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Birdland
Birds and their habitats

A Global Perspective on the Mass Audubon Model



Henry Tepper near Lago Espolón in Chilean Patagonia

As most of you know, during the past two months I have begun my new job as Mass Audubon's President, getting down to the business of leading this wonderful and effective conservation, education, and advocacy organization. As I become immersed in Mass Audubon, there will be many opportunities to write about our projects and initiatives; but, for this issue of *Sanctuary*, I thought I'd tell you about some of my previous work advancing land conservation in Chile.

The central strategies we've implemented there will be familiar and relevant to Mass Audubon supporters because they were pioneered here at home and continue to be used with great effectiveness.

My work in Chile began in 2006 when I was the New York state director of The Nature Conservancy, which sent me (and my family!) to Chile for four months. The trip's purpose was to explore ways of increasing voluntary land conservation by private landowners, adapting the methods used so effectively by land trusts in the United States. Representatives from both the public and private sector in Chile welcomed me, and our partnership quickly coalesced into an ambitious broad-based venture that we called the Chilean Private Lands Conservation Initiative.

Increasing conservation of private land in Chile is particularly appropriate at this moment in time. The nation's rapidly expanding economy is dominated by four landholding, export-dependent industries—agriculture, fisheries, timber, and mining. Chile is strongly committed to increasing its exports of these products, and the international markets it is selling to are increasingly putting sustainability requirements in place. So the need for the country

to move quickly toward sustainability is paramount.

My Chilean colleagues and I began talking to the leaders of the country's major industries about the land trust movement in the United States. The Chilean industrial leaders were very receptive, and before long the initiative was advancing a comprehensive five-part program with practical and flexible tools for private landowners to take action to protect their properties. These tools include financial incentives for conservation-minded landowners. For example, tax savings and direct compensation; conservation easements/restrictions in Chilean law; land trusts established to help landowners take conservation action; and sound science to ensure protection of both rare and endangered species and landscape-scale habitat for wildlife.

A great deal has happened in the ensuing six years. Precedent-setting conservation easement-enabling legislation, the *Derecho Real de Conservación*, was introduced and is pending in the Chilean Congress. A widely praised template was created for conservation easements under existing Chilean law—the *Servidumbre Voluntaria*. In 2012, one of Chile's first land trusts, Tierra Austral, was established and has already protected key properties using the *Servidumbre* agreement. Work is also ongoing in collaboration with the Chilean Treasury Ministry to implement tax reforms, adding land conservation to the list of deductible charitable contributions.

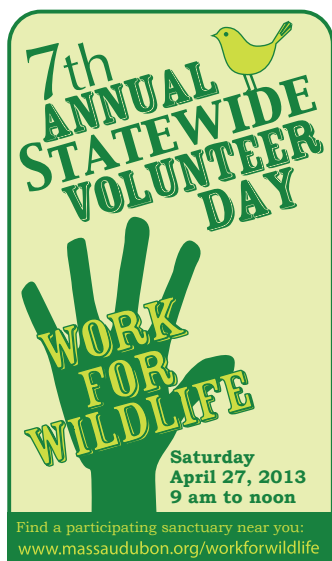
A key collaborator in the Chilean initiative is Patagonia Sur, for which I worked previously. Patagonia Sur is a conservation real estate company that owns 70,000 acres of ecologically and scenically significant land in Patagonia. The company has already protected two of its properties, totaling 56,000 acres—a panoramic 8,000-acre mountain valley called Valle California and a 48,000-acre coastal temperate rain forest named Melimoyu, with critical habitat for birds including the magellanic woodpecker, des mours's wiretail, and Andean condor.

The successful methods being adapted, embraced, and implemented in Chile have been used for decades by Mass Audubon. My Chilean colleagues and I have benefited enormously from the years of hard-learned experience and exponential achievements of organizations like Mass Audubon and its partners. From landscape-scale habitat protection, to templates for conservation easements, to perfectly drafted non-profit governance standards and practices—Mass Audubon has led the way. *Henry Tepper, President*

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STAFF

Editor:

John Hanson Mitchell

Associate Editor:

Ann Prince

Production Editor:

Rose M. Murphy

Field Editors:

Thomas Conuel

Gayle Goddard-Taylor

Poetry Editor:

Susan Richmond

Designer:

Lynne Foy

Cover: James Coe,

Waiting for Spring,

Red-shouldered Hawk

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Scratch Flat

Just before dawn last summer I was awakened by a soft series of coos and low warbles emanating from a wooded thicket just below my house. It took me a moment to realize it was the call of a black-billed cuckoo and for a while I lay in bed thinking about cuckoos. How long had it been since I heard one? Last year? Two years ago? I couldn't remember.

This was a pattern I had been experiencing in recent years. I would hear or see a certain species of bird and then come to the realization that I hadn't seen that formerly common bird in a while.

Over the past thirty years or so, I had been observing the changing bird populations on a square mile plot of land known locally as Scratch Flat, which is where my house is located. The tract lies just west of a slow-running brook with wide cattail marshes, a wooded drumlin on the east side, two working farms on the west, and a lake on the north.

In the 1970s, there were five working farms on Scratch Flat. One of these had been abandoned around 1980, and for a decade or so it consisted of a series of old fields that dropped down to the wide floodplains of the brook. On the ridge of a drumlin, there was a mixed forest of deciduous trees and white pines, interspersed with six or seven houses strung along a road that followed the course of the brook, two of which had been there since the 18th century when this area was all apple orchard.

Here in this mixed-use tract of land there was once a rich diversity of birdlife. Killdeer and meadowlarks, swallows and sparrows nested around the farms. Woodpeewees, veeries, wood thrushes, red-eyed vireos, and even for a few years whip-poor-wills, nested in the deeper sections of the woods, and around the gardens of the houses, and in the old fields there were blue-winged warblers, prairies warblers, a host of yard birds such as robins and chickadees, and also yellow warblers, indigo buntings, great crested flycatchers, and kingbirds. Not a bad environment in other words for birdlife given the fact that the tract was only thirty-five miles from Boston.

Nowadays in winter you can still find a fairly representative population of winter birds such as chickadees, tree sparrows, tufted titmice, blue jays, cardinals, and, more recently, red-headed woodpeckers and Carolina wrens. But springs are a lot quieter these days. Last spring I did not see or hear a single ovenbird, once a common spring migrant. No wood-pewees cried out from the wooded interiors, no black-and-white warblers, nor any ruby-crowned kinglets, blue-wings, yellow warblers, or indigo buntings. Summer still has robins and song sparrows, cardinals, orioles, and the usual assortment of garden birds. But there are no more great crested flycatchers on Scratch Flat, nor any kingbirds, or any barns swallows and tree swallows sweeping the fields where the abandoned farm once stood.



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Black-billed cuckoo

All this, mind you, is a decidedly casual survey. I never actually went out birdwatching. The birds were just there, a part of everyday life during my rambles over what I had come to think of as my territory. If I thoroughly searched this square-mile tract of land on a daily basis over the course of a year, I could find more. But the slow drift toward a lack of diversity in birdlife is telling. Generally speaking, what has been happening here is what is happening to the world at large. The question is, why?

Global climate change, the destruction of tropical and subtropical forests where the migrants winter, cats, cell phone towers, car collisions, pesticides, are all part of the problem, of course. But on Scratch Flat, the biggest issue is the same as the problem in the rest of the world—loss of habitat.

Scratch Flat has been farmed for nearly 3,000 years if you include Native American agriculture. But in the last three decades the old fields were replaced by a development of pseudo “estates,” which effectively remade the scrublands into a desert of lawns, drive-ways, and veritable seas of mulch. Three of the farms went out of business and were replaced with housing tracts and a small industrial “park,” and slowly, house by house and lot by lot, the land is lost. And as one commentator wrote in *The New York Times*, “Scratch Flat is, and was, the world.”

JHM

The New Woods of New England

The forests of New England have been undergoing changes ever since the first colonists landed. Bird populations have followed suit.

by Thomas Conuel



© COURTESY OF HARVARD FOREST, PETERSHAM, MA

Presettlement Forest, 1700, with differences in age, density, size, and species of trees across a range of sites

When Henry David Thoreau wandered in and around Concord some 160 years ago, the landscape was typical of southern New England at the time—around 30 percent woods consisting of oak, hickory, red maple, black birch, and white pine—interspersed with open land dotted with farms, fields, pastures, orchards, towns and villages, and an occasional large city, Worcester to the west, for example, and Boston to the east.

That agricultural landscape was welcoming to many species of birds. Eastern meadowlarks, bobolinks, and upland sandpipers, all of which have now declined, prospered in the numerous open meadows and fields, as did grasshopper, field, and vesper sparrows. Bluebirds thrived in the orchards, and catbirds patrolled swaths of brushy growth on the edges of the deeper woods, which were fragmented in Thoreau's time and shrinking but still able to support populations of wood thrushes, ovenbirds, and red-eyed vireos.

With few trees and little interior forest, coupled with hunting and trapping, the agricultural landscape of the early to mid-19th century was less welcoming to some species, particularly mammals. Wolves, cougars, beavers, moose, deer, and turkeys all declined well before Thoreau's time.

That landscape of the mid-1800s was about to change dramatically, albeit slowly, as the industrial revolution beckoned. In fact, it had already undergone several transformations over many hundreds of years. Before the first European settlers, some 9,000 years ago, native people from various tribes were burning and clearing sections of the forest to improve hunting, create villages, and support their small farm plots. After 1620, as English settlements in the Massachusetts Bay Colony increased over decades, the native forest began to decline, shrinking decade by decade into smaller and smaller segments. The New England landscape of the mid-1800s, the peak of deforestation in the region, represented a Herculean



Height of Forest Clearing and Agriculture, 1830. In the mid-1800s a long broad-scale decline in farming began throughout New England.

effort by settlers who sculpted the land into an agricultural mosaic by their relentless cutting and clearing. By 1830 and on to 1880, farms, fields, meadows, and orchards dominated the landscape of New England with the woods in full retreat.

According to *New England Forests Through Time: Insights from the Harvard Forest Dioramas* by David R. Foster and John F. O'Keefe, except for northern Maine and the hills and mountains of the region, 60 to 80 percent of the land in New England was cleared. Wood was in great demand for home construction, firewood, furniture, and tools. The forests were cut over and over again; and because wood was valuable and becoming scarce, fences for the newly cleared fields were constructed from the abundant fieldstones, leading to New England's emblematic stone walls neatly delineating the landscape.

In the decades following the Civil War, the industrial revolution with its railroads, canals, and easy access to vast stretches of rich farmland in the Midwest lured away many New Englanders. Farmers, especially, quit the land in droves and moved to more fertile ground in the West or fled to cities and towns to work in the mills, joining in the swell of urbanization that also reshaped the landscape during this period.

The abandoned New England farms, once well-tended fields and orchards, reverted to woods following natural forest succession, and were soon covered by new growth of white pine and other pioneer species including red cedar and various types of poplar and birch.

Henry Thoreau, in his rambles about Concord, was

a keen observer of the changing landscape, noting how mature pine trees left for shade when the fields were cleared decades ago now loomed over fences and pastures, producing abundant seeds that quickly established themselves in the abandoned fields. As the white pines spread quickly over 20 to 30 years, they created a dark canopy that blotted out the sun on the forest floor, creating an area of only sparse undergrowth beneath the trees. As the canopy rose higher and higher, the density of the older white pine stems declined, letting in more light on the ground below.

It was at this stage that the hardwoods began to prosper. Seeds of the native hardwoods, deposited on the site by wind,

birds, and small mammals, grew into shade-tolerant saplings propelled upward by the sunlight now speckling the forest floor. Thoreau coined the term for this process—succession—describing how open fields give way to pine forest and then to a young hardwood understory.

As the white pines reached middle age around 1890, they increased in value, and many of them were cut down, thus opening up the sites to the shade-tolerant hardwoods in the understory that could now outgrow the pine seedlings, facilitating, according to Foster and O'Keefe, the succession from white pine to mixed hardwoods. Other changes followed. In the early 20th century, the American chestnut succumbed to a fungal blight introduced from Asia in 1904. Further, beech bark disease, also introduced into the New England forest, killed off large swaths of beech trees.

Although different in the makeup and diversity of tree species, dense and sprawling woods like those in southern New England that the Pilgrims found when they arrived in Massachusetts in 1620 slowly returned. Massachusetts is now 60 percent woods and 40 percent open land, supporting suburbs, towns, cities, and some farmland. New England is now the second most heavily forested section of the continental United States—behind the Pacific Northwest—and Massachusetts is now more heavily forested than at any time since the first English settlements.

It should be noted, though, that while the woods have expanded in Massachusetts, development is still an issue. Massachusetts is a small heavily populated state with approximately 6 million people living on only

5.2 million acres. According to a Mass Audubon study, a decade ago the state was losing 40 acres of open space daily to development.

