# Field Notes

VERMONT CENTER FOR ECOSTUDIES
UNITING PEOPLE & SCIENCE FOR CONSERVATION

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*Uniting People and Science for Conservation*

## Shedding Light on Songbird Migration

Ever since the day in 1803, when John James Audubon tied thin silver cords to a brood of Eastern Phoebes near Philadelphia, and later confirmed that two returned to the neighbourhood the following year, ornithologists have been devising ways to track songbird migration.

Despite great strides, no one had tracked an individual songbird throughout its annual migration. We have learned about incredible movements of raptors, seabirds, and shorebirds, as these large-bodied migrants carry transmitters beaming their locations to passing satellites. The conundrum for songbirds has been their small size—they simply can't take on much extra weight.

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A Bicknell's Thrush wearing a "backpack" Solar Geolocator.

Enter Canadian ecologist Bridget Stutchbury. Two years ago she attached solar geolocators—miniature, light-sensitive devices, each weighing less than a dime—to a handful of Purple Martins and Wood Thrushes. One year later, the data she retrieved at her Pennsylvania study site yielded the first clear picture of individual songbird migration routes and over-wintering areas. Her revolutionary study, reported in the journal *Science*, ushered in a new era of migratory songbird research.

"Never before has anyone been able to track songbirds for their entire migratory trip," said Stutchbury, a professor of biology at York University's Faculty of Science & Engineering in Toronto. "We're excited to achieve this scientific first."

VCE biologists were among the many researchers eager for an inside look into the elusive lives of songbirds during their non-breeding season. Many migrant songbirds cover impressive distances of over 5,000 km between breeding and wintering sites, yet the exact timing, pathways followed, migratory stop-over areas, and degree of connectivity between all of these sites remain only speculative. These data are integral for any meaningful conservation action plan.

During 2007, Stutchbury and her team mounted small geolocators on 14 breeding Wood Thrushes and 20 Purple Martins in Pennsylvania. Their hopes rested on the site faithfulness of these birds. Tracking their fall departures, speed, and migratory pathways to South and Central America, and journies back to North America would be possible only through recapturing them a year later. Recovering the devices and downloading their precious data would

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## An Innovative Approach to Conserving Bicknell's Thrush

Profound conservation issues demand inventive, bold solutions. We're all challenged to "think big" nowadays, and VCE is doing just that on Hispaniola. As biologists, we thrive on understanding processes and events at small scales, mainly at individual and population levels. Yet truly effective conservation requires that we transcend societal, political and ecological boundaries.

After 15 years of investigating Bicknell's Thrush winter ecology on the island, seeking to unravel the species' fascinating but complex conservation status (see article on pg. 3), VCE's work has taken on a new dimension. We're collaborating with

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View of the Cordillera Septentrional in the Dominican Republic.

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

Our annual appeal will be mailed in mid-November. Your support in any amount will help us achieve our conservation mission.

Field Notes is VCE's biannual newsletter and is free to citizen scientists, donors, and partners.

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Vermont Center for Ecostudies
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Norwich, VT 05055

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# VCE View

As VCE heads into its third year, I'm pleased to report that we are on remarkably solid ground, moving forward with more optimism and energy than ever. Despite the past year's challenging economy, VCE remains vital and viable. Staff have worked hard to maintain a lean operation and diversify our funding base. Some tough decisions have been required, some projects trimmed, but we have kept our team intact, our constituency – you – engaged, and our overall program strong.

As VCE looks ahead, we remain committed to harnessing the collective energy of our many citizen scientists. We know for a fact that restless spirits lurk among you, eagerly awaiting new field-based missions. As we wrap up the Vermont Breeding Bird Atlas and Vermont Butterfly Survey projects, we're thinking about new ways to engage you. Of course, ample opportunities exist to get wet, muddy and bug-bitten on existing VCE projects – Mountain Birdwatch, the Vermont Vernal Pool Mapping Project, and the Vermont Loon Recovery Project among them. However, we'd sincerely like to hear from any of you with inspired thoughts for new or follow-up wildlife monitoring projects. We have a few ideas percolating ourselves.

