



News from Hudsonia

A journal of natural history and environmental issues

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Saving the Northeast's Grassland Invertebrates: Missed Opportunities on the Grassy Knoll

By Sacha Spector*

Two.

That's the total number of times Rick Cech and Guy Tudor spotted the strikingly beautiful bronze copper butterfly (*Lycaena hyllus*) during 10 years of surveys for their book *Butterflies of the East Coast*.¹ Five years of more geographically focused work by the Massachusetts Butterfly Atlas found only nine specimens statewide. Connecticut's atlas project turned up six specimens during a similar period and led to the listing of bronze copper as a Species of Special Concern in the state. New Jersey, Massachusetts, West Virginia, Virginia, and Delaware also list the bronze copper as imperiled or critically imperiled.

Yet the bronze copper is known to occur in open, wet habitats from Montana to New Brunswick and south to Virginia and Arkansas. Generally reported as a common species across the northern and central parts of its range, the species is ranked Globally Secure by NatureServe, the organization that compiles and analyzes data from all state and province Natural Heritage Programs in the U.S. and Canada.

Meanwhile, Conrad Vispo and his colleagues at the Farmscape Ecology Program, based at the Hawthorne Valley Farm in Ghent and Hillsdale (Columbia County), New York, began documenting bronze coppers with startling regularity in the last few years. In short order, they recorded half a dozen new bronze copper distribution points, with dozens of specimens, in a single county. More importantly, they had a recipe for finding more. All the sites where bronze coppers persisted were around small farm ponds in actively managed or recently abandoned pastures and hayfields.

For those in the know about butterflies, the bronze copper's "rediscovery" in New York was welcome but not surprising. Nor has it been an isolated event for Vispo and his crew, who turn up dozens of native butterfly, dragonfly, and beetle species whose grassland and early successional habitats are increasingly things of the past.⁸

The Rise and Fall of Northeastern Grasslands

At one time, grasslands—pastures and hayfields—were easy to find in the Northeast. Conversion of the vast eastern forests to farmland from the late 1700s to the mid-1800s had been swift. By about 1850, more than 80% of what had been a nearly continuous forest stretching from the Atlantic to the Great Lakes had been cleared.² Grasslands once resulting mainly from beaver activity, quirks of hydrology, or wildfires were now the dominant landscape element. From one horizon to the other, a patchwork of pastures and hayfields, punctuated by woodlots and wetlands, provided

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* Sacha Spector is Director of Conservation Science at Scenic Hudson, Inc. This article was adapted from a piece originally published in *Wings*, a publication of the Xerces Society for Invertebrate Conservation. Spector, S. 2009. Missed opportunities on the grassy knoll: Saving the Northeast's grassland invertebrates. *Wings* 32(2):19-23

exponentially more grassland habitat than had existed before, providing an all-you-can eat buffet for species whose preferences ran more toward the grassy than the hardwood leafy.

In any ecological story of change there are winners and losers. In the Northeast's open new world, the winners were probably grassland specialists. Indeed, it's suspected that many grassland-loving animal species colonized the Northeast from the Midwest during this period, exploiting the explosion of grassland resources that started to resemble the Great Plains. But the winners also included many locals likely specialized to earlier, natural open habitats. These were species whose distributions in the Northeast were probably much patchier before the land was cleared. The bronze copper may have been just such a winner, with its preference for wetland edges near open areas suddenly catered to by farmers who cleared their forests to the edges of waterholes or created wet meadows out of poorly drained bottomland forests. Oddly enough, the new human-dominated habitats may have proved suitable analogs of those previously widespread, but less extensive habitats.

Sadly, pendulums swing and real estate bubbles burst. By the early 1900s the great Northeastern agricultural juggernaut was



A female bronze copper.. (Females are yellowish orange and purple above, and pale with black spots and orange margin beneath.) Conrad Vispo © 2010.

declining. Fossil fuels, improved transportation routes, and agricultural innovations made the Midwest the nation's breadbasket. Northeastern farms were sold for other uses or abandoned at a tremendous pace. The landscape that had supported so many grassland species began to close in around them. By mid-century, forest regrowth was widespread. By the century's end, the process had almost run to completion. In New York, pastures and hayfields decreased by about 33% in area between 1965 and 2006.⁶ Today, large swaths of New England and the Mid-Atlantic states are blanketed by forests to the same degree they were by agricultural grassland 125 years ago.

