

Field Notes

VERMONT CENTER FOR ECOSTUDIES | *Uniting People and Science for Conservation*

GRASSLAND BIRDS

VCE Gets Down to Grass Tacks

On the western edge of the vast Llanos grasslands in northern South America, Carlos Ruiz keeps track of Buff-breasted Sandpipers. Traveling from the Arctic coast, these migrants refuel on invertebrates along river floodplains of eastern Colombia before continuing to Argentina. For the past decade, Ruiz has surveyed shorebirds in wetlands, grasslands, and agricultural areas. Migratory blackbirds, however, were never on his radar.

Enter the Bobolink, a charismatic songbird whose epic, trans-continental migrations depend on extensive grasslands from Canada to Argentina. Bobolinks became part of Ruiz's world in 2013 when he joined biologists from eight countries at a VCE-led workshop to tackle problems plaguing grassland birds across the hemisphere. The Bobolink was our chosen icon, and VCE's research had revealed exactly where Bobolinks stop along their 12,000-mile, round-trip migration. Ruiz's survey areas are part of one key stopover region.

"Bobolinks are not well known in Colombia," says Ruiz, a biologist with Calidris, a non-profit waterbird conservation group. "VCE's research alerted us to the importance of our open lands during their migration and gave us insights into their ecology and the problems they may face here."

Forging informed, strategic partnerships lies at the heart of VCE's Grasslands Program. Our

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Upland Sandpiper

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FIELD NOTES

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The Vermont Center for Ecostudies (VCE) is a nonprofit organization whose mission is to advance the conservation of wildlife across the Americas through research, monitoring, and citizen engagement. With a reach extending from Canada and northern New England through the Caribbean and South America, our work unites people and science for conservation.

Field Notes is VCE's biannual newsletter and is free to our constituents.

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VCE VIEW



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There are few places on this planet that I treasure more than the cloud forests of Sierra de Bahoruco, on the Dominican Republic's border with Haiti. Since first stepping into these remote mountain forests at dawn more than 20 years ago, hearing at once a plaintive Bicknell's Thrush call and an otherworldly Rufous-throated Solitaire song, I've been captivated. They exude a mystery, a splendor, and a uniqueness that have penetrated to my core.

Over the past two decades, VCE and our Hispaniolan colleagues have studied Bahoruco's migrant and resident birds. We've done cutting-edge work on the winter ecology of Bicknell's Thrush, described previously unknown nests of two endemics, and helped put Bahoruco on the international conservation map. Yet these cloud forests now face a profound crisis as they disappear before our unbelieving eyes, victim to accelerating pressures from commercial agriculture and charcoal production *inside* the national park. Shockingly little is being done to stem their loss, and an ecological tipping point fast approaches.

With a host of deeply concerned and extraordinarily committed local partners, VCE is galvanizing people to action. During my recent weeklong trip to the DR, I didn't set foot outside the capitol of Santo Domingo! Our focus and efforts have shifted—we know the science and must now act. The odds are daunting, the stakes high, the time short. You will hear more about Bahoruco in the months ahead.

Chris Rimmer
EXECUTIVE DIRECTOR

STAFF NOTES

JASON HILL JOINS VCE STAFF



© KATIE MANN

VCE welcomes Jason Hill, who has joined the staff as a post-doc, mainly to launch our three-year study of Upland Sand-piper and Grasshopper Sparrow migration ecology. Spring will find Jason in travel mode, with a troop of field technicians, to Department of Defense installations across the U.S. breeding range of both species. The team will fit birds with GPS tags and light-level geolocators in hopes of gaining insights about the migratory pathways and wintering areas of discrete populations.

A native Iowan, Jason's taste for adventure has taken him far and wide. Following undergraduate studies at the University of Montana, Jason spent several years as an itinerant field biologist, studying sea otters in California, Po'ouli and Hawaiian honeycreepers in Maui, and endangered Red-cockaded Woodpeckers in Florida. His MS thesis at the University of Connecticut involved a radio telemetry study of Saltmarsh Sparrows along Long Island Sound, while his Ph.D. dissertation at Penn State examined the intersection of population ecology and ecological restoration, studying demographics of grassland sparrows on reclaimed surface mine grasslands.

Jason and his wife Katie are avid rock climbers. A card-carrying "bird geek," Jason is also a passionate birder who serves as an eBird coordinator for central Pennsylvania in his spare time. We look forward to his immersion in Vermont's birding community, and we fully expect to see his name on the 2015 County Quest leader board!