You've heard this refrain before: effective conservation is as much about people as it is ecology. VCE couldn't do what we do without the passion and dedication that each and every one of you brings. As this issue of *Field Notes* highlights, we're tackling conservation issues on scales that require broad-based partnerships and collaborations. Whether you pitch in as a citizen scientist, fellow conservationist, scientific colleague, supporter, interested member of the public, or all of the above, we welcome your involvement. It all starts with you. Thanks, and best wishes for 2010.

*—Chris Rimmer*

# The Julie Nicholson Citizen Science Award

To honor Julie Nicholson, our longtime friend, avid birder and volunteer extraordinaire, who passed away last March, VCE is delighted to have established an award in her memory. The Julie Nicholson Citizen Science Award "honors Julie Nicholson's extraordinary passion and commitment to birds and wildlife conservation through her many years of tireless work as a citizen scientist." Given annually to an individual who exemplifies Julie's dedication to citizen science and conservation, we could not have chosen a more worthy first-time recipient in 2009. Roy Pilcher has arguably volunteered more time, logged more miles, and expended more energy than anyone in the past quarter century to advance bird and wildlife conservation in Vermont. And, he hasn't slowed his pace one bit. Roy, on behalf of VCE and the statewide conservation community, congratulations and heartfelt thanks!

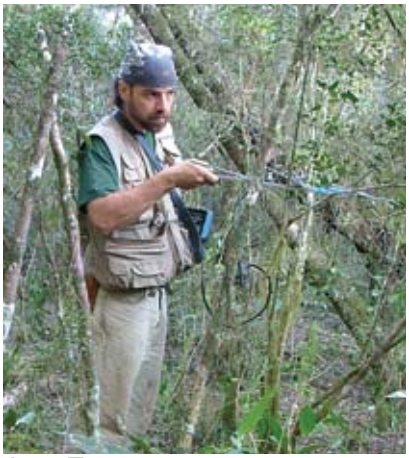


Roy Pilcher birding in the Champlain Valley.

# Competition Heats-Up Caribbean Wintering Grounds

While a winter trip to the Caribbean might sound idyllic, especially when your summer mountaintop haunts are blanketed by 5 feet of snow, life is anything but easy for wintering Bicknell's Thrushes. Ornithologists now recognize that events on the tropical non-breeding grounds can have large impacts on the fitness and survivorship of migratory songbirds. As migrants move south, they squeeze themselves into smaller geographic spaces than are available on the breeding grounds, naturally intensifying competition for limited resources. For territorial species, winter turf is hard-won, with the biggest and strongest individuals staking out sites with the richest food and best protection from predators. Less-dominant birds must settle for sub-par habitats.

VCE's studies of Bicknell's Thrush winter ecology on Hispaniola have revealed sexual habitat segregation—a preponderance of one sex over the other in certain habitats. In high elevation cloud forests, males far outnumber females, whereas in mid-elevation rainforests, we have found more females than males. Do these findings signify a battle of the sexes or just a natural division of labor? This question has prompted much research over the last decade, and theory on winter competition between the sexes falls into 3 camps. One, exemplified by American Redstarts, posits that males outcompete smaller females, forcing them to winter in sub-par habitat. A second, known in Hooded Warblers, proposes that each sex chooses a distinct habitat type, thereby avoiding head-to-head competition. A third behavioral strategy, shown by Ovenbirds, has males and females competing on equal footing and establishing neighboring, albeit exclusive, territories in the best available habitat. These preliminary findings quickly resulted in multiple research questions.



Jason Townsend conducting radio telemetry in the Dominican Republic.

To begin, we wanted to know if birds exhibit dietary differences between habitat types. Availability and consistency of food resources are often key factors that distinguish optimal winter habitat from lower quality habitat. Determining what a reclusive Bicknell's Thrush eats is no easy task. However, there are indirect ways to verify diet, both from droppings collected during mist-netting and banding, and from unique isotopic signatures in small blood samples extracted from each captured bird. Both analyses have shown that in the mid-elevation rainforests—"female habitat"—birds primarily consume fruit, whereas in the male-dominated cloud forests, arthropods predominate in the diet.

