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Rabbits and Rebounding Populations Bring Hope for Shrubland Birds

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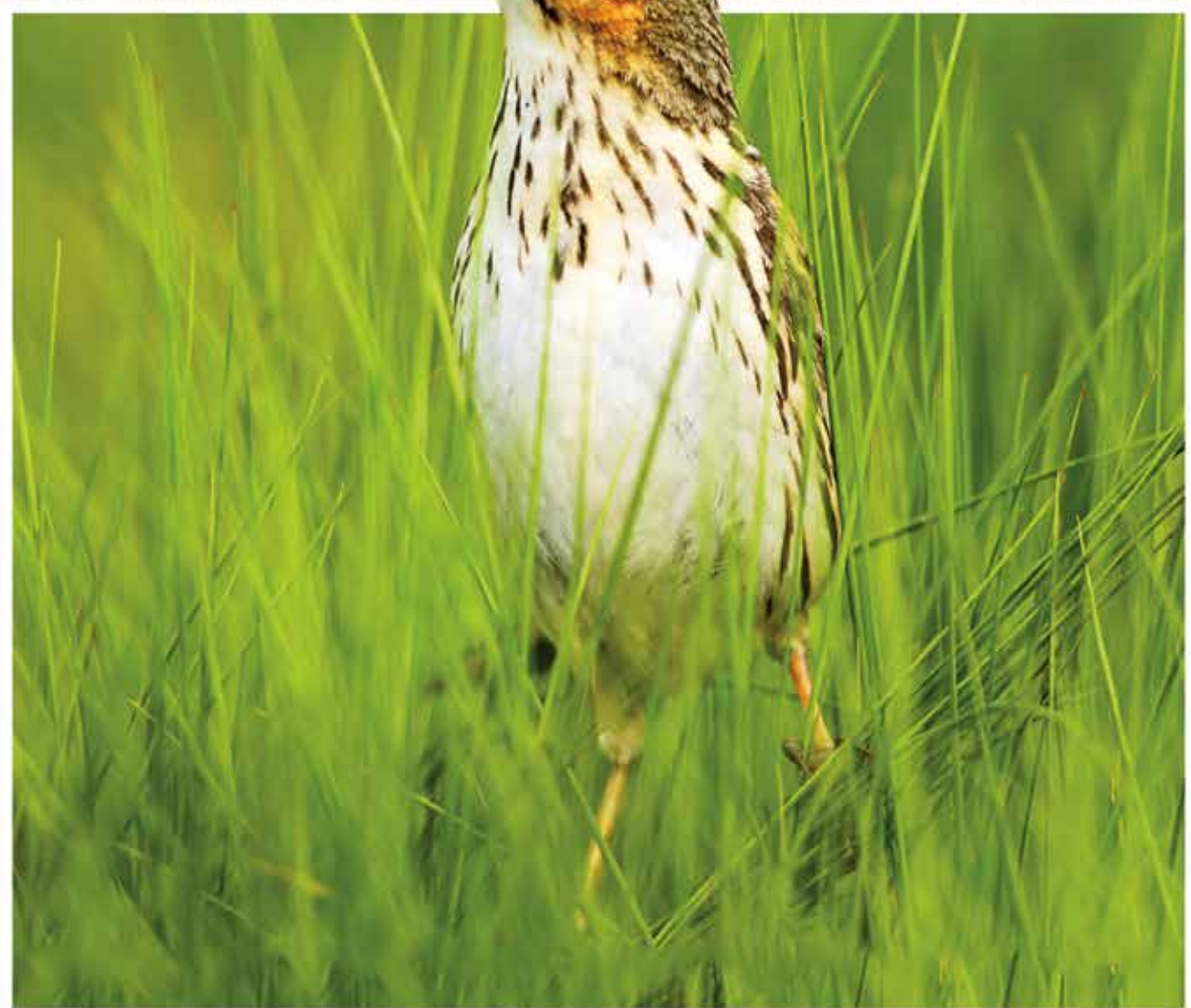
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Gains, Losses and the Prospect of Extinction



2016

CONNECTICUT STATE OF THE BIRDS

Gains, Losses & the Prospect of Extinction



Connecticut State of the Birds

www.ctaudubon.org

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PAUL J. FUSCO

Indigo Bunting

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Front cover:

Saltmarsh Sparrow, predicted to be extinct within 50 years.
Photo by Paul J. Fusco

Back cover:

Piping Plover has benefitted from intensive beach monitoring.
Photo by Julian Hough

Rabbits & Rebounding Populations Bring Hope for Shrubland Birds

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A decade ago, we had little reason to believe that the rapid decline of Connecticut's shrubland birds could be reversed. Blue-winged Warblers, Chestnut-sided Warblers, Indigo Buntings, Prairie Warblers and many other species seemed destined to all but disappear. But today – unexpectedly – Indigo Buntings and Prairie Warblers are on the rise. And there is larger hope for the other species in the form of an unlikely ally—a rabbit. To explain what is happening, and why, requires some history.

In the early 1800s only about 25 percent of Connecticut was covered with forest, and much of what remained was in heavily logged and grazed woodlots. During the next hundred years, as farms were vacated, second-growth forests grew up in the abandoned fields. Between 1880 and 1925, this forest was heavily cut over, often repeatedly, for charcoal. Hence forests, which had been the dominant natural habitat in the state, were at one time or another almost entirely cleared, and they were not allowed to grow back completely after farming was abandoned. As a result, land conservation efforts focused almost entirely on saving trees and forests. Until relatively recently other natural ecosystems, such as salt marshes, meadows, and wild rivers, received little attention from conservationists.

After other fuels replaced charcoal for manufacturing, the amount of forest steadily increased. Today about 60 percent of the state is covered with forest. Early conservationists probably never anticipated such a massive resurrection of the state's woodlands. And not surprisingly, since the Breeding Bird Survey began in 1966, many forest birds appear to be doing well, with stable or

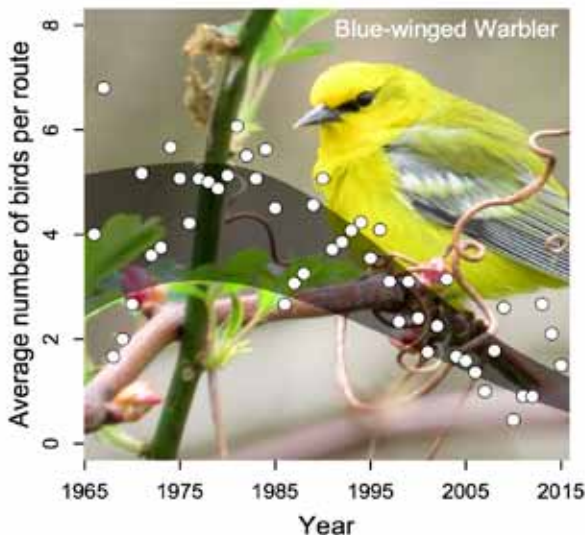
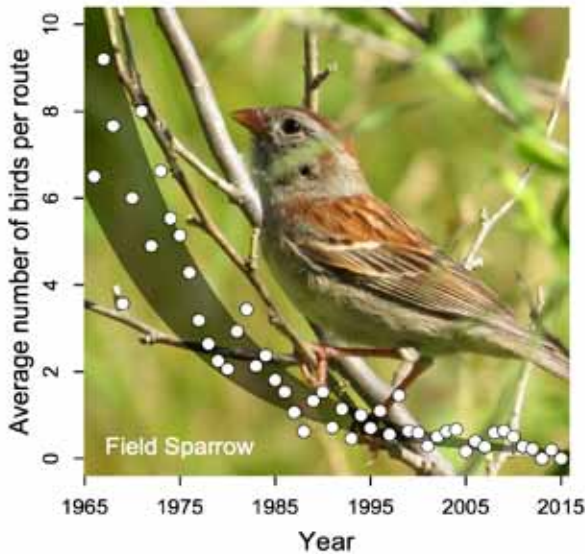
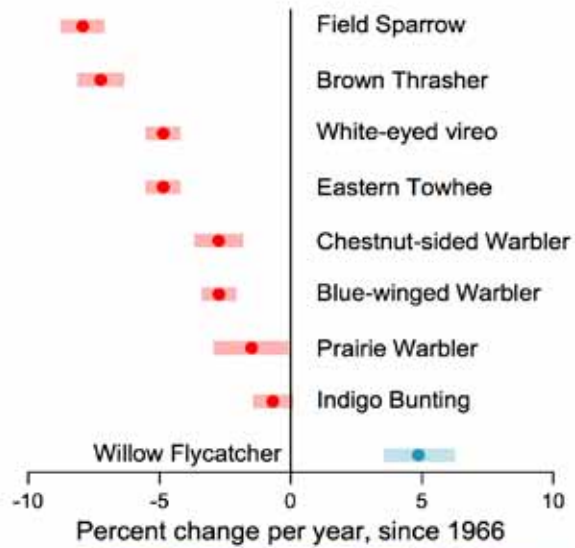