Steve Faccio, a conservation biologist with the Vermont Center for Ecostudies, points out that from early 1890 to 1940, and then on to 1960, a successional forest grew over large swaths of New England and provided habitat for the eastern screech-owl, pileated woodpecker, hermit and wood thrush, ovenbird, chestnut-sided warbler, common yellowthroat, and eastern wood-pewee—all of which flourished in the expanding woodlands.

Change goes on in the woods of New England, perhaps the most far reaching as a result of climate change. A warmer New England will mean a different forest with more oak and pine and certainly different bird species. Many species familiar in southern regions may expand their range to the New England forest.

According to Steve Faccio, some studies show that the line, or ecotone, between mid-elevation hardwoods and high-elevation spruce-fir forests is moving upslope on New England's high hills and mountains, shifting toward more hardwood and less conifer. That means northern bird species such as the Bicknell's thrush and blackpoll warbler that depend on a boreal forest may be squeezed out of their habitats.

Invasive species continue to flourish and change the edge of the forest. Multiflora rose, Oriental bittersweet, glossy buckthorn, Norway maple, burning bush, and, somewhat surprisingly, common earthworms, all present problems. While earthworms are often beneficial in gardens and agricultural fields, they are also invasive pests damaging to the hardwood trees of the interior forest. While not yet considered a problem in the forests of New England, earthworms have seriously damaged forests in northern regions such as Michigan and Wisconsin.

The earthworms, especially prevalent in woods near large lakes, where anglers discard them after a day of fishing, could become a problem in New England as they increase. By consuming the leaf litter of the forest and mixing it deep into the soil, earthworms alter the vegetation and affect populations of birds, amphibians (particularly red-backed salamanders), and other wildlife. Many hardwoods, such as maples, do not sprout in soils heavily worked over by earthworms whereas several invasive plant species thrive in soils heavily populated by the worms including buckthorn (common and glossy), gar-



1910. *Old-Field White Pine Forest on Abandoned Farmland. Landscape shifts over time may benefit either native woodland species or open-land wildlife.*

© COURTESY OF HARVARD FOREST, PETERSHAM, MA

lic mustard, tatarian honeysuckle, black swallowwort, Japanese barberry, hemp nettle, and stiltgrass.

However, in the new woods of New England there is opportunity, according to Richard T.T. Forman, the PAES Professor of Landscape Ecology at the Harvard Graduate School of Design. Forman, who has spent much of his career researching changing landscapes and how they affect wildlife, conservation, and land use planning, points out that the New England landscape of today is a complex amalgam of change.

Invasive species such as multiflora rose have taken over the edges of fields, supplying habitat for mockingbirds and catbirds. Suburbs continue to sprawl across the landscape, bringing roads as well as houses and bird feeders. And the deeper forest, or what he calls the “interior woods,” remains a sanctuary, of sorts. And therein lies the opportunity. Various organizations—Mass Audubon, local land trusts, state forest agencies—are at work preserving green corridors to connect these interior woods and thereby encourage species diversity. New England's growing forest represents a rare opportunity, says Harvard Forest's David Foster, a second chance for a forest that has been cut and cleared many times to become part of an expanding green corridor stretching from the Appalachians north to Quebec, with the woods of New England being an important piece of the green landscape.

All of these new developments offer an opportunity to return the woods of New England to a semblance of the historical forest that blanketed the region prior to 1750. “A chance to reconnect with the land as it was before settlement and be wise in development,” says Foster.

Thomas Conuel is a field editor for Sanctuary magazine.

Melodies of Birdland

Bringing birds back to the riverway

by Dori Smith

The Assabet River tumbles melodiously over stones through a lovely bit of woods along Summer Hill Road in Maynard, Massachusetts. It rolls on its way from headwaters in Westborough, through the Assabet River National Wildlife Refuge, flowing 31 miles until it meets the Sudbury River, merging to create the Concord River.

At some point most of the woods along the Summer Hill river road were cleared, a line of modest houses were built, and estate-worthy greenswards were established down to the river's edge. The lawns were tended well, carefully greened with various chemical substances, all of which were likely to wash into the river and cause anaerobic conditions—anathema to fish, and thus to fishing birds.

When Dave and Betsy Griffin acquired their frontage on this choice section of the river in 1987, the property featured a small ranch house near the street, a stretch of lawn rolling down from their walkout basement to the riverbank, and a young fast-growing Norway maple for shade. The previous owners had situated a toolshed and two water-greedy willows smack dab in the middle of the yard, then barricaded themselves from the river view with dense rows of tall white pines to the front and side.

Three massive white oaks retained the bank from erosion and provided some cover for birds—the hunters and the hunted. But missing from the narrow riverine habitat was the understory: the sub-canopy trees, the shrub layer, and the meadowy feeding grounds rich with berries, insects, and grubs. The long stretch of contiguous lawns—chemicalized, insecticide-treated, deflowered—held little interest and in fact was dangerous territory for small birds, open as it was to sky-bound predators.

Dave and Betsy spend their spare time kayaking and birdwatching, and Dave has become well known for his bird photographs of waterways in the area. As



© DAVID GRIFFIN

The Griffins have a stunning view from their yard of the Mill Street Bridge, which crosses the Assabet River 100 yards upstream from their property.

active leaders in OARS—the organization protecting the Assabet, Concord, and Sudbury river watersheds—they were well versed in the value and needs of the river. In addition, they knew the wildlife habitat potential of their parcel of land. They were aware that the native birds and butterflies are in rapid decline, in large part due to loss of dense habitat from suburban developments such as theirs. Habitat loss means destruction of living spaces for birds and other creatures: diminished flowering plants as insect and bug attractors; reduced berry and seed crops; and loss of tree, shrub, and tall grass cover.

In his 2007 book, *Bringing Nature Home: How Native Plants Sustain Wildlife in Our Gardens*, Douglas Tallamy advocates for healthy local ecosystems. “Our preserves and national parks are not adequate to prevent the predicted loss of species,” he writes, “and we have run out of space required to make them big enough.” So he argues passionately for modifying the places where we live, work, and play to rebuild the robust matrix that supports the lives of diverse beautiful life-forms.

The Griffins wanted to remove the pines so they first consulted the Maynard Conservation Commission, which manages wetland and river protection through federal, state, and local regulations. By state law, a protection zone extends 200 feet from the river, encompassing most of their great lawn so any significant changes needed approval.

About 2004, the Griffins went back to the conservation commission with a proposal to establish their riverfront as an enriched bird habitat featuring native plants. There they met with then conservation agent Jennifer Steele, a former Mass Audubon employee and a nature enthusiast with progressive ideas. She introduced a wider proposal—to get funding for a collaborative river restoration project that would engage all the riverside landowners in rebuilding contiguous wildlife habitat.

The concept was to bolster the forested flyway along the river, connecting the river with the Summer Hill Forest on uplands just to the north, thus allowing birds to hop-skip-fly all the way to conserved land in Acton and Concord. The Griffin project would serve as a demonstration site, showing how individual homeowners could create park-like natural areas for human enjoyment, as well as supporting bird conservation.

The Griffins engaged me in their landscape-planning process, and that winter we started on the design. We would install everything needed for avian livelihood: bird buffets, birdbaths, plumage dusting areas, bird safe houses. We would take all the rainwater from the four corner downspouts of the home's roof, conducting it into two lush rain gardens full of flowering berry bushes on the downslope. Between the rain gardens, a sixteen-foot waterfall would cascade into a lined wildlife pond. The tinkling glittering waters would attract birds from the river zone for drinking and bathing, bringing them near the house for observation and photo shooting.

I enlisted local landscape contractor Mark Carbone, known for his fine stonework, to build the water features and install major plantings. The project would conform to the Standards for Organic Land Care of the Northeast Organic Farming Association (NOFA), which provides holistic guiding principles and practices for designing and maintaining landscapes.

We started amassing materials to reshape the land

and improve soil quality: compost for enriching planting beds and rain gardens, 20 yards; sand to ensure porosity and infiltration of rain gardens, 5 tons; composted leaf mulch, 10 yards; wood chip mulch, 10 yards; composted top soil, 22 yards; native stones for the large-scale water feature, quite a lot.

Plants used in the Griffin project had to meet these criteria: native or naturalized, particularly to the

Northeast; significant wildlife value (attract insects, offer food); easy care; drought tolerant; attractive through the seasons. I chose 45 saplings and shrubs from New England Wetland Plants in Amherst, specializing in wild-gathered seed-grown plants with genetic diversity for restoration projects. The rest were 43 shrubs and trees from standard nursery sources. The Griffins would be responsible for perennials and berry brambles.

The floodplain soil was silty and compacted so it yielded with difficulty to the spade. A front-end loader was required to dig out the pond and rain gardens.

Crafting the pond and the sluicing waterfall, making it all look natural, was a labor of love. One day I encountered Mark listening carefully, “tuning” the final water drop into the pond, rendering its splash more musical with just the right placement of stones.

When all the commotion and disturbance of construction were over, a miniature forest fanned out from the river edge, featuring an unusual assortment of tree and shrub species hosting a wide range of endangered moth and butterfly larvae and insect herbivores. A spacious meadow, filled spring to fall with flowers, occupied the middle sunny ground, along with blueberry and raspberry patches. Fresh organic lawn filled the tractor-disturbed areas, to be replaced over time with more meadow.

Now, eight years later, the tree saplings are filling out and heading up. The native alternate-leaved dogwoods are already fifteen feet high—good news for the larvae of giant moths such as cecropia, valuable for the glory of themselves and as bird delicacies. The larvae appear covered in tiny Christmas lights, the adult moth adorned with feathery antennae and wings brushed in an artist's dream of charcoal and terra-cotta.

The clumps of river birch now popular in gardens add



Rose-breasted grosbeak

© DAVID GRIFFIN



Spiderweb

graceful structure to the small woodland; goldfinches in droves harvest its tiny seeds in late spring. The curly bark provides perfect hiding places for insect larvae, handy for winter pickings of woodpeckers. The tupelo is preparing its rich dark red foliage for autumn. Tattered leaves of the hawthorn tell a natural history of leaf-nibbling insects that are now feeding generations of birds and their babies.

From their spacious deck, the Griffins enjoy watching small mammals sneak out at dawn and dusk from hiding places; they listen to birds twittering as they gather for their afternoon splash in the waterfall. The pond hosts green frogs, the frogs eat the mosquitoes, and the great blue heron feeds on an occasional frog. Red-winged blackbirds roost in the pond's cattails. Ducks occasionally investigate the pond, and each spring snapping turtles seek nesting sites in the yard. Fireflies by night and dragonflies by day provide aerial shows.

The ospreys, once in decline, are coming back to nest and hunt over the river. Dave observes the occasional bald eagle soaring along the riverway. And the kingfishers are making a decent living here. Despite human intentions, nature continues to shape the Griffin land in its own way. According to the Griffins, "We have a beaver den downstream, and they have taken two of our young trees!"

Dave and Betsy agree, "One of the most unexpected but delightful aspects of the project has been the annual succession of plants in the wild gardens. One year daisies dominate, then black-eyed Susans, then gold-

enrod. We don't consider ourselves to be gardeners, so we are slowly discovering that what we thought was a weed—pokeberry—is actually a native plant that bluebirds, woodpeckers, cardinals, and mourning doves enjoy. We benefit from our more knowledgeable friends who bring us plants for the fledgling butterfly garden.

"This is not a project for impatient people," the Griffins warn. "Many of the payoffs take years. While a few birds took advantage of the waterfall at first, it was two or three years before we saw a wider diversity and number as the newly redesigned understory took shape."

The primary maintenance issue has been invasive plant control; bitter-sweet vines festooned a 40-foot stump on a neigh-

boring property for a decade. The birds spread the seeds of bittersweet, honeysuckle, buckthorn, and barberry through the forest and meadow, which, if they are allowed to thrive, would threaten the whole delicate system put in place. As Dave noted, he would do a lot more to expand the meadow if he didn't have to expend so much energy to keep the invasives down. According to Tallamy and many other sources, non-native, or "alien," plants provide far less nutrition than indigenous plants, which have coevolved with the wildlife.

The Griffins intend to steward this haven for wildlife long into their retirement years. Meanwhile, the creatures can plan on their future generations having a harmonious home. "Catbirds own the elderberry bushes," they note. "We have a hummingbird that defends our two feeders from all comers and often chases butterflies from the butterfly bush. Bluebirds are beginning to be more common."

In the gardens, crickets and cicadas make their rhythmic music, the background drum and drone to the soloists: soulful robin melodies, wild improvisation of mockingbirds, fluting trills of finches. Treefrogs provide a good part of the chorus, night and day, and the musical line is punctuated by the whistle-chortle of cardinals and the *tseep* of tiny sparrows.

Dori Smith is owner of Gardens for Life in Acton. She writes, leads garden tours, and offers seminars on humans and nature.