Relating these dietary differences to thrush spatial behavior, we hypothesized that fruit-eating rainforest birds would be non-territorial, possibly even joining foraging flocks as they moved around the forest pursuing the various flushes of fruit throughout the winter. In contrast, we suspected that arthropod-eating cloud forest birds would stake-out strict, non-overlapping territories to protect a winter's worth of bugs. To get at this, we used small backpack radio transmitters that allowed us to pinpoint the movements of birds we rarely had a chance to see in the near-impenetrable wet forest habitats. We were surprised to learn that all wintering Bicknell's Thrushes were territorial—males and females, first-winter and veteran birds, rainforest and cloud forest inhabitants. Several of the fruiting trees in the rainforest appear to have steady fruit throughout the winter, making them a resource worth defending. Interestingly, territory size was remarkably consistent—each Bicknell's Thrush defended an area of ~1/3 hectare (~2/3 of a football field). The radio-transmitters also gave us surprising insights into a specific cause of winter thrush mortality —introduced rats that prowl the canopy at night for fruit, seeds, and the occasional unsuspecting Bicknell's Thrush.

We also began to wonder if the dietary difference between habitats might have an effect on thrush fitness. Some studies have suggested that fruit is nutritionally inferior to arthropods for birds that will soon need to pump-up fat stores for their long flight to North American breeding grounds. However, the body condition of fruit-eating thrushes indicated that they were in good condition for their size, regardless of whether they were male or female. On the other hand, body conditions of the few females that compete for arthropod-rich territories were indeed poor relative to their size. We suspect that these females in "male habitat" suffer from competitive interactions with neighboring males. Together, our findings suggest that mid-elevation rainforest habitat, in contrast to higher elevation cloud forest, may be optimal for females, providing an area where they can compete equally well with males. This habitat has also undergone massive human-caused change over the last 100 years, and its remnant patches face some of the island's heaviest development pressure. VCE's Septentrional initiative (see page 1) is focused on finding avenues to conserve these remnant forest tracts.

Caribbean winters do not necessarily offer Bicknell's Thrushes a sun-drenched refuge from harsh winter weather. The species' future may hinge on conservation efforts to protect and restore a diversity of winter habitats, especially remaining rainforests. Bicknell's Thrush is a selective bird, every bit the habitat specialist, but its winter haunts also harbor many of Hispaniola's most endangered endemics, along with a suite of migratory songbirds and some of the most heavily forested watersheds left on the island. Efforts to conserve and expand these forests will provide critical ecosystem services, a shelter for Caribbean biodiversity, and the safe haven that wintering Bicknell's Thrushes need to survive.

*—Jason Townsend, VCE Research Associate*

*Geolocators - continued from page 1*

unlock the mysteries of migration. The wait was long, but the reward was great. In the summer of 2008, Stutchbury and her colleagues retrieved geolocators from five thrushes and two martins. The stored data, which recorded the precise time of sunrise and sunset each day, enabled them to reconstruct migration routes and wintering locations for each bird.

The findings were remarkable. Data from the geolocators showed that scientists have greatly underestimated the flying ability of migrant birds. Purple Martins flew in excess of 311 miles per day, more than three times previous estimates. The pace of spring migration was two to six times more rapid than in fall. For example, one martin took 43 days to reach Brazil during its fall flight, but returned to its breeding colony in a mere 13 days.

"We were flabbergasted by the birds' spring return times. To have a bird leave Brazil on April 12 and be home by the end of the month was just astounding. We always assumed they left sometime in March," she said.

The birds also spent more time feeding and resting between migratory flights than had previously been assumed. Purple Martins made stop-overs of 3 to 4 weeks in the Yucatan Peninsula before continuing to Brazil. Four Wood Thrushes lingered for 1-2 weeks in the southeastern U.S. during late October before crossing the Gulf of Mexico, while two other birds stopped on the Yucatan for 2-4 weeks before continuing southward.