PAUL J. FUSCO

Found only in second growth and scrubby forests, the Chestnut-sided Warbler is distinctive in appearance.

even increasing populations. These include Eastern Wood-Pewee, Veery, Red-eyed Vireo, Ovenbird, and Scarlet Tanager. But even though the amount of forest in the state was increasing during much of this period, the populations of other forest birds declined. Some of these may have been driven down because of destruction of winter habitat in the tropics or the thinning of the forest understory by dense populations of deer or the interruption of habitat by roads and new houses. Other species, however, have declined primarily because the even-aged, homogeneous woodlands that have grown up after the charcoal era do not provide suitable habitat. These second-growth forests have the characteristics of neither an old-growth forest (giant trees, large snags, and large canopy openings caused by the collapse of ancient, massive trees) nor an early successional forest (a dense layer of shrubs and tree saplings that gradually changes into a young, open-canopy woodland with a dense shrub layer). Birds that need open scrub/shrub, open young woodland,

Figure 1. Percent change per year of early successional forest birds (shrubland specialists) on Breeding Bird Survey routes in Connecticut between 1966 and 2015.



Bird photographs courtesy of NIAL DOHERTY

or canopy openings in old forest are prominent on the list of declining bird species in Connecticut.

Early Successional Decline

The early successional or shrubland birds are usually considered a group apart from forest birds, but this view is anchored in a static view of forests. Before agricultural clearing, the forests of Connecticut were a mosaic of habitat types, from shrubby openings where fire, storm, or beavers had destroyed the trees to tracts of ancient trees that had escaped such disruption for centuries. The open, shrubby areas were an important site of repair and regrowth after the tree canopy had been damaged or destroyed. The early successional plants, insects, birds, and other animals were a critical component of a natural successional cycle. They were an integral part of the forest landscape.

After European settlement, people actively suppressed wildfires, seasonal flooding of rivers, and beaver activity. An entire set of species that originally depended on natural disturbances was forced to depend on human activities, such as farming. As farming was abandoned or became too intensive to allow for shrubby, fallow fields and hedgerows, these species began a long, steady decline. Many are now in danger of disappearing from the state. Despite this, they were only recently perceived as a group in need of protection. Because of the long tradition of equating protection of trees with protection of biological diversity, these species are often seen as intruders on a landscape that should properly be covered with forest. If the forest is viewed as a dynamic ecosystem rather than a museum diorama, however, then early successional species clearly are important components of the forest ecosystem.

Although some young-forest species such as Rose-breasted Grosbeak have declined since 1966, the most severe declines have occurred among birds that are restricted to early successional scrub/shrub habitat. This, of course, is the first successional stage to disappear as the forest matures. Since 1966,

Where do these data come from?

These graphs use data from the Breeding Bird Survey, a long-term monitoring program that is coordinated by the U.S. Geological Survey and conducted by volunteers. www.pwrc.usgs.gov/bbs/.

How do we estimate the population trends?

Our approach is the same as calculating returns on an investment or compound interest. This allows us to calculate trends for each species in terms of the percentage change, per year, in Connecticut's population. These statistical models also tell us how certain we should be about the trends. There is always some degree of uncertainty because over the years there are population fluctuations, different observers (who are best at identifying different birds), and variable weather conditions. More information on how these trends were estimated is available at www.ctbirdtrends.org.

How do I interpret the graphs?

The bars in the top graph show us the range that we are 95% sure contains the actual trend. For context, 95% is about the same probability as seeing an American Robin during a spring visit to Hammonasset Beach State Park. We can be confident that a species is declining if the bar lies completely below zero. The dots on these bars show our best estimates. The graphs with pictures show trends over time in the average number of birds seen on Breeding Bird Survey routes, which we use as an indicator of the statewide population size. The dots are the data collected by volunteers and the shaded areas show the modeled trend.

early successional birds as a group have steadily declined, with species such as Field Sparrow and Brown Thrasher losing 5 percent of their population each year (Figure 1). The only species that has increased since 1966 is Willow Flycatcher, but in recent years even this species has declined.

