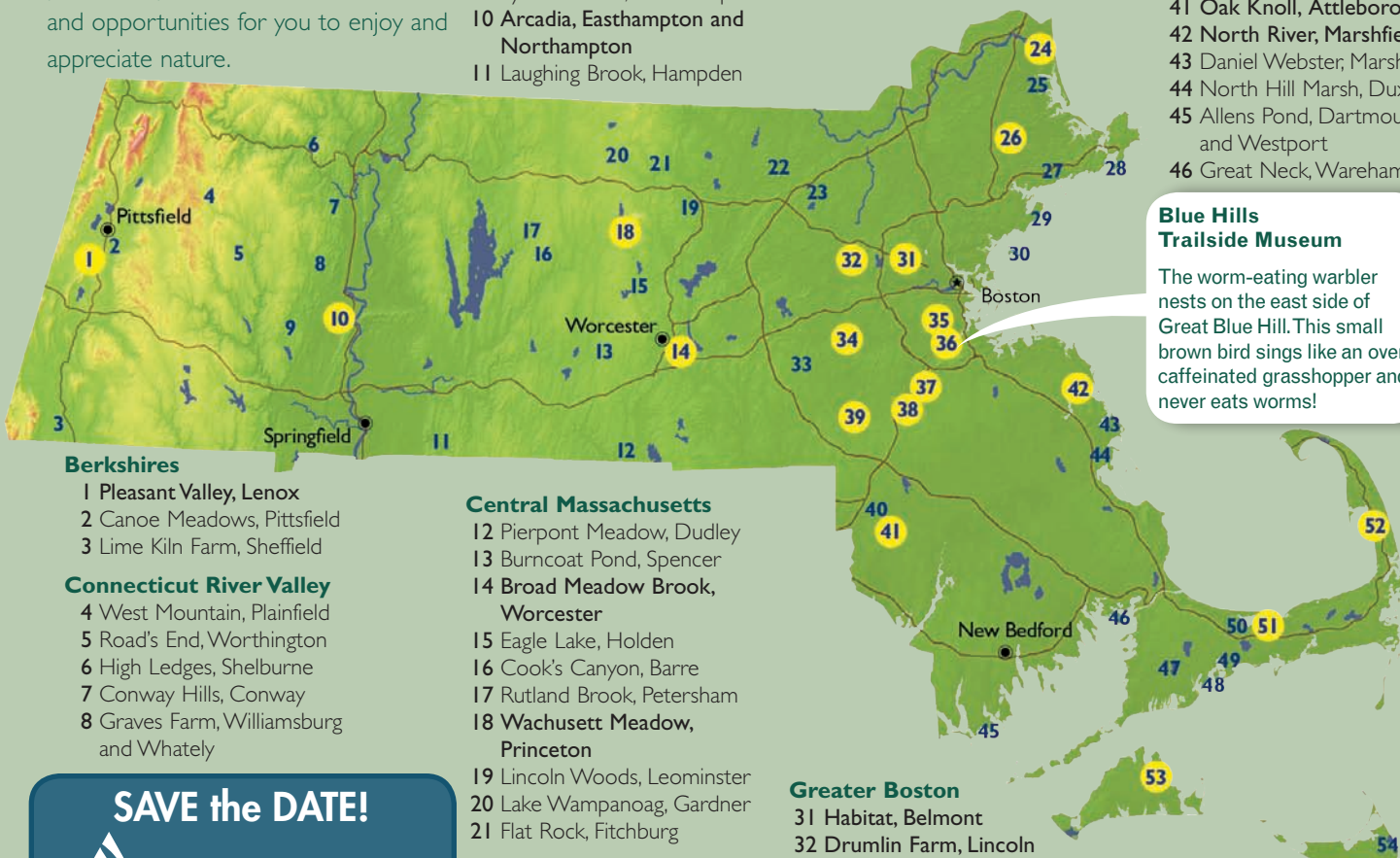
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- 11 Laughing Brook, Hampden

### South of Boston

- 38 Moose Hill, Sharon
- 39 Stony Brook, Norfolk
- 40 Attleboro Springs, Attleboro
- 41 Oak Knoll, Attleboro
- 42 North River, Marshfield
- 43 Daniel Webster, Marshfield
- 44 North Hill Marsh, Duxbury
- 45 Allens Pond, Dartmouth and Westport
- 46 Great Neck, Wareham

### Blue Hills Trailside Museum

The worm-eating warbler nests on the east side of Great Blue Hill. This small brown bird sings like an over-caffeinated grasshopper and never eats worms!



### Berkshires

- 1 Pleasant Valley, Lenox
- 2 Canoe Meadows, Pittsfield
- 3 Lime Kiln Farm, Sheffield

### Connecticut River Valley

- 4 West Mountain, Plainfield
- 5 Road's End, Worthington
- 6 High Ledges, Shelburne
- 7 Conway Hills, Conway
- 8 Graves Farm, Williamsburg and Whately

### Central Massachusetts

- 12 Pierpont Meadow, Dudley
- 13 Burncoat Pond, Spencer
- 14 Broad Meadow Brook, Worcester
- 15 Eagle Lake, Holden
- 16 Cook's Canyon, Barre
- 17 Rutland Brook, Petersham
- 18 Wachusett Meadow, Princeton
- 19 Lincoln Woods, Leominster
- 20 Lake Wampanoag, Gardner
- 21 Flat Rock, Fitchburg

### North of Boston

- 22 Rocky Hill, Groton
- 23 Nashoba Brook, Westford
- 24 Joppa Flats, Newburyport
- 25 Rough Meadows, Rowley
- 26 Ipswich River, Topsfield
- 27 Endicott, Wenham
- 28 Eastern Point, Gloucester
- 29 Marblehead Neck, Marblehead
- 30 Nahant Thicket, Nahant

### Greater Boston

- 31 Habitat, Belmont
- 32 Drumlin Farm, Lincoln
- 33 Waseeka, Hopkinton
- 34 Broadmoor, Natick
- 35 Boston Nature Center, Mattapan
- 36 Blue Hills Trailside Museum, Milton
- 37 Museum of American Bird Art at Mass Audubon, Canton

### Cape Cod and the Islands

- 47 Ashumet Holly, Falmouth
- 48 Sampsons Island, Barnstable
- 49 Skunknet River, Barnstable
- 50 Barnstable Great Marsh, Barnstable
- 51 Long Pasture, Barnstable
- 52 Wellfleet Bay, Wellfleet
- 53 Felix Neck, Edgartown
- 54 Sesachacha Heathlands, Nantucket

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**May 15-16, 2015**

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