Perhaps the most significant finding was that Wood Thrushes from a single breeding population did not scatter over their tropical wintering grounds. Geolocator data from all five Wood Thrushes revealed that they had overwintered in a narrow band in eastern Honduras or Nicaragua, "...suggesting a level of connectivity not previously documented for migratory songbirds. This region is clearly important for the overall conservation of Wood Thrushes, a species that has declined by 30% since 1966," said Stutchbury.

The plastic-coated geolocators, measuring only a half-inch long and a quarter-inch wide, are mounted on the birds' backs and attached by thin Kevlar loops around their legs, similar to wearing a backpack. Geolocators can be small because they don't transmit a signal. They only collect and store data. But, the birds must be recaptured to retrieve that precious data.

Stutchbury credits engineers with the British Antarctic Survey for miniaturizing the geolocators. "They hadn't really been thinking of [attaching them to] songbirds, but when I saw the technology, I knew we could do this," she said.

"Tracking birds to their wintering areas is also essential for predicting the impact of tropical habitat loss and climate change," Stutchbury added. "Until now, our hands have been tied in many ways, because we didn't know where migrants were going. They would just disappear and then come back in the spring."

VCE Biologist Roz Renfrew knows this feeling all too well. "All of the Bobolink flocks we and others have identified in South America account for less than 6% of the entire population. We can only guess where the rest of them are wintering," exclaimed Renfrew.

The Bobolink is a champion long distance migrant songbird, traveling some 12,000 miles each year. Geolocators stand to provide mind-boggling insights as to just how they manage this feat.

VCE biologist Roz Renfrew and University of Vermont Professor Allan Strong attaching a geolocator to a Bobolink.

This past summer, VCE joined forces with a team of colleagues from the Smithsonian Migratory Bird Center, University of Vermont, the Platte River Whooping Crane Trust, and Oregon State University. Our labors resulted in 45 Bobolinks across the breeding range winging their way south with geolocators, and another 120 are planned for 2010. Our collective goal is to determine how migration routes and wintering sites differ among discrete breeding populations, and what bearing this may have on conservation action.

VCE biologists have had the amazing and rare fortune to capture two of our Vermont-banded Bicknell's Thrushes at their wintering sites in the Dominican Republic. But where do the other 100,000 or so winter? What pathways do they follow, where do they stop over, and how long does it take them? When do thrushes depart for their spring and fall migrations? Geolocators will help unravel these mysteries too.

Last summer we collaborated with Environment Canada, Bird Studies Canada, and the University of New Brunswick to deploy geolocators on thrushes across the species' breeding range. Field teams clambered up peaks and through industrial forests from the Catskills to Quebec's Gaspe Peninsula to the Cape Breton Highlands in Nova Scotia, placing geolocators on 71 adult male Bicknell's Thrushes at seven different locations.

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*Geolocators - continued from page 4*

"Now comes the hardest part—the wait," says VCE Director Chris Rimmer. "We're counting down the months before we can recapture these birds and download the data. This will truly be 'the winter of patience' for everyone." Fortunately, history tells us that we can expect ~65% of our banded thrushes to return next May. VCE biologists will also apply the innovative technique this winter, attaching geolocators to thrushes at our long-term montane forest study site in the Dominican Republic.

Stay tuned, as knowledge of the migration ecology and population connectivity of Bobolinks, Bicknell's Thrushes and many other songbirds is about to take a quantum leap.

*—Kent McFarland*

*Bicknell's Thrush - continued from page 1*

an array of partners to launch a multidisciplinary ecoregional effort in the eastern Cordillera Septentrional. This area contains the Loma Guaconejo and Loma Quita Espuela Scientific Reserves, which together form a core of largely intact, but highly threatened forest habitat that VCE's research suggests is crucial for female thrushes. Each reserve is government-owned but co-managed by a local NGO. Outside the two reserves' "protected" nucleus of about 100 km$^2$ combined, lies an additional 150 km$^2$ of buffer zones, where more than 30 local communities practice agriculture and agro-forestry. Most of this land use is ecologically unsustainable; incursions within the reserves' core areas are frequent and unchecked.