Greener Pastures

Grasslands and shrublands, which are critical habitats for certain species of birds, are increasingly rare in Massachusetts. But what's left is being carefully managed for birdlife.

by Gayle Goddard-Taylor

At a time when kestrels have become alarmingly scarce, it's thrilling to see a pair of these small falcons hovering over a field at Westover Air Reserve Base in Chicopee. The 1,400-acre airfield, which maintains short grass around runways but allows more distant areas to remain in longer grasses, also attracts state-listed grasshopper sparrows, upland sandpipers, and a wide variety of other grassland birds.

Because of its size—a factor that is critical to many of these avians—Westover is the state's premier site for all manner of grassland birds. The base even allows birding groups in the fields by appointment.

"Westover is the mother lode of grassland birds in the state," says Scott Melvin, PhD, senior zoologist for MassWildlife's Natural Heritage and Endangered Species Program (NHESP). "Nearly 80 percent of all upland sandpipers and half of all grasshopper sparrows in the state breed here. It's critically important."

Despite places like Westover, not all is rosy for grassland birds. The release of the 2011 *State of the Birds* report revealed a breathtaking drop in grassland bird species. In fact, they are one of the top three bird groups in decline, with 10 out of 23 species in need of urgent conservation action.

"They're not just declining in Massachusetts or New England," says Kim Peters, director of Bird Conservation for Mass Audubon. "It's pretty bad everywhere, including in their core range in the Midwest, the historic tallgrass prairies."

The statistics are clear. The distribution of eastern meadowlarks has contracted by 76 percent, their numbers dropping in recent years by nearly 10 percent annually. Upland sandpipers are vanishing at a rate of almost 9 percent per year, and vesper sparrows show an overall decline of 66 percent.

Habitat loss is thought to be one of the major factors contributing to these declines, both here and in their core range in the Midwest. There, development has turned small farms into giant crop monocultures or chopped them into malls. Here in the East, surveys show grass-



Barn and House, Morning Light

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land habitat has shrunk by 25 percent over the past 40 years.

In an analysis of how Massachusetts grassland habitats have fared in recent decades, Mass Audubon researchers discovered that in 1971 cropland and pastureland accounted for about 400,000 acres. By 2011, about 150,000 acres of that had been claimed for development or reclaimed as forest. Research also showed shrubland and heathland—both successional stages that follow grassland—are losing ground as they mature into forest.

Ascertaining what's at stake means first understanding what exactly grassland and shrubland are. Massachusetts has two types of grassland. The vast majority consists of what is called cultural grasslands—fields and meadows that arose because humans altered what had previously been a forested landscape in order to grow crops or graze animals. Native grasses were insufficient for feeding livestock so Europeans imported their familiar crop strains, which thrived here until farming moved West and the lands began reverting to forest. Initially, these abandoned agricultural lands

self-seeded with those European grasses, but soon forbs, herbaceous flowering plants such as Queen Anne's lace and milkweed, small trees, and shrubs made inroads before the fields succeeded into shrubland.

Few large expanses of natural grassland are found in New England. Where they exist, the soil is thin, nutrient poor, or is frequently inundated, such as beaver meadows or along riverbanks. In these environments, shrubs and trees are challenged to gain a foothold. Similarly, the tallgrass prairies of the Midwest, also prime habitat for these birds, remained as grasslands because of poor soil as well as scant moisture and harsh winters.

In places where the soil was less rich, native grasses such as little bluestem reasserted themselves, and juniper began dotting the fields. Grasslands with the slightly better poor soils became heathlands, where heaths, blueberry, and huckleberry are common. This latter community can be found in places such as Nantucket, where Mass Audubon has been managing heathlands and sandplain grasslands since the 1980s.

"Grasslands and shrublands are stages in a continuum, but they're two distinct stages with two distinct biotas," explains Chris Leahy, Gerard A. Bertrand Chair of Natural History and Field Ornithology at Mass Audubon. "There are grassland birds and shrubland birds, and there are some birds that play both games."

Although not as large, several other Mass Audubon wildlife sanctuaries are managed for grasslands, most notably Daniel Webster in Marshfield, Felix Neck on Martha's Vineyard, Canoe Meadows in Pittsfield, Wachusett Meadow in Princeton, and Drumlin Farm in Lincoln. On Nantucket, Mass Audubon and various conservation organizations steward a few thousand acres of heathland. MassWildlife also maintains Crane Wildlife Management Area on Cape

Cod, along the southern edge of the Massachusetts Military Reservation, for grassland birds.

"There's been a renewed recognition that we need to understand where we have grasslands, how big they are, and what we need to do to manage them," says Leahy. "At Mass Audubon, we're in the process of developing a systematic approach to maximizing these habitats."

With the same goal in mind, over the past five years the state has acquired a significant chunk of former tobacco fields in western Massachusetts that it will manage for grasslands. In Southwick, a town that juts into Connecticut, MassWildlife has cobbled together nearly 300 acres of former tobacco fields that have reverted to meadows dotted with grasses and forbs in some areas, as well as patches of shrubland and strips of forest. The land abuts similarly conserved land in Connecticut.

"The species we really care about here are the grasshopper sparrow and the eastern meadowlark, but we'll manage for a range of species," says Brian Hawthorne, a NHESP wildlife forester. "Conserving the land by buying it is just the first step. We have to make sure the habitat is used by these species in decline. It makes no sense creating habitat without putting in place measures to know if what you're doing is successful or not."

Continued monitoring is critically important, according to Hawthorne, before, during, and after restoration. And that's the dicey part. MassWildlife has limited capability for mowing and will need to outsource maintenance—or convince other organizations and nonprofits to help with the task. Among the chores required are mowing, tree clearing, invasive-species control, and some prescriptive burning.

Wherever grasslands and shrublands are being protected, management is constant, and it is labor intensive. Farmers, who might be called upon to trade mowing services for hay,

are increasingly reluctant to sacrifice the first cutting, the most nutrient rich but occurring during the nesting season. Burning requires a trained staff and just the right conditions. And invasives require constant removal to prevent takeover.

At Mass Audubon's 1,100-acre Wachusett Meadow Wildlife Sanctuary in Princeton, the landscape has been shaped by the retreating glacier, farming, beavers, and once again by humans. Its fields and meadows are now managed as grasslands, and mowing or burning is conducted once a year. Still, bobolinks, which have been well established here over the years, have dropped in numbers recently.

"There had been six or seven pairs," says Site Manager/Conservation Coordinator Cindy Dunn. "Now we've got three or four pairs."

Mowing for grassland birds at



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Mountain Morning

Wachusett and other protected areas gives birds the maximum leeway for time on the nest. With birds arriving in May and chicks on the nest well into July, grass is kept long until the fall. But at places like Westover Air Reserve Base where aircraft safety is paramount, timing of the mowing can be tricky.

A national policy for air bases requires grass be kept to 7 to 14 inches but allows some local discretion. After consulting with state and federal wildlife agencies, Westfield adopted a compromise schedule that allows monthly mowing alongside runways and taxiways but postpones the mowing of other areas until August 1. The grassland species here flourished as a result, at least until recent years, when numbers of these birds have remained level, according to NHESP's Melvin. "What we've been seeing is a gradual increase in the extent of the mowing in the portion of the airfields mowed during that critical phase between May 1 and July 30," he says.

Melvin has been monitoring bird populations at Westover and other grassland sites around the state since 1984. Airfields, both military and civilian, are a magnet for grassland birds because habitats of this size are rare. In fact, the state's second leading spot for grasshopper sparrows is just south of the Cape's Massachusetts Military Reservation, where Melvin has counted some 20 to 25 singing males (singing males are the standard NHESP uses to survey birds). By comparison, this past year 236 singing male grasshopper sparrows were counted at Westover.

But Melvin fears a recent policy change rescinding local discretion regarding mowing could mean fence-to-fence, monthly mowing—and ultimately a reversal of the gains in grassland bird species. The policy must first undergo a Massachusetts Environmental Policy Act review. Melvin contends that the decision to change was "not based on any credible science" and may instead decrease air safety by encouraging the presence of birds such as Canada Geese that prefer shorter grass.

Drew Milroy, natural/cultural resources manager for Westover, is a man caught in the middle. While he has a background in wildlife biology and is an enthusiastic birder, he recognizes that safety is the base's main focus.

"The theory is that taller grass allows for more animals," he says. "The more vegetation, the more seeds, which attract more prey animals and then predators."

The longer grass provides cover for coyotes and the occasional deer that slips through the tall chain-link fence that surrounds the airfield. But birds are, by far, the most common wildlife struck by aircraft. A 2009 study released by the US Department of Agriculture (USDA) Wildlife Services showed that 98 percent of aircraft/wildlife collisions involved birds and cost the civil



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Spring Morning

aviation industry \$625 million a year. From 1988 to 2009, it was reported that 219 people lost their lives, and 212 aircraft, civil and military, were lost worldwide due to bird and other wildlife strikes.

Those kestrels spotted hovering above a Westover field are a significant hazard and, in fact, are the species of bird most commonly struck by planes there, according to Milroy. Of course, no one would ever put protecting kestrels, upland sandpipers, and grasshopper sparrows, no matter how threatened, above the safety of those in an aircraft.

If the *State of the Birds* report was a call to action, then conservation organizations and state agencies are heeding that call. Mass Audubon and the NHESP continue to keep current and potential grassland sites on their radar, managing for grassland birds, monitoring for population trends, and looking for opportunities to add to current sites or acquire new ones. And in some places innovative programs are helping to boost the breeding success of grassland birds.

In 2006, Vermont introduced its Grassland Bird Conservation Incentive through a USDA program that compensated farmers \$100 or more per acre to complete their first haying by June 2 and delay their next cut for at least 65 days. The reproductive rates of bobolinks went from zero fledglings per nest to 2.8 per nest.

Taking a different tack, New Jersey Audubon (NJ) is working with farmers to plant sunflowers rather than other crops as part of its Support Agricultural Viability and the Environment (S.A.V.E.) initiative. Farmers realize a greater return than on other crops, the land remains in agriculture, and for every five acres planted in sunflowers NJA maintains an acre of grassland.

A number of Mass Audubon's grassland projects are

now in various stages of development. About 150 acres have been added to Burncoat Pond Wildlife Sanctuary in Spencer, in collaboration with the town, state agencies, and the Greater Worcester Land Trust, creating a total land area of 400 acres. Tree barriers between smaller fields are being removed to create larger swaths of grassland. And at Arcadia in Easthampton and Allens Pond in Dartmouth, grasslands that were nurtured from bare soil to mature fields are maturing and meadowlarks and bobolinks are beginning to return.

Private landowners, communities, and land trusts

are asking what they can do, according to Jeff Collins, director of Mass Audubon's Ecological Extension Service. Collins recently helped Worcester transform a 35-acre former landfill into grassland. In the second full year after restoration in late July, two male grasshopper sparrows were reported on the site.

"There was no evidence of nesting," says Collins, "but it was certainly encouraging that they were in the neighborhood."

Gayle Goddard-Taylor is a field editor for Sanctuary magazine.

Warbler Hollow

The best five-minute walk you can take

by Joe Choiniere

Warbler Hollow was once a place that needed a name. By place I mean a small but important location. This was a birding mini-destination at Wachusett Meadow Wildlife Sanctuary that was almost entirely visible from a single vantage point. By naming it I envisioned the practice of nature writer Edwin Way Teale who gave small places names that would engender an affinity—somewhere to send visitors looking for birds.

The name Warbler Hollow was certainly easier to fit on a trail map and in speech sounded better than something like "the wet dingle turned orchard just down the road with seepy stream flow and multiple trees and shrubs and full of birds." It was a haunt that I walked past almost daily and soon noticed the nexus of bird activity there during all seasons.

The Hollow lies in low ground between two stone walls and borders Goodnow Road, an old stagecoach route turned trail. Its 220-foot width is close enough to the equal side of a square acre to invite speculation as to its original layout, but it appears to be soggy ground walled off from adjacent upland fields or pastures. The land runs more than 220 feet south, further dispersing the square-acre idea, crossing another trail before descending into the huge marsh meadow that is the namesake for the wildlife sanctuary. Its low point is traversed by a barely visible trace of stream flow, often identified in dry spells by its importance to birds.

And the birds: hairy and downy woodpeckers own it all of January, arguing amongst the dying limbs of butternut trees. February brings the first woodcocks, which will soon begin their courtship with flights launched directly from patches of open sod along the nearby curves of shrubs and trees. By March black-capped chickadees will be somewhere within. Palm warblers and yellow-bellied sapsuckers define April, and by May the full wave of warblers move through in all their species diversity, some of them settling down



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Common yellowthroat

to nesting in June with American redstarts, blue-winged warblers, and even black-and-whites. And so on until the inevitable arrival of a northern shrike in December wraps around the New Year corner.

I can think of few sanctuary birds that have not been sighted in the Hollow. And a few have been sighted there only, most namely a Lawrence's warbler discovered by Fran McMenemy during an annual breeding bird census—then this bird remained for the

summer. Since the Lawrence's is a hybrid between the golden-winged and blue-winged warbler, I thought it metaphorical, at the time, for the ongoing decline and homogenization of open habitats, the fall of the diversity of openness, pushing the two species into closer proximity resulting in hybridization.