This was a rousing lesson of nature's resiliency, particularly if you're a fan of forests and the idea that someday other areas of this deforested planet will return to their glorious, leafy past. But not for bronze coppers or the dozens of other open-habitat specialized species whose best days in the Northeast were receding. For them the salad days were over.

Grassland management: A boon for biodiversity

Of course, invertebrates were hardly the only species whose distributions shrank with the regrowth of Northeastern forests and the near total conversion of the Midwestern grasslands and shrublands to intensive agricultural uses. Perhaps a third of the Northeast's mammal species prefer open habitats. A handful, most notably the New England cottontail which is now found on barely 20% of its range, were essentially restricted to the dwindling open landscape.

More than any other vertebrate group, though, grassland birds began to sing the blues. On a continental basis, no other segment of avifauna has experienced such sharp declines over the past half century. According to Breeding Bird Survey data,

between 1966 and 1991 New England upland sandpiper and eastern meadowlark populations declined by 84% and 97%, respectively.⁵ Decline rates of virtually all grassland birds have been frightful—over roughly the same time period in New York, the average grassland bird species' population was reduced by 6.5% *each year*.³ The grasshopper sparrow, eastern meadowlark, bobolink, American woodcock, Henslow's sparrow, and short-eared owl have practically vanished.

Numbers like these make federal and state agencies sit up and take notice, especially when they're about birds. Federal attention and funding for grassland restoration and management began to grow in the 1990s through an alphabet soup of conservation initiatives led by the US Department of Agriculture and the US Fish and Wildlife Service. The 2002 Farm Bill and the 2008 reauthorization stepped up the emphasis on grassland protection, and today the federal government supports grassland conservation efforts on private lands through the Grasslands Reserve Program, Conservation Reserve Program, and many others. Management efforts by the Department of the Interior in federal wildlife refuges, parks, and national monuments also have expanded significantly. State wildlife agencies followed. By the middle of this decade, nearly 50,000 acres of state land in New England and the Mid-Atlantic region were being managed for early successional habitats.⁴ Many state agencies also began offering guidance and incentives for grassland conservation by private landowners.

The centerpiece of these programs has been restoring regular disturbance to habitats, repeatedly setting back the clock on the successional process to maintain grassy or shrubby open habitats. Mowing, burning, and grazing are the primary tools for



Poet's Walk Park (Town of Red Hook, Dutchess County) after mowing. Host plant refuge patches, left unmowed, are visible in middle- and foreground. Sacha Spector © 2010.

accomplishing this, and a tremendous academic literature and set of “best grassland management practices” have followed. Conservation organizations, most notably the Audubon Society, have stepped forward with useful, easily implemented guidelines for improving grassland habitat. We expect that all this attention and funding will continue to be a tremendous boon for grassland biodiversity at all levels of the taxonomic hierarchy.

Grassland management: A missed opportunity

Returning to the bronze copper, though, what was surprising about its “rediscovery” was not just its many occurrences in Columbia County, but that, in a region where the decline of grasslands was an increasingly recognized conservation issue and where state, federal, and private funds were pouring in for grasslands preservation, it hadn’t been found sooner. Here was one of the Northeast’s rarest butterflies hiding in plain sight.

The lesson of the bronze copper has to do with missed opportunities in our conservation targets. The vast majority of state,

federal and private initiatives described above establish the recovery of grassland bird species as their near-exclusive focus. Grassland managers are encouraged to mow or burn areas after the breeding season for birds has concluded, usually a convenient date like July 15 or August 15, after fledgling bobolinks and meadowlarks are on the wing. Come mid-July or mid-August, they mow and burn, often oblivious to the life cycles of the dozens of other grassland obligate species still in the midst of feeding, pupating or egg-laying.