A Rabbit Comes to the Rescue

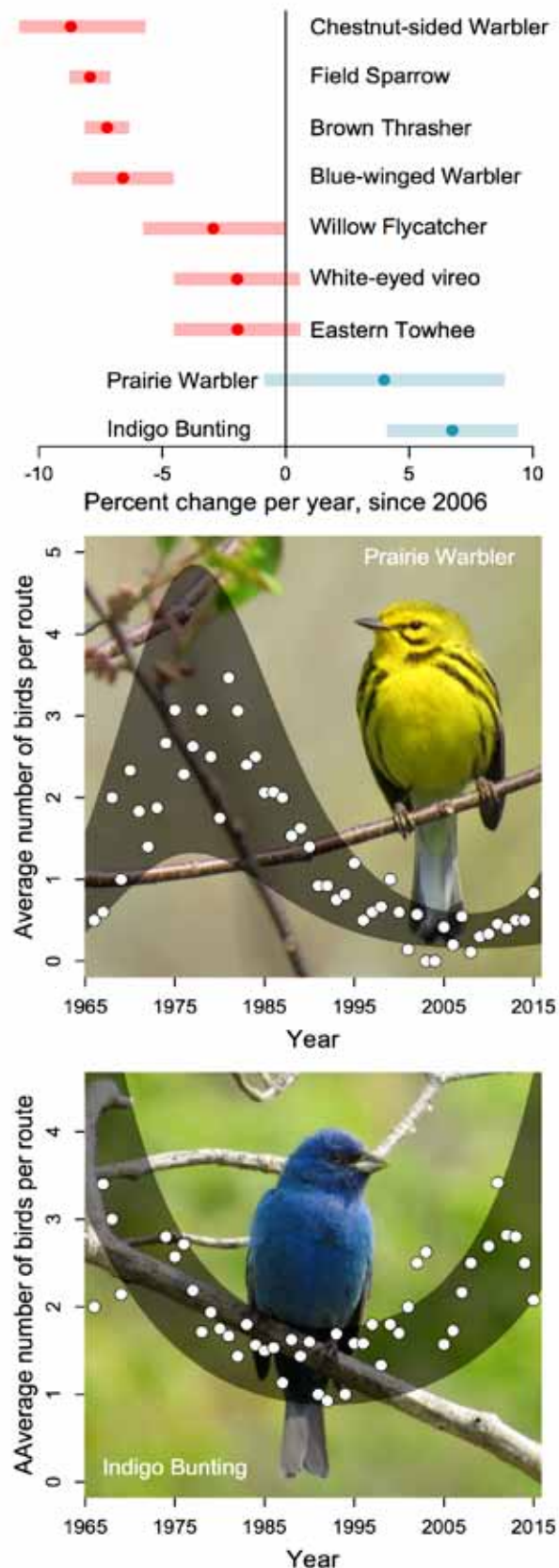
In 2006 one of us (Robert Askins) wrote an article in the first issue of Connecticut State of the Birds conceding that the conservation of birds restricted to thicket and scrub/shrub habitats would be a major challenge. The wildfires, beaver activity and seasonal flooding that originally sustained their habitats were no longer practical in a heavily populated state. Moreover, given the expense of active vegetation management and the problem of controlling invasive species in disturbed habitats, it seemed unlikely that enough land would be managed specifically for shrubland conservation to reverse the decline of early successional birds. Thickets and overgrown fields seldom inspire poems or paintings. The destruction of a patch of trees in the forest is often viewed as an environmental disaster regardless of whether it is caused by logging or a severe storm. In fact, creating early successional habitat by removing trees is resisted by some conservationists. Even with the future of attractive tropical migrants such as Blue-winged and Chestnut-sided Warblers at stake, conservation groups and agencies are unlikely to create and manage enough thicket to make a difference. Consequently, the 2006 article emphasized the role of economic activities such as logging and maintenance of utility corridors that result in early successional vegetation.