Warbler Hollow is a combination as well—some as-yet-unfathomable force blends tree, shrub, vine, and sod that contribute to a diversity of cover seeming almost fractal in its variety. I can't say that we foster this phenomenon; we have at times worried that the Hollow is growing in, becoming too much one way or the other. We have even done a bit of managing—mowing, grazing, girdling trees, and removing invasives; but one never feels that the management engaged in really has a predictable result. I have found often that former orchards, likely grazed for many years around the fruit trees, develop a bit of resistance to being overtaken by succession.

But whatever composes Warbler Hollow, this is the best five-minute walk you can take.

In the face of important management needed for open habitat nesting birds, I am confronted with a point to ponder. What makes a site nexus like Warbler Hollow? Can we find others? And having found such a place, can we name and preserve it, and if needed manage it well? We have the preservation part down; the management element remains to be seen. But naming is the first step. Warbler Hollow keeps me ever aware that nature the artist can paint a seemingly commonplace scene and imbue it with a spark that we all can sense yet not explain.

What would happen to birds without Warbler Hollows?

Joe Choiniere is property manager at Wachusett Meadow and Broad Meadow Brook wildlife sanctuaries.

Where Sea Meets the Shore

Various economic and recreational activities have wreaked havoc on coastal areas, one of the most biologically diverse ecosystems on earth.

by Wayne Petersen

From the perspective of an ornithologist charged with preserving, protecting, and educating the public about the birdlife of the Commonwealth of Massachusetts, the conservation of coastal and marine environments is critically important to maintain a robust and intact portfolio of bird species indigenous not only to Massachusetts but to the entire Atlantic Coast. Coastal habitats, including everything from estuaries and barrier beaches to salt marshes and mudflats, are vital to the survival of breeding, migratory, and wintering bird populations up and down the Atlantic Flyway.

And no less significant are the ocean waters off the coast. Together these coastal and marine habitats annually host and sustain the greatest diversity of bird species to be found anywhere on the eastern seaboard; yet, at the same time, they face some of the greatest environmental challenges to be found anywhere. The list of threats facing these environments runs from anthropogenic impacts to biological and climate-caused phenomena. The cumulative impact of many factors makes responsible stewardship of coastal environments among the most challenging issues facing politicians, scientists, and the general public in the current millennium.

As recently as 12,000 years ago, the continental shelf represented the terrestrial borders of North America. Following the retreat of the great Wisconsin ice sheet, the continental shelf was subsumed by glacial meltwater, today leaving the eastern and western margins of the continent bounded by ocean. As a result of this immersion, North America's coastlines represent the interface between land and sea—an immense boundary region crucial to humankind's survival and rich in biodiversity. As the conservation movement in this country gained momentum, coastal environments increasingly came to the forefront as ecological treasures and unfortunately all too frequently became the battleground for intense struggles on behalf of habitat and specific species protection efforts.

It is generally acknowledged that birds are litmus for registering environmental quality. Accordingly, by providing appropriate stewardship for coastal and marine habitats, we will likely be benefiting not only bird pop-



Little Harbor, Wareham

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ulations but also biodiversity in its entirety. A coastal environment may be likened to a grand theatrical performance—with a complex of key players, i.e., species, during which each integral player is supported by a cast of other organisms. With appropriate stewardship of the key species, the supporting cast and overall functioning of the ecosystem will continue to flourish. Since each primary coastal habitat has its own signature species, if sufficient conservation energy is focused on promoting the welfare of these signature species, an entire suite of other organisms—i.e., “supporting characters”—should benefit from our efforts. Several scenarios can illustrate this point.

Since the 1960s and 1970s, barrier beaches have been sites of controversy and conflict among the protectors of coastal nesting and migratory birds, the development community, and the beach-using public. Species of beach-nesting birds such as the piping plover, American oystercatcher, and least tern are signature species that require broad sandy beaches for nesting. Accordingly, off-road-vehicle users, surf fishermen, dog walkers, joggers, volleyball and Frisbee players, sunbathers, and other beachgoers all represent potential threats to these species. For nearly a half-century, federal and state agencies, community beach managers, nonprofit organizations such as Mass Audubon, and others concerned about coastal conservation have endeavored to broker

compromises for sometimes bitter controversies between one or another of these entities. Some of these compromises have achieved laudable success in the arena of bird conservation.

For example, as a result of intensive barrier beach management in Massachusetts, the number of nesting pairs of the federally threatened piping plover has gone from 126 pairs in 1987 to approximately 730 pairs in 2012. The recovery of these previously declining coastal breeders in Massachusetts offers living proof that with focused legislative effort and targeted educational outreach, bird conservation and habitat protection efforts can be successful. Equally important as the increase in these signature species is the fact that with improved barrier beach management other species are benefiting as well.

Every year beginning in early July, thousands of migratory shorebirds including plovers and sandpipers begin heading south from their Arctic and sub-Arctic tundra nesting areas in Canada and Alaska. Approximately 30 species stop annually to forage on coastal mudflats in Massachusetts and roost on adjacent barrier beaches during high tide. Without the combination of exposed, food-rich mudflats at low tide and relatively undisturbed beaches for resting at high tide, these specialized coastal migrants would face significantly heightened challenges during their quest to obtain sufficient nutrients to fuel their lengthy autumn migrations to Central and South America. It is the intercontinental scope of the shorebird life cycle that highlights the importance of sustaining our efforts to keep tidal flats pollution free and barrier beaches responsibly regulated in order to ensure that these transhemispheric migrations will continue in perpetuity.

In addition to protecting mudflats, which provide feeding grounds for so many coastal bird species, conservation efforts must also concentrate on the nutrients to sustain the invertebrates living in these mudflats. Just as a garden or agricultural field requires nutrients to sustain a healthy crop, nutrients are needed to sustain the marine worms, tiny crustaceans, and small mollusks that are the preferred food of so many shorebird species. In large part these nutrients emanate from coastal salt marshes.

Research has revealed that coastal salt marshes are among the most productive habitats on earth. A healthy salt marsh produces on average nearly ten tons of organic matter per acre per year, far and away exceeding productivity on any of the world's richest agricultural landscapes. In acknowledging the significance of salt marshes to a plethora of biological organisms, identifying and protecting the signature species of these habitats becomes a priority.

In Massachusetts the list of signature salt marsh species includes clapper rail, willet, saltmarsh sparrow, and seaside sparrow. Of these, arguably none is more important than the saltmarsh sparrow. The world's entire breeding population of this obscure salt marsh denizen is concentrated between Maine

and Virginia, thus making Massachusetts and its extensive salt marshes extremely critical to the survival of this specialized little bird. If we can successfully protect, manage, and maintain healthy salt marshes and their attendant saltmarsh sparrows, evidence suggests that most other salt marsh-dependent species will prosper as well.

Unfortunately, one of the greatest threats potentially facing the future of the saltmarsh sparrow is the specter of sea-level rise. Climate change is already producing measurable increases in the mean height of sea level in some regions including in Massachusetts. Since saltmarsh sparrows ordinarily place their nests barely above the high-water mark of normal high tides, when storm tides or extra high spring tides flood coastal salt marshes, saltmarsh sparrows are increasingly sustaining significant mortality. With the promise of increasingly high tides on a regular basis in the future, in conjunction with more frequent high-energy storms, the long-term prognosis for this specialized species is not favorable.

Of equally great consequence could be the future impact of sea-level rise on humans since coastal barrier beaches and salt marshes are together among the habitats serving as our continent's first line of defense against the ocean's impacts on the land. Thoughtful concern about the future of signature species utilizing barrier beaches and salt marshes is tantamount to addressing concerns about our own survival in the face of a rapidly changing climate.

In the estuaries of large rivers such as the Merrimack, Taunton, and Westport, or in extensive and relatively shallow bays such as those in Duxbury or Pleasant Bay on Cape Cod, large numbers of geese and other waterfowl regularly congregate in winter or use those waters during migratory staging periods in early spring. At some of these locations, the waterfowl gatherings are largely unaffected by humans for most of the season whereas in other areas they can be disturbed by hunters,



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Red knot and short-billed dowitcher

reducing survival and productivity, even for individuals that are not actually shot.

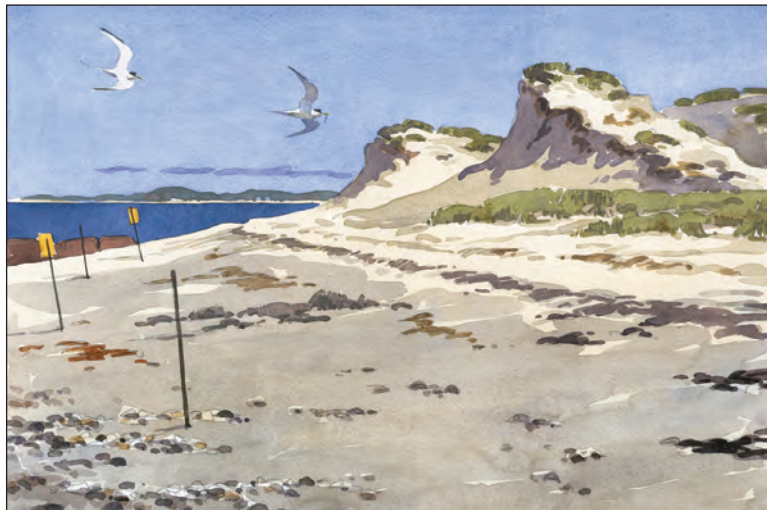
Perhaps of greater concern in these coastal waters are threats caused by spilled oil and contamination from chemicals such as the PCBs (polychlorinated biphenyls) that once plagued New Bedford Harbor. Blights affecting sea grasses such as the eelgrass (*Zostera marina*) that is so important in the winter diet of brant, or virulent infections like the “Wellfleet Virus,” which in recent years has caused the death of hundreds of common eiders in Wellfleet Bay, are also a problem. Though some of these are natural biological events and not anthropogenic in nature, they are nonetheless factors in coastal areas that can have serious consequences for bird species utilizing these habitats.

Even events that on the surface are perceived as benign or even positive can sometimes produce results with unexpected consequences to birds. Newburyport Harbor, the estuary of the Merrimack River, has for many years been a premier locality in Massachusetts for concentrating waterfowl such as the American black duck, greater scaup, and common goldeneye; shorebirds including lesser yellowlegs, semipalmated sandpipers, and short-billed dowitchers; and gulls such as the Bonaparte’s, black-headed, and Iceland.

After many years of tracking the numbers, it has become apparent that there has been a decline in the numbers of nearly all of these species at this site. Although several of these birds are also showing long-term overall population declines, the collective impact of cleaning up the Merrimack River and the construction of a sewage treatment plant on the river’s edge in Newburyport (both of which may actually be contributing to the decline in productivity of the harbor’s benthic community), and the substantial increase in foot traffic on the famous Joppa Flats for purposes of fly fishing along the river channel’s edge, have likely combined to diminish the number of birds using this once bird-populous estuary.

Human-induced or natural events can also cause rapid increases in waterbird populations, which are not always perceived as positive by those with stakeholdings in the affected areas. For instance, in Chatham concern has been registered over an increasing common eider population at the mouth of Pleasant Bay following a series of recent breaches of adjacent North Beach. These breaches have apparently increased the number of blue mussels present in the shallow bay waters, which in turn has increased the number of wintering eiders concentrated there. These events have not gone unnoticed by Chatham shellfishers who fear that their take could be in jeopardy from the growing eider populations. Even in seemingly secure estuarine waters, habitat protection constantly requires balancing between what is good for humans and what is good for birds.

Of all the coastal and marine habitats, none is more difficult to monitor or more challenging to protect than offshore waters. For reasons complex and somewhat



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Least terns at Town Neck Beach, Sandwich

perverse, humankind seemingly embraces the notion that the oceans of the world are giant sinks into which all manner of refuse and pernicious material can be endlessly deposited. There are others who adhere to the belief that there is apparently no limit to what, or how much, we can extract from the sea before these systems begin to collapse. And there are even some who fail to acknowledge that human beings have already extracted too many fish from the sea, killed too many whales, and possibly extracted too much oil from the seafloor.

Yet, who can forget or ignore such iconic reminders of the hazards associated with marine industry as the oil spills from the *Argo Merchant*, *Exxon Valdez*, and *Deepwater Horizon*, to name a few? And why are we not more concerned about the horrors being caused by the Great Pacific Garbage Patch—that massive accumulation of drift plastic in the North Pacific Subtropical Gyre, twice the area of Texas, that is causing the death by ingestion of countless numbers of young albatrosses on the island of Midway and elsewhere in the Pacific region? These are global habitat issues, and much like avian losses caused by longline fishing, or seabird mortality resulting from the gillnet fishery, they are concerns that need to be taken seriously by everyone concerned about the conservation of coastal and marine habitats.