Do we know enough to manage grassland invertebrates concurrently with birds? The answer is yes. Rigorous research on grassland invertebrate conservation has repeatedly shown that managed disturbance can be optimized to conserve multiple sensitive species. Careful rotation of burning, grazing, or mowing on fractions of sites can be coordinated by time and habitat patches according to routines that benefit a variety of life histories and host plant associations. But designing such routines requires an equally careful inventory of which invertebrates and habitat patches

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The use by others of Kathleen A. Schmidt’s line drawings is prohibited without express permission of the artist.

Kestrels and Centipedes: A Biodiversity Handbook for New York City

By Liz Johnson and Erik Kiviat*

Following on the success of the *Biodiversity Assessment Manual for the Hudson River Estuary Corridor* published in 2001, Hudsonia and the Center for Biodiversity and Conservation at the American Museum of Natural History are teaming up to create a *Biodiversity Assessment Handbook for New York City*. Because the city is more highly urbanized than the Hudson Valley and has its own environmental laws and programs, habitats, species, and threats, it seemed to us that the city needed its own biodiversity assessment guide to help residents, city agencies, civic organizations, and others recognize and protect important biological resources in and near the city.

But why should New York City—to many just a biological wasteland of high-rises and pavement—care about biodiversity within the city boundaries?

Conserving biodiversity—the variety of life on Earth including the ecological and evolutionary processes that sustain it—is the key to long term sustainability and quality of life for all of us, even urbanites. In the larger landscape, biodiversity provides essential goods and services: clean air and water, healthy soil, flood control, the food we eat, and many of our most common medicines, and is a source of beauty and inspiration. Similarly, in urban areas like New York City, residents and visitors benefit from biodiversity in many ways. Protected habitats in the Catskills supply much of the city’s plentiful and clean drinking water. Wetlands on Staten Island help to store and cleanse stormwater, and thus reduce the contaminants reaching the Kill van Kull, Arthur Kill, and Lower New York



Spring beauty (*Claytonia virginica*), a spring ephemeral wildflower that occurs in moist forests in New York City. Marielle Anzelone © 2006

Bay. Nutrient cycling and decomposition build healthy soils for community gardens and brownfield restoration. In addition, city parks and natural areas provide spiritual solace, visual relief, and daily recreation for city residents and workers, and are ecotourism destinations for millions of nature-lovers and birders each year. Trees moderate urban heat island effects and mitigate climate change impacts. Studies show that our exposure to nature reduces stress, improves healing after surgery, and improves student learning—all at no “charge.” In short, whether they know it or not, New Yorkers benefit greatly from the abundant services provided by our local biodiversity.

Yet plants, animals, and their habitats are often ignored or under-appreciated in urban areas such as New York City. Many of us assume that biodiversity—nature—only exists in far away places like the Adirondacks

or in tropical rainforests. But urban areas can have a surprising array of uncommon and rare species in among the common, weedy plants and adaptable animals like dandelions, pigeons, and raccoons. Did you know that American kestrels—a cavity-nesting bird that is declining in the Northeast—seem to be thriving in New York City? That the city’s parks and greenways provide critical resting and feeding habitat for migrating songbirds en route to their northern nesting grounds each spring? That the New York City beaches harbor rare beach-nesting birds such as the piping plover, and a federally protected plant—the seabeach amaranth? That more than 220 species of bees pollinate community garden crops and plants in natural areas, in pocket parks, and even window boxes and roof gardens? And that a species entirely new to science has been discovered in recent years—the dwarf centipede *Nannarrup hoffmani* in Central Park?

Nature in the city faces the same threats as biodiversity everywhere: habitat loss, degradation or fragmentation; invasive species; pollution; unsustainable use; and climate change. Many of these stresses are intensified, however, due to the highly altered landscapes in cities—pavement and buildings, channelized waterways and hardened shorelines. Today more than 80 percent of the US population is living in what are considered urban or suburban areas. And it is estimated that by 2050 more than 60% of the world’s population will be living in urban areas.