VCE research associate Jim Goetz is working hard to conserve broadleaf montane forests in Haiti's La Visite National Park.

Restoring La Visite's Cloud Forests

An innovative program to conserve and restore broadleaf montane forest habitat for neotropical migratory birds.

In the fall 2013 edition of *Field Notes*, I reported on VCE's efforts to pilot an innovative program to conserve and restore broadleaf montane forest habitat for Bicknell's Thrush and other neotropical migrant birds in Haiti's La Visite National Park.

Our core effort follows a payment for ecosystem services model in which we contract with local landholders to conserve their forested land. Participants earn cash payments every three months based on forest area, habitat value, and level of compliance. On contracted land, compliance means not cutting trees, not grazing livestock, not farming, and making sure no one else does either. My colleagues and I have shepherded this project through many challenges over the past two years, expanding from 20 to 30 participants, increasing the project area from 50 to 60 hectares, walking over 700 km on compliance checks, meeting monthly with participants, and learning every day. While those measures reflect considerable effort, we have to ask ourselves whether we are succeeding in terms of forest actually conserved.

The answer is a qualified yes. Most significantly, clearing for agriculture—by far the most damaging activity—has stopped on contracted land. However, grazing, especially in the dry season when other forage is scarce, and small-scale woodcutting continue. To address this, we try to understand who is breaking the rules and why. For example, to the extent that participants violate their own contracts, we must consider how to revise our system of incentives, surveillance, and sanctions. To the extent that others cut wood or pasture animals on contracted land, we must



© REBECCA HEIDKAMP

consider whether this represents cheating, or perhaps whether cultural norms of sharing wealth (including forest wealth) are in play.

Revising rules, engaging neighbors outside the program, reducing fuel consumption, and increasing alternate sources of forage are important issues to consider as we work closely with participants to adapt this program to better fit local conditions. There are no obvious, quick fixes, but our success to date gives us optimism that we will continue to make significant conservation progress amidst challenging conditions.

—Jim Goetz is a longtime VCE colleague who has crossed the hemisphere many times in pursuit of Bicknell's Thrush and montane forest conservation.

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VERMONT ATLAS OF LIFE

Leader: Kent McFarland

Season: Year-round

Beginner to expert

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www.vtecostudies.org/atlas/

email: kmcfarland@vtecostudies.org

MOUNTAIN BIRDWATCH

Leader: Judith Scarl

Season: June

Beginner to expert/hiking required

Adopt a mountain and survey Bicknell's Thrush and other mountain songbirds.

www.vtecostudies.org/projects/mountains/mountain-birdwatch/
email: jscarl@vtecostudies.org

LOON WATCH

Leader: Eric Hanson

Season: Mid-July

Beginner to expert

Participate in the annual one-day census of

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www.vtecostudies.org/loons/
email: ehanson@vtecostudies.org

VERMONT LOON
CONSERVATION PROGRAM

Leader: Eric Hanson

Season: Spring-Summer

Beginner to expert

Help monitor nests and lakes.

www.vtecostudies.org/loons/
email: ehanson@vtecostudies.org

Visit www.vtecostudies.org/citsci.html to find the citizen science project that's right for you.

Though not a showy, eye-catching bird, the Mangrove Cuckoo holds a special allure for those seeking close encounters with more elusive species.



© QUINTEN QUESTEL

The Allure of Mangrove Cuckoos

This elusive species is the iconic bird of Florida's mangroves, and a hot item for birders because of its scarcity.

Over the past decade, the birds of Florida's mangrove forests have piqued my scientific curiosity and occupied many of my working hours. Not the showy, gregarious wading birds that attract winter-weary birders and photographers, but the smaller, less conspicuous land birds, species like Black-whiskered Vireos, White-crowned Pigeons, and Mangrove Cuckoos. No ostentatious beauties these, but for me they hold a special allure. Each is an essentially tropical species that has found a foothold in North America in the mangrove forests that cloak the southern coasts of Florida, where they lend a sense of the exotic to that biologically rich but often austere environment.