Enter a small, nondescript migrant songbird that may be turning the conservation tide. Our approach uses Bicknell's Thrush as a focal species to develop a locally sustainable business model that relies on financial incentive mechanisms. In plain speak, that means VCE and our partners will implement on-the-ground actions to both improve local livelihoods and enhance or restore forested habitats for Bicknell's Thrush. The benefits will be ecosystem-wide.

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A Narrow-billed Tody, one of the endemic species that stands to benefit from habitat conservation efforts.

How, you might ask? The challenge is daunting, but our proposed solution novel. We'll apply a multi-pronged strategy centering on Payment for Ecosystems Services (PES), an innovative conservation approach that has gained international traction in the past decade. PES schemes provide performance-based incentives that financially compensate landowners for achieving specific environmental outcomes. In the case of Cordillera Septentrional, we will establish a landowner incentive program through sustainable agro-forestry production, forestry carbon credits (offsets), and water markets. This will necessitate a comprehensive feasibility study involving stakeholder workshops and rigorous cost-benefit analyses, under the expert coordination of our partners Consorcio Ambiental Dominicano, Vermont-based AgRefresh, and local NGOs Fundacion Loma Quita Espuela and SODIN.

Complementing this PES approach, we will employ several simultaneous strategies. First, we will identify priority candidate lands for further protection, based on a careful assessment of legal, economic, social, and biological needs in the region. This process will inform a planned land acquisition by the Eddy Trust to increase protected habitat in the reserves' buffer zones and intervening corridor by 10%, providing crucial ecological connectivity. Second, we will establish a community-based park ranger program to bolster habitat protection by equipping, training, and (importantly) paying six rangers in each reserve. These individuals will not only safe-guard the reserves from human intrusions, but will provide community outreach and support. Third, we will create a designated fund in the Dominican Republic to conserve Bicknell's Thrush habitat through innovative public-private partnerships, marketing campaigns, and fundraising activities. Modeled after the U.S.-based Bicknell's Thrush Habitat Protection Fund, which VCE helped to establish, this "sister" fund will provide a parallel mechanism to build sustainable financial support for habitat conservation on Hispaniola.

VCE's role in this ambitious undertaking? In short, we'll provide the scientific underpinnings for a plan to protect and restore habitat for Bicknell's Thrush in the eastern Septentrional. This winter, we will conduct a field study to examine how occurrence of Bicknell's Thrush and nine other bird species relates to a suite of habitat and landscape variables. Understanding avian habitat selection across the mosaic of forest types and disturbance regimes will provide essential information to guide our PES approach and to inform future habitat restoration efforts.

VCE and our network of partners are forging new ground with this project. There are no guarantees of success, especially against a backdrop of chronic ecological and socio-economic issues, but our local collaborators are truly energized and optimistic. Already we are looking ahead to replicating this model elsewhere in the DR, with Haiti also in our sights. As our colleague and friend Jaime Moreno so aptly exclaimed at a workshop last winter, "Thanks to this little bird, all of these people have finally come together." Bicknell's Thrush may just be the glue that pieces together a new paradigm of conservation on Hispaniola. We can only hope.

*—Chris Rimmer*

# Where Are They Now: From Field Tech to PhD

*VCE projects have benefitted from dozens of seasonal field technicians and biologists over the years. Many of these young men and women have relied on the skills they acquired while working on VCE projects as they advanced their careers in conservation biology. We asked four seasoned veterans of our Mountain Ecosystem Studies Program to discuss their current work and reflect on how their experiences helped prepare them for their future careers.*