This situation changed dramatically soon after the article was published because the New England cottontail was listed as a candidate for protection under the Endangered Species Act. This rabbit, which is restricted to New England and adjacent New York, had declined steadily and steeply throughout its range, and only a few isolated populations survived, because they require the same type of low, woody, early successional vegetation as shrubland birds. Although they are difficult to distinguish from the closely related eastern cottontail, New England cottontails have distinctive behavior and ecology. While eastern cottontails are adapted to more open, grassy habitats and tend to freeze and rely on camouflage to escape predators, New England cottontails respond to predators in Br'er Rabbit fashion, diving into the nearest thicket, where they dash quickly away through the stems and thorns. These rabbits must have been an important component of the pre-agricultural forest landscape, browsing on the plants in forest openings and supporting predators such as bobcats.

As soon as the New England cottontail was listed as a candidate for protection, federal and state agencies began a concerted program to identify surviving populations where habitat could be enhanced or created. The goal was to create 27,000 acres of rabbit habitat in five focus areas in six states by 2030. These habitat creation efforts were so successful that by 2015 the New England cottontail was removed from the list of candidates for endangered or threatened status.

In Connecticut habitat for New England cottontails has been

Figure 2. Percent change per year of early successional forest birds (shrubland specialists) on Breeding Bird Survey routes in Connecticut between 2006 and 2015



created on both state and private land, especially in state forests and wildlife management areas, according to Lisa Wahle of the Wildlife Division of the state Department of Energy and Environmental Protection. In June 2016, 842 acres had been cleared of tall vegetation or were slated for clearing in the near future—not including areas where trees were removed primarily for timber harvesting. In addition, since 2012, 1,133 acres have been contracted for creation or enhancement of New England cottontail on private land (including conservation land) under a wildlife program sponsored by the U.S. Department of Agriculture. Another 223 acres were slated for cottontail habitat creation with funding from the Landowner Incentive Program with support from a grant from the U.S. Fish and Wildlife Service.

Although it is too early to know whether the work of the past 10 years has had a positive effect on early successional birds, preliminary evidence from Connecticut Breeding Bird Survey routes suggests that the populations of two species, Prairie Warbler and Indigo Bunting, may have increased (Figure 2). The uptick for Prairie Warbler is small and only time will tell whether it is part of a larger increasing trend. Indigo Buntings, in contrast, have increased steadily since the early 1990s (before habitat management for cottontails was widespread), almost recovering from declines in the 1960s, '70s, and '80s.

Early successional habitat in Connecticut and other northeastern states will increase substantially if the

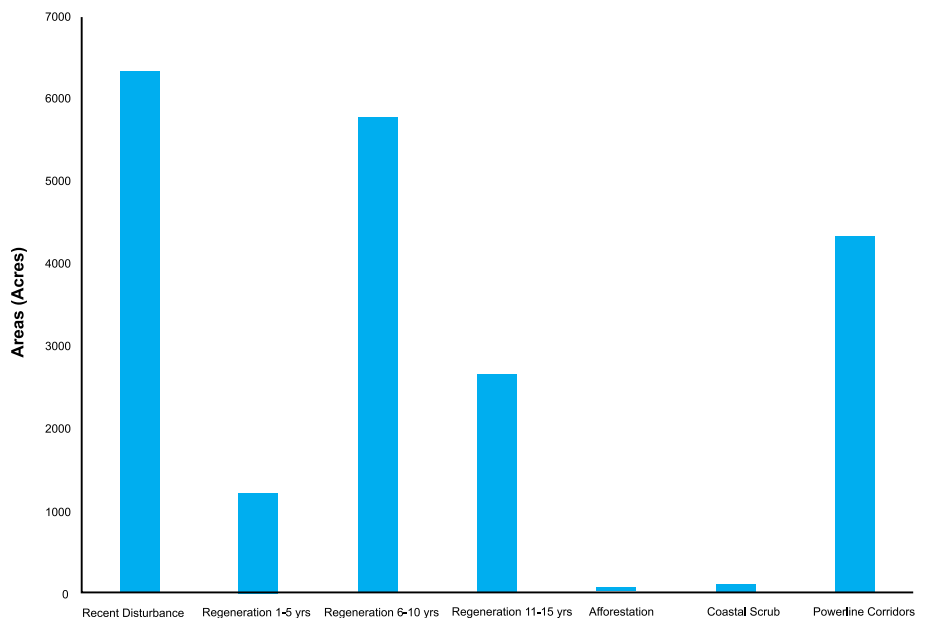


Figure 3. Total area of different types of upland early successional vegetation in Connecticut in 2011 (Rittenhouse, 2014). Only patches of vegetation ≥ 5 acres are included.