During my fieldwork in the mangroves, I have met many others who feel that same pull. These days, I study the ecology of Mangrove Cuckoos on Sanibel, a barrier island off Florida's west coast and home to the J.N. "Ding" Darling National Wildlife Refuge, arguably our nation's most popular wildlife refuge. Most visitors come with a casual interest in seeing the sights, but a surprising number arrive with a more specific goal: finding a Mangrove Cuckoo. This elusive species is—to my mind, anyway—the iconic bird of Florida's mangroves, and a hot item for birders and naturalists because of its scarcity. Nearly everyone I meet has a Mangrove Cuckoo story to tell, and most involve otherwise rational people who spend years of their lives going to absurd lengths to catch a glimpse of this decidedly modest bird. Explaining the Mangrove Cuckoo's appeal is no easy task; they are, after all, dull in color, staid in disposition, and anything but melodic in voice. But these stories resonate with me, because I know that even a fruitless pursuit of this bird takes us back to a Florida that is wilder, more teeming with nature, and ever more distant. It's a Florida that we can't afford to lose.

—John Lloyd



In Vermont, loons annually reuse nest sites at a much higher rate than do Midwestern birds.

Shifting Nest Sites of Loons

In some parts of North America, loons regularly shift nest sites every few years.

For those of us eagerly awaiting the spring return of breeding loons to our favorite lake, chances are we know exactly where the pair's nest site is located and count on them to reoccupy it nearly every year. Yet in some parts of North America, loons regularly shift nest sites every few years, or at least once per decade. Why? Water level changes from rain, drought, or beaver activity may force loons to relocate nests to higher or lower sites. Social dynamics may come into play as well. Researcher Walter Piper, following individually color-banded loons in the Midwest, discovered that nest site relocations often occurred when a new male took over a territory and mated with a female who had bred on that lake before. In contrast, when territorial switches involved the female only, the new pair (with a male who previously had nested in that territory) invariably used the “traditional” nest site. These observations strongly suggest that males choose nest sites.

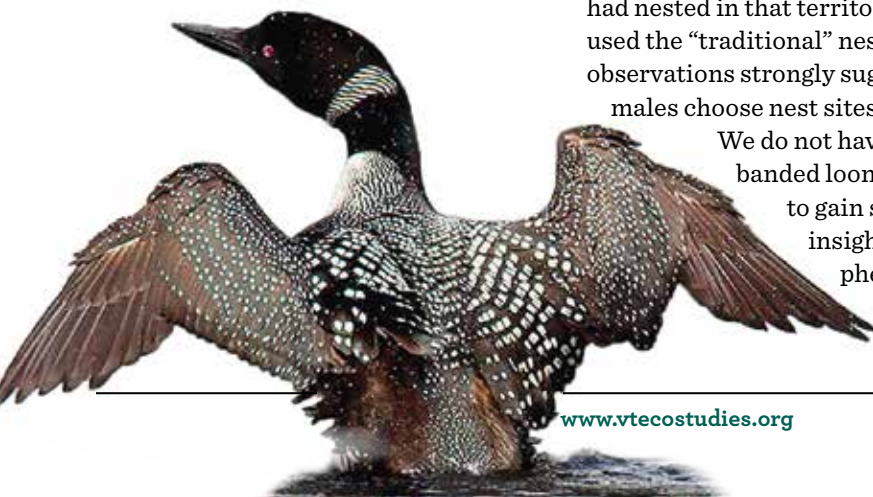
We do not have enough banded loons in Vermont to gain such specific insights into this phenomenon, but we have noted nest

site shifts in many territories. For example, the Wolcott Pond pair nested in the north marsh for nearly a decade before moving to the pond's south end. We've observed many similar nest site shifts between rafts, islands, and shorelines on other lakes and ponds, including Joe's, Kettle, Osmore, Little Averill, Great Averill, Holland, Miles, Nichols, and Somerset. Although we can't be sure, we suspect that at least some of these relocations resulted from territorial takeovers by a new male, as many observers have reported skirmishes between pairs and intruding birds. Other shifts are smaller, for example, from one side of an island to another.

In Vermont, loons annually reuse nest sites at a much higher rate than do Midwestern birds. Since the early 1980s, pairs on many established territories have used the same nest site for over 35 years. Yet there have been multiple mate changes over this period of time. Over the many years I've observed loons on both Vermont and Midwestern lakes, I've noticed that Vermont lakes tend to have fewer islands and marshes, which may cause pairs to focus on the “one” best site, whether an island, marsh, or nesting raft. In addition, Vermont lakes tend to have higher levels of shoreline development than many Midwestern lakes. Therefore, Vermont loons—even new males—facing a limited choice of prime nest sites, may simply “decide” to use the tried and true options.