* Liz Johnson is Manager of the Metropolitan Biodiversity Program of the Center for Biodiversity and Conservation at the American Museum of Natural History. Erik Kiviat is Hudsonia’s Executive Director.

The *Biodiversity Assessment Handbook for New York City* will help planners, land managers, and biologists identify existing habitats and plan how to conserve, manage, and restore those areas that have the greatest conservation potential and importance. In addition to profiles of habitats and key species of conservation concern, the *Handbook* will include a description of the New York City environment, an analysis of how the city's laws and regulations address biodiversity issues, and many photographs illustrating habitats and species. In addition to "natural" habitats, the *Handbook* will also address some of the biodiversity values of dredged material, abandoned piers, landfills, structures, gardens, green roofs, stands of invasive plants, and other urban habitats.

The *Handbook* will:

- **Encourage stewardship of natural areas by providing organized information about the City's biodiversity and the value of remaining natural areas;**
- **Help users identify targets and techniques for management and restoration;**
- **Educate people about the value of natural resources and environmental**



Blunt-lobed cliff fern (*Woodsia obtusa*) is uncommon in southeastern New York, but abundant on the stone and mortar wall of the Metro North train trestle in Manhattan. Marielle Anzelone © 2005

protection by synthesizing information from disparate and fragmented sources, and making this information accessible to practitioners and interested non-specialists;

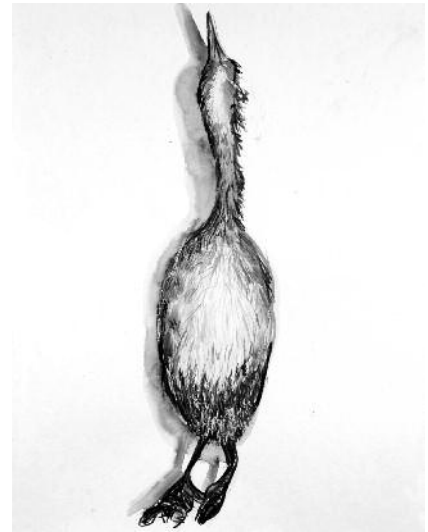
- **Promote community involvement by placing biodiversity and natural area preservation in a city-wide perspective that clarifies the arguments for stewardship of natural areas.**

NYC has a wealth of species and habitats important not only to the city's human population but to the Northeastern ecological landscape in general. The city should be congratulated for protecting significant habitats and implementing many good environmental programs over the years. But urban stresses are great, and biodiversity resources can disappear quickly. We hope that the *Handbook* will help residents better recognize and appreciate the city's native biodiversity. With expanded measures to promote effective conservation and management, the city could serve as a model to others for how to effectively provide habitat for species with connectivity across the urban landscape and the space for critical ecological processes to occur. ■

The Biodiversity Assessment Handbook for New York City has been funded by the New York City Environmental Fund, the Sarah K. de Coizart TENTH Perpetual Charitable Trust, and the Estate of Marian O. Naumburg. The first edition of the *Handbook* will be available on the American Museum of Natural History website in winter 2011.

A principle focus of the American Museum of Natural History has always been the study of the variety of life in all its forms and the interactions among them. By its very nature, this work is concerned with the conservation of biodiversity, which is increasingly threatened by factors such as human population growth, soaring demand for natural resources, and widespread habitat degradation. In response to these threats, the Museum created the Center for Biodiversity and Conservation (CBC) in 1993. The CBC integrates scientific research, education, and outreach to heighten public understanding and stewardship

of biodiversity. Through its Metropolitan Biodiversity Program the CBC works closely with local, regional and state partners to promote biodiversity conservation. In these ways the CBC mission parallels Hudsonia's, leading to our collaboration on this project.