Safeguarding and providing thoughtful stewardship of our nation’s coastal and offshore marine habitats should be of concern to every American, not merely individuals focused on achieving personal gain or interested in developing coastal environments exclusively for personal profit. Likewise, the exploitation of marine resources at the long-term expense of the ocean ecosystem should not go unregulated. If we hope to maintain a complete portfolio of earth’s biodiversity, preservation of the interface between coastal and marine habitats must remain a priority.

Wayne Petersen is director of the Important Bird Areas program for Mass Audubon.

The Other End of Migration

To keep neotropical migrant birds returning north each spring requires lots of cooperation and coordination with our Latin American neighbors.

by Nini Bloch

The population of the federally endangered roseate tern has fluctuated wildly over the past 150 years, first because of plume hunting, then because of predation and possible susceptibility to toxic chemicals, as well as losing ground, literally, to expanding gull populations. Today, most of the upwards of 1,600 pairs that breed in Massachusetts nest on one island—Bird Island—off Marion, along with more aggressive common terns that are there helping to ward off gulls and other predators.

At summer's end, the roseate terns wing south to coastal wintering grounds on the Atlantic from Colombia to Brazil—where they face another potential threat: humans who may hunt the birds for food and likely caused major declines in the 1960s and '70s. Every fall, millions of these neotropical migrants fly to winter homes in Mexico, the Caribbean, and Central and South America where in many cases habitat is disappearing or changing faster than the birds can adapt.

According to Mass Audubon's 2011 *State of the Birds*, more than a third of all the state's birds are suffering significant declines. The most vulnerable appear to be ground nesters (resulting in part from increased predation from feral cats and raccoons), birds that eat insects on the fly, and grassland, shrubland, and freshwater marsh species that are directly losing habitat. Species that live in cities, suburbs, and forests, by and large, are doing well.

The real test of conservation is catching declines among common, widely dispersed species, for example the wood thrush, which has been losing ground over the last 30 years, probably primarily a consequence of forest destruction both here and in Mesoamerica where it



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Yellow-breasted chat at a banding station in the tropics

overwinters. Helping species such as the roseate tern and the wood thrush that face human-made perils at both ends of their migration routes is a challenge that we have only relatively recently begun to appreciate and address.

First, however, there has to be both the recognition that many neotropical migrants' populations are declining and the will to save the birds and their habitat. Certainly, that intent is expressed in such documents as the Convention on Migratory Species (CMS) and the US Endangered Species Act. In 2000, the United States took a step further when it passed the Neotropical Migrant Bird Conservation Act (NMBCA) that specified annual funding of roughly \$5 to \$6.5 million.

The act attributes population declines primarily to "habitat loss and degradation (including pollution and contamination) across the species' range" and notes that increased coordination will strengthen and enhance existing efforts to conserve migratory birds.

Not only did the act provide a legal framework for action, but it also required that 75 percent of the money be spent on projects south of the border and that each project raise at least 75 percent of its funds from elsewhere (national governments, NGOs, landowners, business people) in matching grants. To date, the US Fish and Wildlife Service, which administers the NMBCA, has awarded \$43 million in support of 395 projects in 35 countries that have impacted more than 11,600 square miles of migratory bird habitat. Partners have contributed another \$166 million to these efforts.

While the NMBCA is not the only funding source for migrant bird conservation, its leveraging mechanism has helped form alliances that work. For example, with NMBCA seed money in 2003, Birdlife International

partnered with one bird conservation group each from Brazil, Argentina, Paraguay, and Uruguay to create the Southern Cone Grasslands Alliance to focus conservation efforts in the 400,000-square-mile pampas, which is vital to hundreds of resident and migrant bird species, including the Massachusetts-endangered upland sand-piper. In a vast area that is 98 percent privately owned, forging alliances with landowners, cattle ranchers, and rice farmers has been a major part of the project's success. Such cooperation and coordination between NGOs, local communities, and various levels of government lie at the heart of neotropical migrant bird conservation.

One of the huge hurdles in migrant bird conservation is simply figuring out where each species goes and evaluating those habitats and the threats, if any, that a species faces. Only then can countries, citizens, and NGOs make plans and take action. One of the major players for this sort of research is Birdlife International, which has spearheaded national efforts to identify and assess Important Bird Areas (IBAs) in countries throughout Latin America and the Caribbean. The Southern Cone Grasslands Alliance, for example, has recognized 61 IBAs (and counting). Grouping the results by region or continent helps give an overview of the status of habitats and pinpoint those areas in greatest need.

Essential to the success of this hemisphere-wide effort is sharing a staggering amount of information. To provide a forum for exchanging research, the Western Hemisphere Migratory Species Initiative maintains the WHMSI Pathway, an online searchable database of migratory species research (birds, bats, and so on) that includes contacts, funders, project descriptions, and results. The organization highlights best lessons learned, innovative eco-initiatives, and efficient monitoring and evaluation techniques.

Over the past half-century, we've made great strides in figuring out how to aid bird species in North America. The US Fish and Wildlife Service, the Forests and Forestry office, and many NGOs have invested heavily in training up-and-coming Latin American ornithologists and conservationists so that they can apply many of those same research techniques (breeding bird surveys, mist netting, and banding) and conservation strategies (land easements) in Latin America.

The simplest conservation strategy is to gain protection for a large parcel of intact habitat. Founded in 1984, the Western Hemisphere Shorebird Reserve Network (WHSRN) has single-mindedly focused on identifying the most strategic sites for shorebirds throughout their migratory routes and sought commitment from governments or private owners to make shorebird conservation a priority. Its network currently monitors 87 sites in thirteen countries. *Marismas Nacionales*, on Mexico's Pacific coast, offers 200,000 shorebirds annually a vast mosaic of wetland habitats in a region of river deltas. Of the 446 bird species reported here, 38 are shorebird species. One such shorebird is the willet, which has benefited from support at the southern end of its migra-



© DAVID LARSON

Ovenbird on its winter grounds

tion route. Once hunted to near extinction for eggs and meat in New England, it has rebounded over the past 30 years but requires continued vigilance from conservationists to survive.

Sometimes a government has set aside the land, but it ends up in fact to be a "paper park" that still needs protection, planning, and management. In Nicaragua in 2005, with seed money from an NMBCA grant, the British NGO Fauna & Flora International formed a consortium that turned Maderas Volcano Natural Reserve into a protected and fiscally sustainable birding hot spot. Sitting in Lake Nicaragua, the island reserve is two volcanoes connected by a wetland isthmus with incredible diversity in a series of forest habitats.

From the start, the consortium involved the community in hiring residents as park rangers. With financing from USAID, the Darwin Initiative published a bird checklist of 148 species (and counting) with such rarities as the globally threatened three-wattled bellbird and familiar Massachusetts forest species including the wood thrush, indigo bunting, rose-breasted grosbeak, Baltimore oriole, and nine warblers. Most of these species are in trouble here. The region already attracted mountain climbers, but with 20 natural history guides certified by the Nicaraguan Institute of Tourism bird ecotourism blossomed. Today, 40,000 visitors annually visit this stunning island oasis, which in 2010 was designated a UNESCO Biosphere Reserve.

Many neotropical migrants are forest dwellers whose winter habitat has been degraded, fragmented, or wholly destroyed. For example, while 80 percent of Brazil's Amazonian forest remains, 93 percent of its Atlantic rain forest is gone. To provide habitat for these species usually takes some combination of land purchase, procuring easements from landowners to create corridors between fragments, and restoring degraded habitat. Although Paraguay had designated San Rafael, a rare parcel of Atlantic forest, a national park 20 years ago, it



American redstart, a neotropical migrant, in southern climes

was subject to the encroachments of 55 landlords until a number of global players secured funding to buy pieces of it in a series of sales. As a result, a large portion of the park is protected, and part of the park is held in “condominium” with the indigenous Mbyá Giaraní community.

Restoring forest is slow and labor-intensive and won’t fill in vast stretches of forest converted to pasture or plantations, but linking forest fragments through corridors across private land can work if species will venture out of deep forest. Certainly, planting “hedgerows” of fast-growing species like alder in cattle pastures can offer shade for livestock, protect streams, and promote pasture growth while giving forest birds a corridor to other forest fragments.

One of the most successful models for “augmenting” forest fragments, however, is to employ the traditional architecture of shade-grown coffee farms to mimic the structure and function of real forest. Indigenous coffee growers have applied the same techniques to growing coffee that they used to grow cacao: shading the plants under a canopy of up to 40 different tree species, including fruit and nitrogen-fixing trees. These plantations require little fertilizer, weeding, and watering, though the coffee plants need individual pruning and harvesting, which offers seasonal work for local labor.

The result is a kind of ersatz forest, and scientific results suggest that the majority of forest birds will utilize this habitat. The same holds for traditional cacao farms and may apply as well to cardamom and vanilla plantations. Many neotropical migrant species in decline frequent these coffee and cacao farms: Baltimore orioles, Tennessee and Cape May warblers, wood thrushes, and scarlet tanagers, to name a few. On at least one coffee farm, the birds are numerous and diverse enough to spawn a sideline in bird tourism.

Since Latin America and the Caribbean grow two-thirds of the world’s coffee, and, according to the Smithsonian’s Migratory Bird Center (SMBC), it is

the “leading source of foreign exchange,” over the past 40 years coffee cultivation has undergone a radical shift from a small-scale, forest-based crop to agro-industrial production. Large landholders favor less flavorful and hardy, but sun-tolerant, high-yield plants they can grow on mega-plantations with abundant herbicides, pesticides, fertilizers, and year-round labor. Almost 70 percent of coffee cropland in Colombia has undergone this conversion. The conversion has destroyed thousands of hectares of forest habitat, and resident and neotropical migrant birds have suffered the consequences, with 94 to 97 percent fewer species found on sun-grown than shade-grown coffee plantations.

The good news is that coffee production remains a family-based, small-farm operation. Traditionally managed coffee plantations support more bird species (150) than any other cropland. Today these coffee plantation refugia cover 2.7 million hectares of critical forest bird habitat from Mexico to Colombia, often where there are no other forest reserves. The best way to maintain and expand traditional coffee farms is to make them financially successful. And, since Americans drink a third of the world’s coffee, the best place to start is here.

The Smithsonian Migratory Bird Center, which has generated much of the research on coffee farms, took up the challenge, developing the only 100 percent organic shade-grown coffee certification (Bird Friendly® Coffee), and entrepreneur Bill Wilson joined forces with ornithologist Kenn Kaufman as advisor to market the certified coffee under the label Birds & Beans (birdsandbeans.com). In four years Wilson has expanded his coffee supply to farms in eight countries and sells product in 26 states and in such chains as Whole Foods. He donates 20 percent of the proceeds to conservation partners and the SMBC.

Wilson is investigating selling cacao as well. He feels his message that citizens can make a difference “and it’s fun” has resonance.

Overall news about bird populations is sobering. Many species, even common ones, continue to decline or are showing signs of vulnerability. Are all these conservation efforts doing any good? To get hard data, in 2013 the NMBCA program is focusing 25 to 30 percent of its funding, its website says, “on a group of particularly threatened neotropical migratory birds with the goal of achieving a measurable biological improvement in these species over the next 5 to 10 years. Neotropical Migrant Bird Conservation Act scientists hope this experiment will provide a clearer method of evaluating the program’s successes and failures and offer potential funders the chance to invest their conservation dollars more strategically.

In the meantime, the fact that neotropical migrants are resilient enough to flourish in such human-managed habitats as family coffee and cacao farms gives us hope that they will keep returning to breed here for years to come.

Nini Bloch is a writer who covers field science, environmental topics, and animal behavior.

Central American Conservation Connection

Saving birds south of the border

by Ann Prince

For 28 years, Mass Audubon has fostered a close collaboration with conservation partners in Belize to save habitat for birds, some of which migrate north to New England.

"All the efforts in Belize have paid off," says Mass Audubon Joppa Flats Sanctuary Director Bill Gette. "The endeavor in the late eighties by Mass Audubon to help set aside large tracts of land there has meant that birds have benefited significantly."

In the late eighties, Mass Audubon helped found Programme for Belize (Pfb) and spearheaded protection of 400 square miles of critical habitat in Belize to preserve our migratory passerines on their winter grounds. The tract, which is roughly the size of Cape Cod, is now known as the Rio Bravo Conservation and Management Area. The overall implications extend far beyond the forward-thinking act of land acquisition and establishment of an environmental organization and reserve in the tropics.

Mass Audubon has remained involved, working with Belizeans at Rio Bravo in northwestern Belize for all of the years following. Two lodges have been established on the reserve, Hill Bank Ecolodge and Research Center by the New River Lagoon and La Milpa Ecolodge and Research Center near one of the largest sites of the ancient Maya.

Renowned bird artist David Sibley portrayed the experience there: "At La Milpa, you don't *go* birding; you *are* birding at every moment. From the instant you get up in the comfort of your cabin, while you walk to the open air dining area, and when you explore the surrounding forest—you are constantly surrounded by birds."