—Eric Hanson

NEST SITE CHANGES OFTEN OCCUR WHEN A NEW MALE TAKES OVER A TERRITORY AND Pairs WITH A FEMALE WHO HAS BRED ON THAT LAKE BEFORE.



VCE GETS DOWN TO GRASS TACKS

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collaborative research is pointing the way to where, how, and with whom to most effectively carry out conservation. In classic VCE fashion, we use our research results much like a GPS, identifying where to focus conservation efforts and leading us to partners like Ruiz.

The seeds of VCE's Grasslands Program have quietly germinated since our initial foray into Bobolink over-winter ecology in 2004. Since then, expanded research in South America, budding collaborations, and conservation plans have taken root. For example, VCE has guided Ontario's development of a recovery strategy for threatened grassland birds, has provided support tools to New England landowners willing to manage their property to benefit grassland birds, and has helped secure a ban on the deadly pesticide monocrotophos in Bolivia after demonstrating its toxicity to wintering Bobolinks.

Our attention to grassland birds is no fluke. Species like Eastern Meadow-



Carlos Ruiz of Calidris is partnering with VCE to conserve birds like Bobolink that stop over in Colombia during their fall migration.

© YANIRA CIFUENTES

lark, Grasshopper Sparrow, and Bobolink have experienced 50-80% population declines over the last 50 years. Losses of breeding habitat continue today; 1.3 million acres of core grassland habitat were tilled and planted to corn and soy for ethanol and biodiesel production from 2006 to 2011. Simply put, grassland bird populations have been in free fall, and stabilizing them is a crucial conservation challenge.

Biologists have struggled for decades to turn the situation around. Most grassland habitat is on private lands in agricultural production, and practices that maximize profits often directly conflict with the needs of birds. Finding solutions that stick will require creative, landscape-scale transformations developed in collaboration with “non-traditional” partners such as farm interest groups and agricultural services, and with input from experts in agricultural economics and the human dimensions

of natural resource planning.

Capturing and enacting ideas from many partners demands a structure, a synthesis of priorities, and a plan for how to move forward. With this in mind, Tom Will of the U.S. Fish and Wildlife Service (USFWS) Midwest Region invited VCE to submit a proposal for crafting a Bobolink Conservation Plan. “VCE’s Rosalind Renfrew had conducted extensive research on Bobolinks in both North and South America, and was well underway uniting partners in Canada and the Northeast,” says Will. “Bringing Roz on to write the plan was a no-brainer.”

USFWS took the logical next step and awarded VCE the task of optimizing grassland conservation through a Midwest Grassland Landscapes Network. “We realized that to solve the complex problems, we needed to lay down a strong foundation that brings together all the partners,” says Will. “Since this was also a VCE interest, it made perfect sense to link Bobolink planning with a comprehensive project to map grassland initiatives throughout the Midwest, and develop more synergistic and productive partnerships.”

Meanwhile, Ruiz and Renfrew will convene with biologists and farmers in Colombia this fall to explore means to integrate Bobolink conservation needs into farming practices. While there, they will glean input from biologists and farmers alike as they converge on priority conservation actions for overwintering Bobolinks and other grassland birds.

“Migratory birds face various threats here, including exposure to pesticides and unsuitable water management practices,” says Ruiz. “Our solutions to conserve Bobolinks will also benefit a suite of other species, plus grassland systems as a whole and the farmers that depend on these lands.”

With committed partners like Ruiz, VCE faces the complex challenge of conserving migratory grassland birds throughout their annual cycle—breeding, migration, and winter periods—with resolve and optimism.—Rosalind Renfrew

BEFORE AND AFTER PHOTOS FROM NORTH DAKOTA EXEMPLIFY THE MILLIONS OF ACRES OF GRASSLAND HABITAT IN THE GREAT PLAINS THAT HAVE BEEN TILLED AND PLANTED TO CORN AND SOY FOR BIODIESEL FUEL.



© RICK BOHN

© LEIF RICHARDSON



Self-medicating behaviors may help structure the relationship between bumble bees and the flowers on which they feed.

You're Not the Only One

Some animals consume plant tissues with antibiotic, anti-fungal, or anti-parasitic effects in order to rid themselves of disease, a phenomenon known as “self-medication.”