proposal for a Great Thicket National Wildlife Refuge is approved. The goal of the proposal is to generate up to 15,000 acres of early successional habitat in six states by purchasing acreage or conservation easements on private property, and by funding habitat enhancement on existing conservation land. The focus would be on 10 areas, two of them in Connecticut: Pachaug/Ledyard in New London County, and Northern Housatonic in Litchfield County and adjacent New York. The refuge would facilitate not only funding, but also collaborative efforts among private landowners, conservation organizations, and land-management agencies.

Regional conservation planning has been hampered by inadequate information about the extent and location of early successional habitat in Connecticut. Recently,



JULIAN HOUGH

Powerline corridors now provide the majority of shrubland habitat in Connecticut.



Habitat restoration projects for the New England Cottontail benefit declining shrubland birds.

however, Chad Rittenhouse of the University of Connecticut Wildlife and Fisheries Conservation Center used images from Landsat and aerial photographs to map the distribution of Connecticut's early successional habitats, classifying them as permanent, regeneration, or afforestation. Permanent shrub habitats show very slow change over time; they include palustrine (wetland) shrub habitats such as alder swamps, and powerline rights-of-way that are managed to maintain a stable shrub layer. Regeneration habitats are areas that are recovering from removal or major disruption of the forest canopy, so clearcuts would be in this category. But trees quickly grow back, and after 15 years these areas typically provide habitat for mature-forest birds rather than early successional species. In contrast, afforestation occurs on abandoned farmland that has not been covered with forest for decades or centuries, so forest grows back much more slowly.

Figure 3 shows the availability of the different types of early successional habitat in Connecticut in 2011. Afforestation in old fields was once a major source of habitat for shrubland birds but no longer contributes significantly. Most early successional habitat occurs in regeneration and powerline corridors, and most of the regeneration results from timber harvesting. Areas with recent disturbance do not support many shrubland birds, but these will become valuable habitat in a few years.

Powerline Corridors Result in a Diverse Shrub Community

Powerline corridors can potentially provide habitat for a high density and diversity of shrubland birds. This is often interpreted as a fortunate accident, but it actually results from a vegetation management technique developed by plant ecologists: selective removal of tall trees that interfere with powerlines, as well as removal of invasive introduced species. The result is a diverse shrub community that is usually dominated by native plant species.



Large clear-cuts help create forest diversity by encouraging young forest growth.

First, however, the power companies must address potential problems caused when Eversource Energy modified its methods for managing powerline corridors in response to new regulatory guidelines for rapid restoration of power following storms, as Anthony Johnson, the manager of transmission vegetation management for Eversource, explained. Although vegetation management in the corridors has not changed, the access roads are being covered with gravel, and when new poles are installed, gravel pads are laid down to stabilize cranes for current and future pole replacement. This gravel reduces habitat for early successional species, especially plants and animals associated with more disturbed habitat along the original dirt roads. The resulting fragmentation of shrubland habitat is a particular concern for New England cottontails, because powerline corridors are the most effective "rabbit highways" connecting rabbit populations in isolated forest openings. Interruption of the continuity of early successional habitat may also affect shrubland birds, which will be more exposed to predators and have less usable habitat. In some key areas, however, Eversource Energy has worked with conservation organizations to restore vegetation over gravel pads. Storm protection measures have also made some powerline corridors wider, according to Anthony Johnson, of Eversource, thereby generating additional shrubland habitat that should benefit early successional species.

Most shrubland bird species have been on a declining trajectory that would lead to their disappearance from the state during the next decade or two, repeating the history of once-common grassland birds. But the effort to save New England cottontails is creating partnerships among non-profit conservation organizations and state and federal land management agencies that not only promise to save this distinctive New England mammal, but also to save an array of other early successional forest species, including birds.