© DAVID SIBLEY

Black-cowled oriole painted in Belize

To visitors from the north, some birds are familiar such as Baltimore orioles, scarlet tanagers, gray catbirds, and numerous warblers that we see in Massachusetts in the summer, while others seem exotic such as red-capped manakins, black-cowled orioles, keel-billed toucans, and great curassows.

"Outside of conservation areas like Rio Bravo," says Bill Gette, "there are species that have become quite rare." These include the aplomado falcon, king vulture, ocellated turkey, black guan, and red-billed pigeon.

Through other projects staff have undertaken, Mass Audubon has extended our positive collaboration with conservationists native to Belize way beyond the borders of Rio Bravo to other parts of the country. For example, Mass Audubon's Belize Conservation Fund provides support for habitat and wildlife protection

implemented by TIDE (Toledo Institute for Development and Environment) in southern Belize.

In addition to managing the 160-square-mile Port Honduras Reserve for the government of Belize, TIDE manages the Payne's Creek National Park since it contains valuable pine/savannah habitat for the critically endangered yellow-headed parrot. As well as safeguarding the park, active management is required to protect this parrot because of poaching.

In 2011, TIDE staff initiated a collaborative effort with the US Fish and Wildlife Service, starting a nest box project for this rare parrot. Last year, yellow-headed parrots used 3 of the 10 nest boxes erected and three eggs hatched, an improvement on the 10 percent survival rate for natural nests. Outside the Payne's Creek National Park, 90 percent of the chicks are illegally poached, underscoring the necessity to enhance breeding success.

Additional participation by Mass Audubon in Belize includes bird banding workshops and the Certificate Program in Birding Ecology led by staff from Mass Audubon's Joppa Flats Education Center. This will be the fourth year for the program, during which about 20 Belizean naturalist/guides spend six days learning about many aspects of the nation's avian fauna, as well as how to lead travelers with enhanced self-confidence. To date, 57 individuals have completed the program. "Training these guides helps improve ecotourism in Belize and attracts more travelers," says Bill Gette. "Many of the guides have gone on to take leadership roles at lodges and conservation organizations within their home county of Belize."

In February of 2011, Mass Audubon Visitor Experience Coordinator Lucy Gertz spent six days taking in the beauty of Belize for the first time as a regular tourist would. Then, working with Programme for Belize staff, she created a plan to provide ecotourists with more ways to enjoy their visit and learn through a variety of resources including self-guided trails, interpretive and identification signage, museum displays, and hands-on children's activities.

Mass Audubon's ongoing friendship and cooperation with Belizean conservationists is rewarding and no doubt invaluable with the long-term goal to preserve and manage tropical habitat for birds and other species.

Ann Prince is associate editor of Sanctuary.

WHAT YOU CAN DO



© DAVID LARSON

Northern jacana

Donate to Mass Audubon's Belize Conservation Fund. You can help provide a vital source of funding for Mass Audubon's work in Belize, especially efforts to support our conservation partnership organizations there such as Programme for Belize and the Toledo Institute for Development and the Environment. Contributions can be sent to: Belize Conservation Fund, c/o Mass Audubon, 208 South Great Road, Lincoln, MA 01773. Or donate online: www.massaudubon.org/Belize/our_work.php. **Join a Birding Trip to Belize.** Mass Audubon runs at least one birding tour to Belize each year. Trips to Hill Bank and La Milpa ecolodges can also be arranged, and private customized tours are available: www.massaudubon.org/travel; 800-289-9504. Email: Travel@massaudubon.org

Centennial Milestone for Migratory Bird Protection

Beginning in March some of our best-known, most-loved migratory birds will arrive in Massachusetts as harbingers of spring. March is also the month when, one hundred years ago, the Weeks-McLean Act, or Migratory Bird Act, passed—the first legislation in the nation to place migrants under federal jurisdiction and prohibit their killing without the permission of the US government.

Pre-spring arrivals that can move freely and safely from state to state thanks to such early 19th-century advocacy initiatives—sandy-colored piping plovers to beaches, winsome red-winged blackbirds to marshland, and melodious song sparrows to yards and open spaces—are just a few of the many shorebirds, dooryard birds, and other species that still benefit from the efforts begun by pioneering conservationists.

"The Migratory Bird Act was primary legislation protecting native birds in the United States," says Advocacy Director Jack Clarke, "and one of the country's earliest environmental laws." Without this and subsequent protections put into

place at the outset of the 1900s, other avian species would undoubtedly have been subjected to the same fate as the passenger pigeon and Carolina parakeet, whose species no longer had representative wild individuals as of 1900 and 1904, respectively, leading ultimately to their extinction.

Mass Audubon was one the first players promoting legislation to save birds, so it was fitting that the Migratory Bird Act had its origins in Massachusetts. In 1908 Charles H. Hudson, a farmer in Needham Heights, wrote to his Congressional representative, John Wingate Weeks, imploring him to sponsor "a national law put on all kinds of birds in every State in the country, as the gunners are shooting our birds that Nature put here...."

Five years in the making, the 1913 bill—introduced by Representative John W. Weeks of Massachusetts and Senator George P. McLean of Connecticut—set the stage for national bird conservation on a scale that changed the path of history for the good of our priceless avian life.

AP

Where Birds Are and Why

A zoogeographic primer

by Chris Leahy

The questions of where different bird species live and *why* encompass a large portion of our fascination with birdlife; they are also critical in figuring out how we might manage our overburdened planet in a way that allows most of the ten thousand bird species now living to survive.

If for example we wish to study, protect, or merely tick off on our life lists a purple sandpiper, we must at a minimum find out which continent(s) it inhabits; what sort of living conditions it prefers (wet or dry, highland or lowland, forest or desert); and during what season and time of day we are most likely to encounter one. These are all essentially matters of place (and also time), but they are also inextricably connected to why this species lives where it does, why in short a purple sandpiper became a purple sandpiper. What follows are some of the ways science has devised to talk about these matters—starting with the big picture.

The Zoogeographic Regions. The first scientists to consider animal distribution in the mid-19th century noticed that regions of the globe contained characteristic species assemblages. They recognized, for example, that the toucans and many other bird families occurred only in the New World Tropics and that similar characterizations could be made about other parts of the globe; and they drew lines to define six major regions: the Nearctic, Neotropical, Palearctic, Ethiopian, Oriental, and Australasian. Of course, these determinations depended on an accurate classification system. One had to recognize that the African hornbills, though superficially similar to the Neotropical toucans, were not in fact closely related. Asking why these distinctive biogeographical communities exist and how they might have come into being, Charles Darwin and Alfred Russel Wallace correctly surmised that the geographical isolation of the continents, as well as that of much smaller islands, resulting from continental drift, ecological barriers, and other factors, promoted the evolution of new species.

By determining areas within the larger regions where certain bird families showed the greatest

diversity, ornithologists in the 20th century postulated where these groups originated and then dispersed, sometimes to other regions. The “dispersal center” for the hummingbird family, for example, is located in the northern Andes where there are over 200 species; as birders look for hummingbirds to the North or South of this center of diversity, they find fewer and fewer species until they reach Patagonia and New England, each with but a single hummer.

Range. While the zoogeographic regions allow us to see distribution patterns of bird families and species, range maps serve to show the geographic limits within which a particular species of bird normally lives its life. It may be divided into several standard subsets: the total area where a given species normally occurs; the area in which it is found while breeding; the extent of its wintering grounds; and, in the case of long-distance migrants, the space through which it migrates, but neither breeds nor winters. It is a broad strictly geographical concept that fails to account for the much narrower habitats to which most species are restricted within the boundaries of their range, i.e., for most species there will be many places within their range where they don’t normally live. It also tells us nothing about ecological or evolutionary relationships. At any given point on the earth’s landmasses (except a few extremities), the ranges of



© STEVE BORICHEVSKY

Purple sandpipers at Eastern Point, Gloucester

hundreds of bird species overlap yet no two ranges are exactly alike.

Natural Communities and Biomes. A natural community is an assemblage of organisms found together often enough to give them a distinct collective identity. They are typically confined to the ranges of their constituent species. The salt marsh community of northeastern North America is characterized by species of *Spartina* grasses and salt-tolerant shrubs as its dominant plant species but also includes many other characteristic plants and animals. Some of these may be endemic to this community, e.g., the salt marsh sparrow, which nests nowhere else, while others, e.g., greater yellowlegs, may be characteristic of salt marshes, but also occur in other community types. It is also possible to talk about bird communities, e.g., the bitterns, rails, and other birds that share the resources of a freshwater marsh community and are rarely found elsewhere.

A biome is a natural community writ large as it were. The Coniferous Forest (or “Spruce-Moose”) Biome stretches around the top of the globe and includes the Siberian Taiga as well as the equivalent community that covers much of Canada. Unlike local communities, the biomes in different regions often have different, though equivalent species: Siberian pine vs. jack pine; Siberian jay vs. gray jay, etc.

Ecosystems. This designation adds in the nonorganic elements of an environment (rocks, water, temperature, etc.) to define a functional unit that encompasses physical processes together with the collective interaction of plant and animal communities. The emphasis is on the “system.” An estuarine ecosystem combines the flow and water chemistry of a river, oceanic tides, the invertebrate communities of mudflats, the salt marsh bird community, etc. An ecosystem can be described at any scale from the global ecosystem to that of a tide pool.

Ecological Niche. This is not a finite place but more like an organism’s role: what it eats, where it nests, how it uses and modifies both living and non-living entities with which it comes in contact; in other words, the total combination of factors that allow an organism to occupy its place in nature. Each species’ niche is unique.

Latitudinal and Altitudinal Zones. These zones are another way to describe where birds and other life-forms live. Alexander von Humboldt (1769-1859) was the first to draw attention to certain similarities between moving northward (or southward) from the tropics to the poles and moving up the slopes of a high mountain. In both cases the temperature drops as the elevation/latitude rises and the vegetation and animal life change accordingly. It is not a perfect analogy, but one can, for example, note that as one approaches the tropics from the poles the vegetation climbs the mountains: at 70 degrees N, tundra occurs at sea level; but at 30 degrees N, it is not encountered below 10,000 feet. Black-throated green

warblers breed at sea level in New England but only in the mountains in the southern extremities of their range. The zones of latitude and altitude, like the separation of continents, create in effect isolating islands that promote speciation.

So what then is a Habitat? Habitat is the third person singular of a Latin verb meaning “He, she, or it dwells or lives in...” It refers to an ecological “place” as described from a specific organism’s point of view. On their wintering grounds, purple sandpipers prefer to dwell within (inhabit!) rocky marine shores. Of course, they also dwell within a zoogeographic region (the Holarctic); a range (High Arctic breeding grounds and northern shorelines on both sides of the Atlantic Ocean in winter); two natural communities (Arctic tundra and rocky intertidal zone), an altitudinal zone (sea level) and an ecological niche that includes the marine invertebrates it feeds on and the gyrfalcon that occasionally feeds upon it.

If we hear a lot more about range and habitat than about the other “places” where birds dwell, perhaps it is due in part to the growing population of birdwatchers who tend to be less interested in ecological relationships than in particular species and where to find them.

Chris Leahy holds the Gerard A. Bertrand Chair of Natural History and Field Ornithology at Mass Audubon.

Family Programs

BERKSHIRE SANCTUARIES

Lenox, 413-637-0320

Bluebird Nest Box Building Workshop

March 23—1:30-3 p.m.

Bat House Building Workshop

April 13—1:30-3 p.m.

Bird Banding Demonstration

April 6—10 a.m.-noon

Evening at the Beaver Ponds

April 24—6:30-8 p.m.

May 15—7-8:30 p.m.

BOSTON NATURE CENTER

Mattapan, 617-983-8500

The Art of Nature and the

Nature of Art

April 21—1-2:30 p.m.

BROAD MEADOW BROOK

Worcester, 508-753-6087

Pond Prowl at Sibley Farm

May 5—1-3 p.m.

BROADMOOR

South Natick, 508-655-2296

Frogs, Pollywogs, and Fairies:

Exploring a Vernal Pool

April 27, May 4—1-2:30 p.m.

Wild about Amphibians

May 18—1-2:30 p.m.

CONNECTICUT RIVER VALLEY

Easthampton, 413-584-3009

Turtle Day at Laughing Brook

May 25—10 a.m.-1 p.m.

DRUMLIN FARM

Lincoln, 781-259-2206

Bringing Up Baby

April 26—3:30-5 p.m.

FELIX NECK

Edgartown, 508-627-4850

Spring Equinox Yoga:

108 Sun Salutations

March 20—9-11 a.m.

IPSWICH RIVER

Topsfield, 978-887-9264

It's Big Night

April 6—6-8 p.m.

Audubon Nature Festival

June 2—10 a.m.-4 p.m.

JOPPA FLATS

Newburyport, 978-462-9998

Take a Walk on the Wild Side

Ducks and Geese:

April 7—9:30 a.m.-noon

Open to families

with children ages 7-11

STONY BROOK

Norfolk, 508-528-3140

Earth Day/Arbor Day

April 20—10 a.m.-3 p.m.