If you've been sick this winter, chances are you took something to feel better. And if you did, you probably have a plant to thank, since many of our most useful medicines are based on chemicals synthesized by plants. Examples of such plant secondary metabolites—so called to distinguish them from other “primary” molecules involved in plant growth and reproduction—include phenolics (e.g., aspirin, originally from bark of willows), alkaloids (among them morphine from poppies), cardiac glycosides (the heart drug digitoxin from foxglove), terpenoids (decongestants like menthol from mints), and phenolics (taxol, a cancer drug from yew trees.)

It was once thought that secondary metabolites were waste products, but we now understand they have important functions in plant life history. Many function as defense against herbivores, with negative effects on consumers ranging from deterrence to lethal toxicity. Interestingly, some herbivores have evolved a tolerance for these potentially harmful chemicals, and some even derive a benefit from them. Like people, some animals consume plant tissues with antibiotic, antifungal, or anti-parasitic effects in order to rid themselves of disease, a phenomenon known as “self-medication.”

There are a number of examples of mammals and birds self-medicating in ways reminiscent of human behaviors. Chimpanzees, goats, and sheep have all been observed to change their diets when infected with parasites, consuming plants with little nutritional benefit that contain chemicals with anti-parasitic function. And a recent study demonstrated that two species of urban birds—House Sparrows and House Finches—incorporate smoked cigarette butts into their nests, resulting in lower levels of ectoparasite infestation of nest materials!

Vertebrates aren't the only animals that self-medicate; there is growing recognition that insects also ingest plant tissues with medicinal properties. Following attack by parasitoids, woolly bear caterpillars eat plants containing toxic pyrrolizidine alkaloids, thereby improving their chances of surviving attack. Honey bees and related social bees use antibiotic plant resins in nest architecture, increasing their collection of these substances following challenge by fungal pathogens.

In most of these examples, animal self-medication has a negative effect on plants, but self-medication behaviors can also structure relationships between plants and their mutualists. It has been known since antiquity that nectar may contain toxic chemicals, some of which kill the bees that gather it. The presence of toxic chemicals in floral rewards has long perplexed us, since this seems incom-

patible with flowers' role in pollinator attraction. In research with colleagues at Dartmouth College and beyond, I found evidence that nectar chemicals can function to attract self-medicating wild bees. First, we found that some naturally occurring nectar chemicals, including the alkaloids anabasine and nicotine (found in tobacco nectar), the terpenoid thymol (from basswood tree nectar) and the iridoid glycoside catalpol (from nectar of turtlehead, a northeastern wetland plant), reduce disease load in the guts of parasitized bumble bees. Second, we found that healthy and sick bumble bees foraged differently at turtlehead flowers; healthy bees ignored nectar chemistry variation, while those infected with parasites favored plants with the highest iridoid glycoside concentrations, increasing pollination success of those flowers relative to others in the population. Whatever the benefits of self-medication, however, herbivores such as bees may also experience negative effects of consuming plant chemicals, leading to trade-offs between anti-parasitic benefits and physiological costs.

THERE ARE A NUMBER OF EXAMPLES OF MAMMALS AND BIRDS SELF-MEDICATING IN WAYS REMINISCENT OF HUMAN BEHAVIORS

There is concern that some bee pollinators are declining, which underscores the importance of monitoring efforts such as VCE's Vermont Bumble Bee Survey. As parasites are blamed for some cases of bee endangerment, dietary secondary metabolites may play a role in mitigating these worrying declines. Pollinator gardens and plantings are now a well-established land management tool; perhaps the future will see the widespread planting of pollinator pharmacies!

—Leif Richardson is a USDA-funded postdoctoral research fellow at UVM's Gund Institute for Ecological Economics, where he studies interactions among mycorrhizal fungi, blueberry plants, and their wild bee pollinators.

TRAINING WORKSHOPS



© JUDITH SCARL

2015 Mountain Birdwatch Training

Are you a Mountain Birdwatch volunteer, or would you like to join a citizen science effort to learn about montane songbirds such as Bicknell's Thrush? This May, Mountain Birdwatch director Judith Scarl will hold three volunteer training workshops.

Learn MBW protocols, meet other volunteers, and brush up on your identification skills!

SATURDAY, MAY 9

10 a.m. to 1 p.m.