Pied-billed grebe. Watercolor by Naomi Bardoff from a late-1800s specimen in the collection of the Bard College Field Station. The pied-billed grebe breeds in ponds and marshes, including in New York City, where it eats aquatic insects and builds a floating nest among emergent plants such as cattail, purple loosestrife, or common reed. This species is listed as Threatened in New York State. Prior to federal bird conservation laws, collecting birds, nests, and eggs was a gentlemanly hobby. Specimens collected by A.W. Gilkeson in New Jersey and Pennsylvania were found in Bard's biology department in the 1970s, repaired by Erik Kiviati, and the most important specimens transferred to the Carnegie Institute. Other specimens were transferred to the Bard College Field Station collections, which have been curated by Hudsonia since 1981. Specimens such as these are used by scientists for research on genetics, evolution, toxicology, and biogeography. In 2010, Naomi, a Bard studio arts major, painted many of the specimens as part of her Senior Project. Hudsonia provides resources to the Bard College students, faculty, and staff, as well as the larger communities of the Hudson Valley and Northeast.

exist at a site—a seemingly obvious step that's left out of most of the "best practice" documents for bird conservation.

The unfulfilled potential in our grassland recovery efforts is in not recognizing how many more conservation targets we leave lurking in the tall grass that we could be integrating into our management strategies. As Ann Swengel wrote for the North American Butterfly Association,⁷ "whether butterflies are a management objective or not, butterflies present in the habitat being managed are just as affected by whatever management occurs." The same could be said for species of every other invertebrate group.

Last spring, Scenic Hudson began putting this expanded vision of grassland management into practice on two of our properties, Poet's Walk Park in Rhinebeck (Dutchess County, NY), and the Stockport Flats Conservation Area in Stockport and Greenport (Columbia County, NY). At both, we have implemented a new rotational mowing plan that we believe will ensure the continued breeding success of the sites' grassland birds while also providing continuous nectaring, foraging, and overwintering refuges for grassland-dependent butterflies, dragonflies and other inverte-

brates. With help from the Farmscape Ecology Program, we'll be monitoring the new plan's impacts on the sites' biodiversity, learning what works and what doesn't, and looking ahead toward applying those lessons as we invest in preserving and restoring grassland habitats at other Scenic Hudson preserves. We hope other landowners will join us by managing their own meadows and grasslands in ways that will maintain or improve habitat for grassland-dependent organisms.

We believe it's time for all native grassland species to have their day in the sun on the grassy knoll. ■

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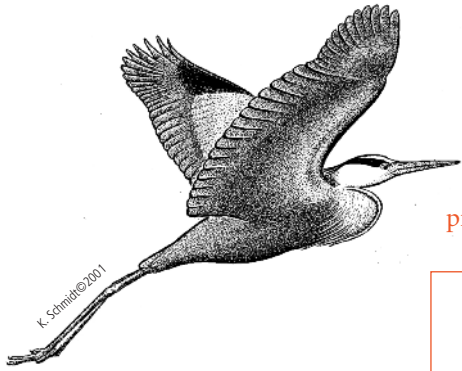
SILENT AUCTION:

The photograph "Arched Willow over North Bay" on the cover of this issue of *News from Hudsonia* was taken by Tom Teich at Roger's Island (Columbia County) as part of a limited edition series of black and white images of the Hudson River initiated in 2000. Tom has donated a print of this photograph to a **silent auction** to benefit Hudsonia. The photograph (gelatin print #5, matted, glassed, and framed, 23" x 27") can be viewed Monday through Friday, 10 am - 3:30 pm, or by appointment at the Hudsonia administrative offices, 7539 North Broadway (NYS Rt 9) in the Village of Red Hook, Dutchess County, NY. (Also on exhibit at Hudsonia are natural history and landscape photos by Esther Kiviat, and a large painting "Dance of the Fairy Shrimp" [acrylic on canvas] by Jean Tate.)

Tom Teich is a fine art landscape photographer who grew up in the Hudson Valley, and has been photographing the "wild and quiet places" of the region for 30 years. He creates his stunning images with an 8" x 10" view camera, which allows him to capture the elaborate detail and textures of the natural world. His prints are hand-developed in the large-format darkroom that he built in a barn on his property in Greene County. Each gelatin silver print is unique and signed by the artist. Tom's work has been featured in numerous solo and group exhibitions in the Northeast and is included in many private and corporate art collections. Visit www.thomasteich.com for more information on the photographer.