WACHUSETT MEADOW

Princeton, 978-464-2712

Sheep Shearing Open House

April 6—1-4 p.m.

WELLFLEET BAY

South Wellfleet, 508-349-2615

Call the individual sanctuaries for more information, fees, and to register.
For a full listing of Mass Audubon programs and events, visit our online catalog at
www.massaudubon.org/programs.

The Political Landscape Cosmopolitan Birds

by E. Heidi Ricci and Kim Peters

Which is better for birds: low-density suburban development, sometimes referred to as sprawl, or dense urban areas where most of the land has been altered for human use?

It may come as a surprise that for some species an urban environment may be better, and, on a larger scale, densely developed areas surrounded by patches of relatively undisturbed habitat actually benefit more species.

Any human development changes habitat and affects features that birds use for food, shelter, and nesting. And certainly, some hazards are more prevalent in cities. For instance, domestic cats and collisions with buildings, the greatest causes of bird mortality in the US, are both highest in urban areas. These factors result in hundreds of millions to over a billion birds killed each year.

Tall buildings with extensive amounts of glass and lighting have the highest collision risk, but any structure with glass, whether in the city, suburbs, or rural environment, can present deadly hazards. Birds can be confused by reflections or they often do not see the glass and fly into windows or other glass surfaces. Bright city lights can disorient birds that migrate at night. Some cities such as Boston reduce this risk during peak spring and fall migratory periods through voluntary Lights Out programs. The US Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) program recently began piloting a credit for Bird Collision Deterrence.

But in spite of all this, both urban and suburban developments do provide some advantages. Mass Audubon's *State of the Birds* report found that urban and suburban bird species, primarily residents, are likely to be stable or increasing in both abundance and distribution whereas many migratory species that depend on other habitats are in trouble. Some birds such as peregrine falcons have adapted to the urban environment and utilize building ledges and other structures as substitutes for the natural breeding habitat of cliff edges. In fact, of the 22 pairs of falcons breeding in Massachusetts, 14 are nesting on urban infrastructure.

Massachusetts has gained 10 species that live in urban or suburban environments over the past 60 years, many of them such as the red-bellied woodpecker, tufted titmouse, northern mockingbird, and northern cardinal, formerly restricted to more southerly ranges. The wealth of ber-



Red-bellied woodpecker

© JOHN HARRISON

ry-bearing shrubs and ample shelter and nesting locations in urban and suburban areas support healthy populations of many species.

Perhaps the most valuable factor to consider is that denser development occupies less land than more sprawling land use patterns. These areas meet human needs for jobs and housing, and allow for more sustainable living (in terms of energy consumption and CO₂ emissions), while preserving

neighboring intact blocks of forests and farmland for species that need large contiguous areas free of roads and predators such as skunks, raccoons, and domestic cats.

A recent study conducted in Brisbane, Australia, projected the effects of compact versus sprawling development on 36 species, and the results predicted that more species would be lost under the sprawl scenario. Studies in the Western US, published in *Landscape and Urban Planning*, have further shown that "exurban," or low-density, one- to ten-acre lot developments have negative consequences that rival those of typical suburban areas, negatively impacting woodland bird composition. Similarly, here in Massachusetts, even moderately developed areas (one house per one-half to four acres) have been shown to reduce numbers of long-distance migrants and forest-dependent species, as published in *Animal Conservation*. These results are thought-provoking and point out the need to consider the effects our land use choices have on avian life.

While many urban and suburban birds are flourishing across the Commonwealth, some common and widespread species such as the blue jay, eastern phoebe, song sparrow, and Baltimore oriole have been gradually declining over the past several decades. The reasons are not entirely clear, but there are some steps that you can take to make your neighborhood bird friendly, whether you live in the city, a suburb, or a small rural community.

- Support local planning and land conservation initiatives including the Community Preservation Act and Open Space Design zoning.
- Landscape with native plants that provide food, shelter, and nesting sites.
- Avoid the use of pesticides in your lawn and gardens.
- Keep cats indoors.
- Minimize the use of outdoor lighting and install shielded light fixtures that direct the light where it is most needed.

•Modify windows to make them more visible to birds—a variety of techniques are available including decals, tape, films, blinds, and awnings.

Refer to the following for more information.

State of the Birds: Documenting Changes in Massachusetts' Birdlife, www.massaudubon.org/StateoftheBirds

Bird-Friendly Building Design by the American Bird Conservancy and New York City Audubon, www.abc-

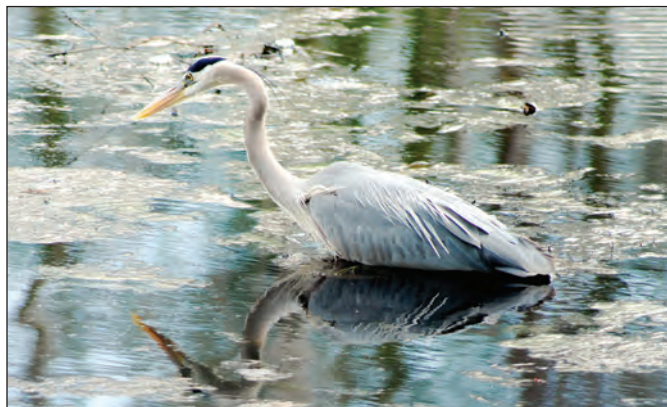
birds.org/newsandreports/BirdFriendlyBuildingDesign.pdf

LEED Pilot Credit 55: Bird Collision Deterrence: www.usgbc.org/ShowFile.aspx?DocumentID=10402

E. Heidi Ricci is Mass Audubon's senior policy analyst. Kim Peters is Mass Audubon's chief scientist and director of bird conservation.

Poetry

Edited by Susan Richmond



Vigilance

by bg Thurston

That day, I walked alone in swampy woods.
The loosestrife freed its spires of purple
while the cattails kept their velvety secrets.

Beneath the pond's shimmer, tadpoles swam,
changing into bigger prey. I knew down deep
the water snake slithered between slender stems.

In the dead pine, a blue heron sat statue-still,
leaning against a darkening sky. I moved closer,
until he became like you, all feathers and flight.

Originally published in *Tar River Poetry*

bg Thurston is the author of two poetry collections, Saving the Lamb and Nightwalking. She resides on a sheep farm in Massachusetts and teaches writing.

Nearing Winter

by Melissa Green

The phragmites have given in to the tempo of suffering,
stalks now sticks and feathers brushing on soft drums.

The marsh bells stay silent. Clouds hold dominion.
Beaches are running with votive lights carried out

on the tide, and threading through the bracken broken
on the other shore, cobwebs of mist knit skeins of fog

that hang under the low sky. Huddled on a
surf-soaked
railroad tie fallen frozen onto the road in raw
November,

I watch fragile hoarfrost form on salt hay and whiten
the sea moss. All the water birds have winged across
iced-

over pools. We are holy, in spite of ourselves, and can
make sacred a small place on earth, simply by the
mind's

companionship. Sleet reshapes me, conferring its
blessing,
the wind wandering above me, wondering what it has
done.

Melissa Green of Winthrop is the author of The Squanicook Eclogues, Fifty-Two, and the forthcoming The Linen Way.

Bird-a-thon Turns Thirty

by Ann Prince

It was May 1982 when the Phenomenal Five—a handful of formidable birders including then President Jerry Bertrand, Chris Leahy, Jim Baird, Dick Forster, and David Clapp—set out on Mass Audubon's first Bird-a-thon. One of the organizers of this bird-finding and fundraising mission was Chris Leahy, director of Conservation at the time, who loosely based the localized North Shore 24-hour outing on legendary ornithologist and “Dean of Birdwatching” Ludlow Griscom's Essex County Big Day event.

“I really like helping to pioneer new things,” says Chris Leahy, the Bertrand Chair of Natural History and Field Ornithology at Mass Audubon. “So that was part of the fun of the early Bird-a-thons. It was also just a great group of people, all of them passionate about birds.”

Mass Audubon's inaugural excursion, pursued with unflagging enthusiasm despite decidedly inclement weather, resulted in 173 species recorded, including a black-necked stilt, which had only been sighted in the state on ten previous occasions and whose normal range is west and south of Massachusetts. That start-up year, the weather-hardy birding crew raised a couple hundred dollars for bird conservation but more importantly started a tradition that has grown exponentially in the ensuing years.

The next year the Phenomenal Five were challenged by the Terrible Three—John Bradley, then director of Membership; Lee Malloy, also in membership at the time; and Betsy Watson, then director of Planned Giving—who were admittedly “untalented ornithologically” but who said that they would stop at nothing to bolster their tally. Thus, the Bird-a-thon officially became a showdown.

“Mass Audubon initiated its Bird-a-thon early on,” says Wayne Petersen, our director of the Important Bird Areas (IBA) program. “We got in to sponsoring competitive and successful fundraising Bird-a-thons in the early eighties about the same time that dance-a-thons, walk-a-thons, and a number of variations on this theme were also emerging.” In this case, supporters pledged a certain amount per every bird species counted.

Still true to its diverting yet ambitious beginnings, the Mass Audubon Bird-a-thon continues as a fun and rewarding way to raise funds each spring and a wonderful opportunity for friendly camaraderie and competition among birdwatchers of all stripes and skill levels. Over three decades, the scope of Bird-a-thon has gradually evolved to include more and more participating rival sanctuaries and programs, each striving to find the most



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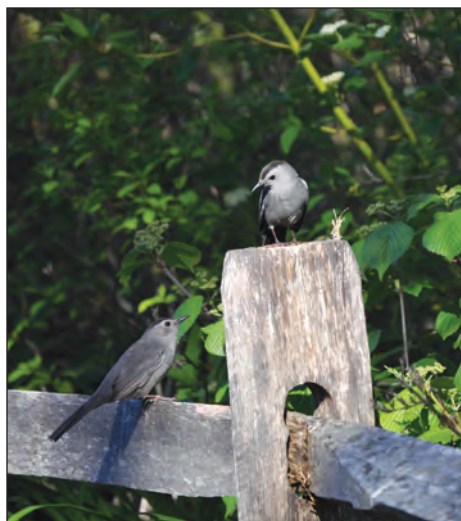
2012 Bird-a-thon participants at Foss Woods in Princeton saw a worm-eating warbler.

species and raise the most money during a 24-hour period. The total raised during last year's 2012 Bird-a-thon was nearly \$200,000, twenty-eight teams representing various sanctuaries and departments rallied all through the day and night, and 740 individuals participated as birders throughout the Commonwealth.

Countless volunteers help coordinate and carry out enormously successful efforts for Bird-a-thon. Some teams, which are required to consist of no more than 50 “official” birding team members, still bird locally while others spread out all over the state to cover as many habitats as they can in hopes of finding as many species as possible. Fortunately, teams following either strategy can receive recognition for their efforts, potentially winning a prize for the most species sighted overall or the highest total within an IBA (aka the Lowest Carbon Footprint Award).

Chris Leahy's current team, fundraising for bird conservation, seeks birds for their count exclusively on Cape Ann in the towns of Gloucester, Rockport, Essex, and Manchester. “It saves on gas and avoids having to run all over the state,” says Leahy, “and I like to see how many species we can find in a restricted area, but we never win a prize for the most species.” Their highest total in a single year was 152 species, and their cumulative total for the area is 183. Similarly, Wayne Petersen's IBA team only goes birding in Important Bird Areas located in Plymouth and Bristol counties and only tallies species located in those specific South Shore hot spots.

At the other end of the spectrum is Drumlin Farm, which has won the Brewster Cup for the one team that records the greatest number of species for many years



Gray catbirds, Wellfleet

age 18 who receive the Young Birders Award for raising more than \$200.

Through the years, Bird-a-thon has turned up a number of standout avian discoveries. Notable records include a very late snowy owl at Plum Island; a king rail at Great Meadows Wildlife Refuge in Concord; passerines such as a clay-colored sparrow, nesting white-winged crossbills, and a blue grosbeak; and seabirds blown in by a storm including great, sooty, and Manx shearwaters, as well as pomarine and parasitic jaegers. Also, vagrants such as the cave swallow, which nests primarily in Texas and the Southwest, and the Eurasian collared-dove, with a range that is extending northward, have been “extra credit” points for lucky observers.

Over the three decades, certain changes have emerged in species likely to be encountered. “Some birds that were infrequently seen in the eighties such as

running by combing the state to increase the chances of tallying the widest variety of birds. Not surprisingly, the Drumlin Farm contingent holds the record for the most species recorded in a single Bird-a-thon—an impressive total of 236. This team also annually includes several members under

Cooper’s hawks and red-bellied woodpeckers are ubiquitous now,” says Leahy, “and others like eastern meadowlarks and American kestrels that were once common are getting harder to find.”