Five Rivers Environmental Education Center
Delmar, NY

SATURDAY, MAY 16

1 p.m. to 4 p.m.

Giltsland Farm Audubon Center
Falmouth, ME

SATURDAY, MAY 30

10 a.m. to 1 p.m.

White Mountain National Forest Office
Campton, NH

Please RSVP to
Judith Scarl
jscarl@vtecostudies.org
if you plan to attend or to learn more
about volunteering for this project!



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2015 VCE Birdathon

Team VCE is gearing up for Birdathon 2015! Join us on May 21st as we celebrate the return of Vermont's migrants with some early morning terrestrial birding, then a paddle down the Connecticut River as we strive to identify as many species as possible in a single day. Form your own team and count birds anytime in May, or sponsor the VCE Birdathon team. However you participate, you'll help VCE advance the conservation of wildlife through research, monitoring, and citizen engagement.

Suds & Science

Join VCE scientists and colleagues on the first Tuesday of most months at the Norwich Inn in Norwich, VT. With handcrafted brew and lively conversation, "Suds and Science" is a chance to talk science with VCE biologists and interested members of the community.

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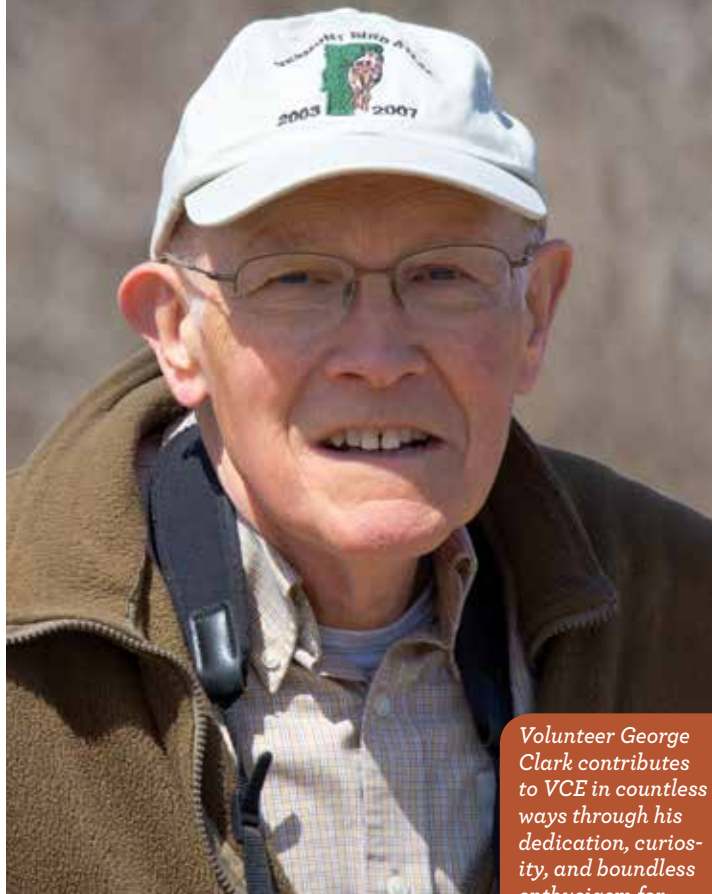
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Volunteer George Clark contributes to VCE in countless ways through his dedication, curiosity, and boundless enthusiasm for the natural world.

© DOUG HARDY

George Clark

A Quiet Exuberance for Birds and Volunteerism

George Clark's quiet, soft-spoken demeanor belies a boundless enthusiasm, not only for birds and their habits, but for communicating their wonders to others. While his contributions as a professional ornithologist and teacher are innumerable, George has embodied the spirit of volunteerism since retiring and moving to Vermont in 1997—giving abundantly of his time and energy to worthwhile causes, yet seeking no tangible returns.

George's interest in birds developed as a youth in New Jersey and Pennsylvania. "My maternal grandfather was an all-around naturalist," he says, "and I went on little trips with him. Then I discovered in college that it was possible to study birds professionally." After earning a bachelor's degree from Amherst College in 1957 and a Ph.D. from Yale in 1964, George spent two years at the University of Washington in Seattle before moving to the University of Connecticut, where he retired after 32 years as a professor of ecology and evolutionary biology.