Private bids for "Arched Willow over North Bay" can be placed at the Hudsonia office, or by phone (call Linda Spiciarich at 845-758-0600), or online at www.hudsonia.org/silent-auction.

The auction will close on 30 November 2010.



Hudsonia is delighted to announce that Philippa Dunne, our Board chair, her husband Robert Kraus and son Philip Kraus, have made a major donation to Hudsonia in honor of Philippa's parents, **Philip and Amanda Duff Dunne**, and godparents, **Sam and Mary Taylor Zimbalist**, for their decades of work protecting local habitats.

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- Bard College, for use of facilities.
- All artists who participated in the Gazen Gallery *Love our Local Landscapes* exhibition this summer, and especially to Ania Aldrich, Kary Broffman, Maureen Maliha, for donating to Hudsonia from the proceeds of sales of their art work. And thanks to the Gazen Gallery for hosting the show.
- Bill Maple who has been a great help to Hudsonia as a collaborator, adviser, and the longest-sitting member of our Board of Directors.
- The Millbrook Garden Club for funding an internship for our reeds-to-energy project.
- Maribel Pregnall, colleagues, students & families at Arlington High School for taking over key components of the long-term Blanding's turtle studies.
- Tom Teich for donating his fine art photo "Arched Willow over North Bay" to a silent auction to benefit Hudsonia.
- Jean Tate for donating to Hudsonia her large painting "Dance of the Fairy Shrimp."
- The following for advice and expertise on Erik Kiviat's New Jersey Meadowlands book: Kerry Barringer, Brett Bragin, Bill Buck, Hugh Carola, Richard Harris, Christine C Hobble, Dee Ann Ipp, Stephen Marshall, Tammy Marshall, Eric Spencer Martindale, Peg McBrien, John Mickel, Robert Prezant, Beth Ravit, David Snyder, Bill Standaert, Jason Tesauro, Judy Weis, Sue Williams.
- John and Mary Yrizarry for assistance with field work, to employees and officials of the towns of Chester and Monroe, and to the landowners who gave us access to their properties for the habitat mapping project in the Trout Brook watershed (Orange County).

WORKSHOPS

Conservation Advisory Councils for Columbia and Greene Counties

Monday, 31 January 2011 5:30-7:30 p.m.

(Snow date: Tuesday, 2/1),

Columbia-Greene Community College

An evening workshop on how to form and work with a conservation advisory council (CAC) to protect important natural areas in your town. Presenters will include staff of the Hudson River Estuary Program and Hudsonia Ltd. as well as board and CAC volunteers from local communities who will discuss how CAC's can support the work of planning boards. Members of town boards, planning boards, conservation commissions, comprehensive plan committees, and interested citizens in Columbia and Greene counties are especially invited. \$10 fee. Self-certification forms will be provided for the annual municipal board training requirement. To register, contact Ellen Jouret-Epstein, Columbia Land Conservancy, (518) 392-5252 x 208 or ellen@clctrust.org.

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Our heartfelt thanks to everyone who has supported Hudsonia's work this year through their generous contributions.

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Stuart & Susan Auchincloss
Amy & Steve Bartolomeo
Matthew Bialecki AIA / Bialecki Architects
Ronald & Jean Bourque
Louise M Bozorth
Everett Brady
Linda & Brud Brady
Julia Brine
Kary Broffman
Drew & Linda Casertano
Evie Chanler
Franzen Clough / Clough's Bookstore
David B Clouser & Associates
Ryan Courtien
Roxie & Don Geramita
Louis DiCocco / Sunburst Furniture Restoration
Mark & Vicki Doyle
Francis X Dwyer *in memory of Esther Kiviat*
Norah Edwards
Richard S Feldman
Jane Ferguson MD
Maureen & Bob Forbes
Peggy Fox & Ian MacNiven
Chris & Nicole Galayda
Lenore Gale
Marlena & Justin Gault