* * * * *

About The Authors



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ROBERT ASKINS is Katharine Blunt Professor of Biology at Connecticut College, where he teaches courses in ecology, animal behavior, conservation biology, and ornithology. He received a B.S. from the University of Michigan and a Ph.D. from the University of Minnesota. His research focuses on the ecology and conservation of migratory birds in both their northern breeding areas and tropical wintering areas. He also has studied Blue-winged Warblers, Prairie Warblers, and other species that are restricted to early successional habitats. He has published scientific papers in numerous journals including *Current Ornithology*, *Studies in Avian Biology*, *Wilson Bulletin*, and *Conservation Biology*. In 2000 he published *Restoring North America's Birds* (Yale University Press), a book on the ecology and conservation of North American birds. He also published a book on ecology and conservation of northern deciduous forests (*Saving the World's Deciduous Forests*, Yale University Press, 2014).



CHRIS ELPHICK

MILAN G. BULL is senior director of science and conservation for the Connecticut Audubon Society and is a long-time expedition leader to destinations throughout the Americas, and to Australia, Antarctica, and Africa. He has a B.S. degree in wildlife management from the University of Connecticut and a M.S. degree in biology from the University of Bridgeport. He currently is a member of the Citizens Advisory Council to Connecticut's Department of Energy and Environmental Protection, and was a founding director and past president of the Connecticut Ornithological Association. He has also published numerous articles and speaks statewide on topics relating to ornithology and the environment. Milan and his wife, Cathy, reside in Fairfield.



MILAN G. BULL

PATRICK COMINS is a graduate of Trinity College in Hartford, and has worked in the bird conservation field for 20 years. He began his career with the Connecticut Audubon Society undertaking bird surveys at the McKinney National Wildlife Refuge, then as biological technician for the U.S. Fish and Wildlife Service at the McKinney NWR. Patrick is with Audubon Connecticut as the director of bird conservation and is a past president of the Connecticut Ornithological Association. He has written several articles on bird conservation and identification for *The Connecticut Warbler*. As a member of the Connecticut Forestlands Council he serves as liaison to the Forest Ecosystem Health Committee of the Council. He is the Northeastern representative to Partners In Flight for the National Audubon Society.



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JENNY DICKSON is Supervising Wildlife Biologist employed by the Connecticut Department of Energy and Environmental Protection. As leader of the DEEP's Wildlife Diversity Program (WDP), she specializes in songbirds, inland and freshwater wetland birds, and small mammals, including bats. She received a Bachelor of Science degree in Natural Resource Conservation with a specialty in wildlife from the University of Connecticut and a Master of Science degree in Wildlife Management from West Virginia University. Jenny has also worked as a research biologist for the federal Environmental Protection Agency on songbird toxicology and as a naturalist at the Kellogg Environmental Center in Derby, Connecticut. She has served as Vice-Chair of the Northeast Partners in Flight Working Group, president of the New England Chapter of The Wildlife Society, and is on the executive committee of the Northeast Bat Working Group.



PATRICK COMINS

CHRIS ELPHICK is an assistant professor at the University of Connecticut. He earned his Ph.D from the University of Nevada for his work on the conservation benefits of managing California's rice fields for wetland birds. His work continues to focus on the conservation ecology of birds, especially in wetland and agricultural settings. Recently, he has worked on the population dynamics and management of endangered waterbirds, and on the ecology and conservation of saltmarsh nesting birds. His work on Saltmarsh Sparrows earned him a 2004 National Investigators Award by Partners in Flight for contributions toward bird conservation. With over 20 years of field experience, his research has been published in peer-reviewed conservation journals including *Biological Conservation*, *Journal of Applied Ecology*, and *Ibis*. He was one of the co-editors of the *Sibley Guide to Bird Life & Behavior* and writes for the nationally syndicated newspaper column "Sibley on Birds."



MIN HUANG

CHRIS FIELD is a postdoctoral researcher in the Ecology and Evolutionary Biology department at the University of Connecticut, where he received his Ph.D. in 2016. He has researched bird song, the transmission dynamics of zoonotic diseases, and the demography of early-successional forest birds. His current research focuses on tidal marsh ecology and conservation, with an emphasis on predicting the fate of bird populations and habitat in the face of sea-level rise. In addition to research, he previously worked for Audubon Connecticut, where he coordinated Connecticut's Important Bird Areas Program. He is currently working as part of the Saltmarsh Habitat and Avian Research Program (SHARP; www.tidalmarshbirds.org).



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