Today Administrative Manager Ellen McBride, aka the Bird-a-thon “traffic cop,” annually coordinates what has become a giant, multifaceted, statewide venture. She says that, in addition to sanctuary teams, there’s a bird conservation team led by Joan Walsh, an IBA team headed by Wayne Petersen, Gordon’s Gaggles with staff from headquarters, an Education/Diversity team led by Gloria Villegas-Cardoza who directs that department, and a Wildwood contingent with Camp Director Bob Speare and birders who are alums, former counselors, and camp families.

Prizes are awarded in many categories; each team fundraises for its own sanctuary or program. “For every bird seen, it’s another penny (and usually a lot more!) earned,” says Petersen.

This year’s 30th anniversary Bird-a-thon is scheduled for Friday, May 17, 2013, at 6 p.m. through Saturday, May 18, 2013, at 6 p.m. McBride says that this year’s Bird-a-thon will be the biggest and best ever. She hopes that the much-anticipated event will draw more participants than ever and break a record for funds raised to protect the nature of Massachusetts.



There is room for everyone—of all ages and levels of birding experience—to participate in Bird-a-thon 2013. Come, get involved, make a pledge, or join the team of your choice. For more information go to www.massaudubon.org/birdathon, email birdathon@massaudubon.org, or call 781-259-2133.

Birding Programs



Birding at Pilgrim Heights, Truro

BERKSHIRE SANCTUARIES

Lenox, 413-637-0320
Friday-Morning Bird Walks
 at Canoe Meadows
 April 5, 12, 19, 26—8–10 a.m.
 May 3, 10, 17, 24, 31—7–9 a.m.

BOSTON NATURE CENTER

Mattapan, 617-983-8500
Spring Bird Walk
 April 2—7–9 a.m.

BROAD MEADOW BROOK

Worcester, 508-753-6087
Friday-Morning Birds
 Every Friday from
 April 5–June 14—7–9 a.m.

BROADMOOR

South Natick, 508-655-2296
35th Annual Birds and Breakfast
 May 13—walks start at 7, 8, 9, and 10 a.m.

CONNECTICUT RIVER VALLEY

Easthampton, 413-584-3009
Bird Sounds and Calls
 April 10—7–9 p.m.
Bald Eagles and Great Blues
 April 13—3–6 p.m.

IPSWICH RIVER

Topsfield, 978-887-9264
Birder's Getaway for the Day Series
 March 29, April 19, May 24—times vary
Spring Migrants at Mount Auburn
 May 9—5:50–11:30 a.m.
Warblers at Wompatuck State Park
 May 16—7 a.m.–3 p.m.

JOPPA FLATS

Newburyport, 978-462-9998
Wednesday-Morning Birding
 Every Wednesday—
 9:30 a.m.–12:30 p.m.
 Preregistration not required

OAK KNOLL

Attleboro, 508-223-3060
Birds and All That Jazz
 May 10—7–10 p.m.

STONY BROOK

Norfolk, 508-528-3140
Spring Romance of the Woodcocks
 March 24, April 7—6–8 p.m.
Early-Morning Birds
 April 16–May 28—7–8:30 a.m.
Heron at the Nest
 May 12, June 9—9–11:30 a.m.

WACHUSETT MEADOW

Princeton, 978-464-2712
Bird-a-thon Birds and Breakfast
 May 18—7:30–10:30 a.m.

WELLFLEET BAY

South Wellfleet, 508-349-2615
Friday Cape Cod Birding
 April 5–May 24—9 a.m.–noon

Call the individual sanctuaries for more information, fees, and to register.

For a full listing of Mass Audubon programs and events, visit our online catalog at www.massaudubon.org/programs.

Travel with Mass Audubon Naturalists

Join Mass Audubon Staff Naturalists and Ornithologists on International Birding and Natural History Tours

INTERNATIONAL TOURS

Galápagos Cruise Aboard the *Evolution*: April 5-14, 2013

Spitsbergen and Arctic Norway Cruise Aboard the National Geographic *Explorer*: June 14-24, 2013

Newfoundland Exploration: June 19-23, 2013

Brazil Birding the Pantanal and Atlantic Forest: August 2-15, 2013

Cuba Bird Survey: November 2013

Guyana Exploration: November 2013

Patagonia Birding: January 2014

US TOURS

Grasslands of Oklahoma—Prairie Chickens and More: April 18-22, 2013
For more information, contact Drumlin Farm, 781-259-2206

Birds and Blooms of the Texas Big Bend Country: April 23-May 1, with René Laubach and Doug Williams
For more information, contact Berkshire Sanctuaries, 413-637-0320

Cape May Birding: May 2-5, with Carol Decker and Scott Santino
For more information, contact Ipswich River, 978-887-9264



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Red-necked tanager

Birding the Connecticut Lakes in New Hampshire: June 7-9, 2013, with Bill Gette and Nancy Soulette
For more information, contact Joppa Flats, 978-462-9998

Puffins and Peatlands: July 11-14, with Carol Decker and John Galluzzo
For more information, contact Ipswich River, 978-887-9264
Cosponsored by Ipswich River and South Shore Sanctuaries

Puffins and Natural History of the Northern Coast of Maine: July 24-27
For more information, contact Arcadia Wildlife Sanctuary, 413-584-3009

Alaska Cruise: July 27-August 3, 2013

Women's White Mountains Adventure: August 1-3, with Carol Decker and Berkley Sadana
For more information, contact Ipswich River, 978-887-9264

Arizona Hiking and Birding in the Sky Islands: January 2014

...and many more!...



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through late September*

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for more information
and availability.*

SCHOOL VACATION WEEK PROGRAMS

BERKSHIRE SANCTUARIES

Lenox, 413-637-0320

Spring Stampede

April 17-20—10 a.m.-3 p.m.

For children in grades K-2;
preregistration required

BLUE HILLS

Milton, 617-333-0690

Fabulous Families

April 16-19

BOSTON NATURE CENTER

Mattapan, 617-983-8500

Bring on Spring

April 15-19

BROAD MEADOW BROOK

Worcester, 508-753-6087

April School Vacation

April 15-19—9 a.m.-3 p.m.

BROADMOOR

South Natick, 508-655-2296

April School Vacation

April 16-19—8:30 a.m.-4:30 p.m.

For children in grades K-5

CONNECTICUT

RIVER VALLEY

Easthampton, 413-584-3009

April School Vacation

April 16-19—9 a.m.-3 p.m.

DRUMLIN FARM

Lincoln, 781-259-2206

April School Vacation

April 15-19

Half- and full-day programs for
children age 4 to grade 8

HABITAT

Belmont, 617-489-5050

April School Vacation

Senses Alive:

April 16—9 a.m.-3:30 p.m.

Pondemonium:

April 17—9 a.m.-3:30 p.m.

Slime and Scale:

April 18—9 a.m.-3:30 p.m.

Celebrate Earth Day:

April 19—9 a.m.-3:30 p.m.

For children in grades K-3

Adventurers—

to Habitat and Beyond

April 16-19—9 a.m.-3 p.m.

For children in grades 4-6

IPSWICH RIVER

April Vacation Week

Topsfield, 978-887-9264

April 16-19—9 a.m.-3 p.m.

For children in grades K-5; sign up
for individual days or for all 4 days
at a discounted rate

JOPPA FLATS

Newburyport, 978-462-9998

April Vacation Week

Birds and Buds: April 17

Ponds and Pools: April 18

March in the Marsh: April 19

Open to families with
children ages 2-12

MOOSE HILL

Sharon, 781-784-5691

Island Escape

April 22-26

For children ages 3-12

SOUTH SHORE

Marshfield, 781-837-9400

April Vacation Week

April 16-19

For children ages 5-11

WACHUSETT MEADOW

Princeton, 978-464-2712

April Vacation Days

April 16-19—9 a.m.-3 p.m.

For children ages 5-11

WELLFLEET BAY

South Wellfleet, 508-349-2615

Vacation Adventures

April 15-19—9 a.m.-2:30 p.m.

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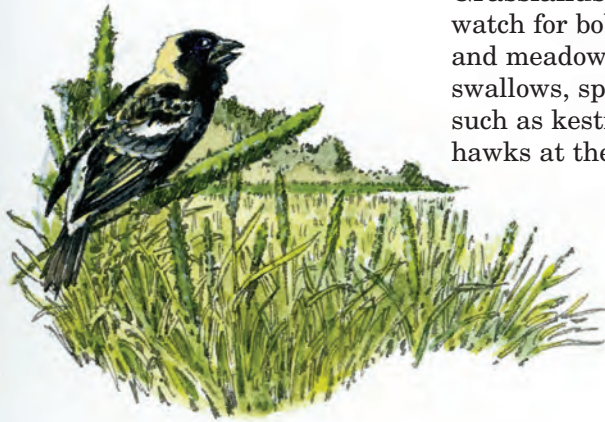
Curious Naturalist

Birds by Their Habitats

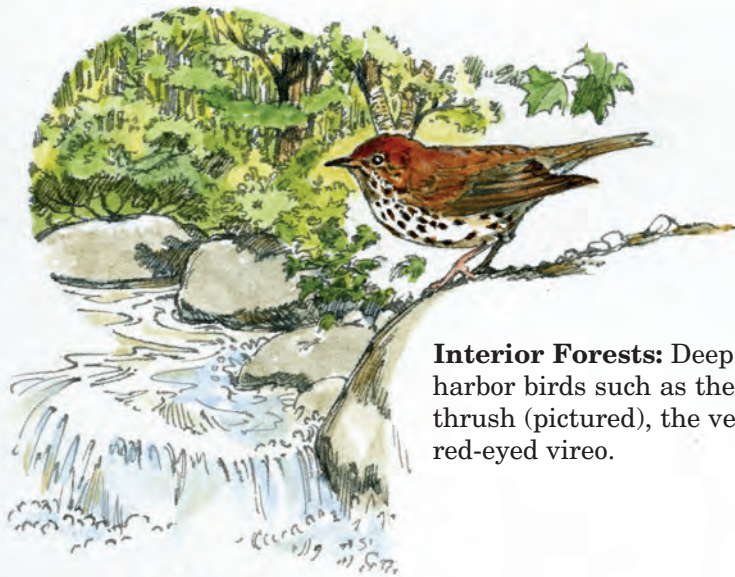
Illustrated by Gordon Morrison

This may seem obvious in some cases, but certain species of birds are attracted to certain kinds of habitats. You wouldn't expect a herring gull in a garden, for example. But more refined bird identification is made easier if you have an idea of who lives and feeds where. Below are five different habitats and five signature species.

Grasslands: In grassy fields, watch for bobolinks (pictured) and meadowlarks, as well as swallows, sparrows, and raptors such as kestrels and red-tailed hawks at the field edges.



Old Fields: Abandoned field or shrublands attract a wide variety of both grassland and woodland species, including the blue-winged warblers (pictured) and also indigo buntings, field sparrows, robins, and blackbirds.



Interior Forests: Deep forests harbor birds such as the wood thrush (pictured), the veery, and red-eyed vireo.



Coastal Areas: Along beaches and salt marshes, you can expect to see shorebirds, ducks and geese, gulls, and flights of various species of terns, including the common tern (pictured).

Gardens and Backyards: Gardens share some of the same species as old fields such as robins, titmice, chickadees, goldfinches (pictured), and song sparrows.





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Outdoor Almanac Spring/Summer 2013



March 2013



March 20 Vernal equinox, first day of spring. Days and nights are equal length.

March 23 Listen for the trill of song sparrows.

March 26 Phoebes and fox sparrows arrive about this time.

March 27 Full Moon. The Fish Moon



May 24 Full moon. The Planting Moon.

May 26 Scarlet tanagers and rose-breasted grosbeaks return.

May 28 Dogwoods bloom.

June 2013

June 6 Listen for the green frog chorus from freshwater marshes and ponds.

June 11 Field wildflowers begin to bloom about this date.

June 16 Sulphur butterflies emerge; fireflies appear in grassy areas.

June 21 Summer solstice, longest day of the year.

June 23 Full moon. The Strawberry Moon.

June 27 Gray treefrogs begin singing; bullfrog chorus can be heard at night at nearby ponds.

June 30 Check your garden for robber flies, which hover in midair then zip off.

April 2013

April 3 Listen for spring peepers.

April 6 Field sparrows return.

April 10 Tree swallows return.

April 15 Look for white shadbush blossoms in woodlands.

April 20 Listen for the trill of toads from nearby swamps and marshes.

April 25 Full moon. The Flower Moon.

April 29 Brown thrashers, towhees, house wrens, barn swallows, and chimney swifts return.



July 2013

July 4 Daylilies bloom along roadsides.

July 10 Watch for monarch butterflies on milkweed blooms.

May 2013

May 8 Watch for trout lilies, columbine, trillium, and other woodland wildflowers before the trees leaf out.

May 10 Spring azure butterflies appear at forest edges and in gardens.

May 15 The height of spring warbler migration; listen for the dawn chorus and watch the treetops and shrubbery at dawn and dusk.

May 20 Painted turtles and snapping turtles move onto land to lay their eggs.



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