Over the course of his distinguished career, George has contributed more than 200 publications that reflect his diverse research interests in the structure, behavior, distribution, and evolution of birds. A past president of the Association

of Field Ornithologists, he served as coeditor of the book *Perspectives in Ornithology: Essays Presented for the Centennial of the American Ornithologists' Union*, and he more recently authored a chapter on avian form and function for the Cornell Lab of Ornithology's *Handbook of Bird Biology*.

A lifelong teacher with extraordinary patience and curiosity, George is in his element introducing people to birds and the natural world. He frequently leads community birding walks in his hometown of Norwich, where he serves on the Trails Committee, the Milton Frye Nature Area Committee, and is a past member of the Norwich Conservation Commission. He's as likely to be out lopping branches or pulling invasive weeds on an overgrown trail as he is to be leading a group of rapt kids or adults on a bird walk.

VCE has been a frequent and grateful beneficiary of George's dedication as a volunteer. His contributions during the Vermont Breeding Bird Atlas alone offer a prime example. During this 5-year project, George served as coordinator for northern Windsor County, organizing scores of amateur birders to beat the bushes for nesting birds, logging 450 hours in the field himself, and writing 22 of the 209 species accounts for the Atlas book published in 2013!

More recently, George has thrown his energies into the Vermont County Birding Quest, an annual effort to identify as many species as possible within Vermont's 14 counties. Part friendly competition and part careful documentation of the state's avifauna, the Quest provides him with a ready "excuse" (not that he needs one) to get out birding in Windsor County. During 2014, George recorded 194 species in Windsor County, narrowly missing his goal to join birding companions Ed Hack and Kyle Jones in the elite "200 Club." Moreover, his submission of eBird checklists (584) far eclipsed anyone else's in the county (next closest was 376).

In addition, George recently joined the Vermont Bird Records Committee, a group of expert birders and ornithologists whose primary purpose is to annually review and validate statewide bird records, and to maintain the Vermont State Bird List.

VCE and the entire birding community are fortunate that this unassuming but energetic and civic-minded man retired in Vermont. Thanks George—200 or bust in 2015!

—Steve Faccio

Volunteers are integral to the success of many VCE projects. From the Vermont Breeding Bird Atlas and the Vermont Butterfly Survey to long-term monitoring projects such as Mountain Birdwatch and the Forest Bird Monitoring Project, the countless hours contributed by these dedicated individuals allow us to achieve conservation in a cost-effective manner. Moreover, our citizen scientists often share their enthusiasm and knowledge of the natural world with friends and neighbors, helping to nurture a community of informed ecological stewards. In an ongoing effort to thank and acknowledge their contributions, we regularly profile a volunteer in Field Notes.



Bicknell's Thrush in Puerto Rico

VCE Targets Puerto Rico for Bicknell's Thrush Surveys

VCE has known for years that Hispaniola is the winter epicenter for Bicknell's Thrush. We estimate that 80-90% of the songbird's global population packs itself into the island's dwindling broadleaf forests for six to seven months each winter.

Our evidence is field-based. Surveys by VCE staff and our partners in Haiti and the Dominican Republic have found the thrush occupying more sites and in higher densities than on any of the three other islands where it is known to winter: Cuba, Jamaica, and Puerto Rico. Further, Hispaniola

has far more extensive high-elevation, wet broadleaf forests, which Bicknell's Thrushes prefer over other forest types.

However, new computer modeling by VCE's Kent McFarland has us rethinking Puerto Rico's potential to harbor wintering Bicknell's Thrush. Guided by this model, which shows that 10% of the species' potential winter habitat occurs on Puerto Rico, VCE took to the island in January. Our goal was to launch targeted surveys for Bicknell's Thrush, of which only a handful had previously been documented islandwide. We assembled a field team led by José Salguero and Julio Salgado and designed a simple but statistically



© JEFF NADLER

Puerto Rico's Cordillera Central is a focal area for VCE's winter 2015 Bicknell's Thrush surveys.

Below: Chris Rimmer field-testing the latest addition to VCE's fleet, Maricao, Puerto Rico

broadleaf forest with moderately dense understory. However, I fully expect that José and Julio will encounter thrushes by winter's end, possibly in nontraditional habitats such as low-lying limestone forests along the north coast. But I'm guessing they won't unearth the mother lode that we know exists on Hispaniola.

What we did encounter during my four days were angels, specifically *Setophaga angelae*, the Elfin Woods Warbler. One of Puerto Rico's 17 endemic birds, this mountain-dwelling gem is a rare, elusive find. It wasn't even a described species until 1972, and there are believed to be fewer than 2,000 individuals on the island. This diminutive warbler primarily inhabits the stunted, wind-clipped forests of Puerto Rico's highest elevations. Its subtle, thin song and calls challenge auditory detection by birders and ornithologists alike (I can personally attest to that).

José, Julio, and I managed to hit the Elfin Woods Warbler jackpot on January 22, our first morning of thrush surveys. We found nine birds in a patch of subtropical, wet serpentine forest, not exactly the species' classic elfin habitat, but an area of rich floristic and avian diversity. Needless to say, I was thrilled to chalk up this lifer, plus several other endemics, including Puerto Rican Screech Owl, Puerto Rican Emerald, Puerto Rican Tody, Puerto Rican Vireo, and Puerto Rican Tanager.

Back to our target quarry. Regardless of whether or not José and Julio find Bicknell's Thrush, we'll obtain crucial information to prioritize local and rangewide conservation planning for this species' vulnerable winter habitats. We know that effective conservation of forests throughout the Greater Antilles extends far beyond Bicknell's Thrush to encompass a suite of biotic diversity. VCE couldn't have two more capable ornithologists scouring the island, and if Bicknell's Thrushes are present, they'll find them.

—Chris Rimmer



© JORGE RODRIGUEZ; INSET: © JULIO SALGADO

robust sampling scheme. José's and Julio's charge was to conduct standardized counts on at least 60 1x1-kilometer blocks of forest habitat across Puerto Rico. No simple assignment, that!

I joined José and Julio in mid-January to launch our surveys. Over four days, we scrambled up and down wet forested slopes, logging many miles from the western mountains of Maricao to the eastern ridges of Carite State Forest. Piercing calls of Bicknell's Thrush rang from our handheld speakers, our ears on constant alert for at least a muted response. We heard none. I was surprised not to find our bird in some of the forest patches we surveyed, which had the key ingredients of wet

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Grasshopper Sparrow {*Ammodramus savannarum*}



JASON HILL



JASON HILL

GRASSHOPPER SPARROWS
BUILD EXCEPTIONALLY
WELL-CONCEALED, DOMED
NESTS OF WOVEN GRASS ON
THE GROUND.

A small, insect-like songster awaits the patient birder who ventures into pastures and hayfields. Easily overlooked, the migratory Grasshopper Sparrow derives its name from a buzzy song rather than its dietary preferences. However, Grasshopper Sparrows are largely insectivorous during the summer months and do favor grasshoppers over their other main prey items—larvae and adults of beetles and moths. Before consuming a grasshopper, this sparrow removes all of the insect's appendages (e.g., wings, legs, antennae, and head) by grasping them individually within its bill and shaking vigorously. Grasshopper Sparrows forage exclusively on the ground, and they are swift and agile runners. Males and females cannot be distinguished by plumage, and a recent study found that females are rarely seen except when attending to recently fledged young. Grasshopper Sparrows build an extremely well-hidden, domed nest of woven grass on the ground. When disturbed, nesting females may hop and run away, feigning injury. Unlike many species of birds, Grass-

hopper Sparrow young that survive their first year of life do not generally return to their area of birth, but how far away they disperse remains a mystery.

Population Status and Conservation

Grasshopper Sparrows breed across much of the conterminous U.S. and overwinter in the Southeast U.S., Mexico, and Cuba. Unfortunately, like many other grassland bird species, Grasshopper Sparrows have experienced declines across most of their range, including Vermont. These declines are likely attributable to widespread loss and degradation of grasslands and perennial grass cover on the species' breeding and wintering grounds, as well as intensification of agricultural practices—especially row-crop agriculture. In Vermont, the Grasshopper Sparrow is an endangered species now restricted to the Champlain Valley, although isolated, yet-to-be-discovered pockets of breeding pairs may exist in the Connecticut River Valley. Grasshopper Sparrows avoid grassland edges, favoring large, intact, and simply shaped (e.g., circular or square) habitat patches. Vermont's few extant local populations are found at airports or in association with rotationally grazed pastures. Recommended conservation actions for Grasshopper Sparrows include establishing a window of 65 days (from the end of May to August) without mowing, and creating and maintaining multifunctional grassland landscapes with low-intensity agricultural lands (e.g., rotationally grazed pastures). —Jason Hill