### Thomas Brandt Ryder

From 1999 to 2003 I was a seasonal field biologist working with VCE conservation biologists on a variety of projects including migration bird banding, Bicknell's Thrush breeding biology, and Hispaniola avian conservation. In addition to my field capacity, I also worked in the office on data management and analysis. Although I have worked in a variety of ecological settings with a diversity of biologists, the VCE staff made the most lasting impression on me as a scientist. Specifically, the VCE team nurtured me as a young biologist by teaching me essential field techniques, quality data collection and rigorous experimental design. Their mentorship taught me about scientific integrity and inspired me to follow their lead. Moreover, VCE's clear commitment to scientific teaching was demonstrated as they guided me in writing and publishing my first peer-reviewed scientific paper. Recently I completed my PhD in evolutionary biology, studying the reproductive and social dynamics of the lek-breeding Wire-tailed Manakin, in Ecuador. I am currently employed as a post-doctoral fellow at the Smithsonian Migratory Bird Center, working on how urbanization impacts the population dynamics of migratory birds. Largely as a result of skills gained while working on the Bicknell's Thrush project, I have now published over 15 peer-reviewed papers. Ultimately, my experiences on VCE projects and the mentorship of the staff have played an integral role in my scientific progression, and for that I owe them enormous thanks.

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Brandt Ryder with a Wire-tailed Manakin in Ecuador.

### Gabe Colbeck

I was fortunate to meet the VCE staff while working as a grounds-keeper at the Vermont Institute of Natural Science the summer after my freshman year of college in 1997. At that time I was trying to figure out what to do with my life, and as my peers tended to opt for careers based on the money they could earn, VCE exposed me to a career path where you choose to do what you love (and hope that there is some monetary compensation in the end). While I was already interested in natural history, my time with VCE led me to a keen appreciation of biological diversity, and provided me with the scientific tools to begin to ask the 'hows' and 'whys' surrounding that biodiversity. Specifically, while studying the Bicknell's Thrush on Stratton Mountain, I learned the fundamentals of the scientific method, from observation, to hypothesis formation, to prediction testing, to data collection. These skills provided me with a solid base and have allowed my continued progression as a scientist. As a first year "Bicknologist," I had dreams of monitoring Bicknell's Thrush populations on mountains throughout the Northeast, and wanted to find and monitor as many nests as possible. While that may have been a little over ambitious, I carry that same enthusiasm towards my larger biological objectives: understanding how and why biological diversity is produced and maintained, so that we might better appreciate and conserve that diversity. My dissertation focused on how variation, such as bird song dialects, accumulates across populations of the same species, and if and how such dialects can lead to barriers to gene flow and speciation.

I am currently studying the evolutionary history of St. Lawrence populations of the Capelin, an economically and ecologically important forage fish species. While they don't sing, their life-history traits are fascinating, and this work is allowing me to expand my biological horizons.

Gabe Colbeck making home brew in Quebec.

### Jim Goetz

When I first came to work on Bicknell's Thrush in 1995, I had more field experience with finned than with feathered wildlife. I had handled many thousands of salmon and trout, but had banded at most a few hundred birds, and probably never had found a bird's nest on purpose. No surprise, cutting my teeth in avian field biology on the Bicknell's Thrush was all uphill. However, the blood, sweat and tears of each successive year's field crew slowly began to unravel, nest by nest, the mystery of this elusive bird. All that hard work led us to discover the bird's remarkable breeding ecology, which formed the core of my Masters thesis at the State University of New York in 2001.

Jim Goetz doing field work in the Dominican Republic.

I also had the great opportunity to explore and map Bicknell's Thrush winter distribution in the Dominican Republic in the late-1990s. Finally, after six summers and two winters of Bicknell's work, and having aged twice as many years, I shifted to work on other projects, with other species. I marveled at the short 10-hour field days, birds that sing all morning and nest in plain sight. In 2003 I shifted direction again and started work in the video archive at the Cornell Lab of Ornithology. However, expeditions with Chris Rimmer to the Dominican Republic and Haiti in 2006 and 2007 helped me stay involved in field research on Hispaniola. No doubt those field expeditions helped me gain the momentum I needed for my latest shift—conducting field research on Black-capped Petrel and Golden Swallow, part of which will be the core of a PhD I started this fall at Cornell University.

### Sarah Frey

I got hooked on "Bicknology" in 2003, my first summer working on the montane bird project on Stratton Mountain. My enthusiasm and energy seemed endless despite the physical and mental demands that Bicknell's Thrush work entails. My field partners and I ran tirelessly all over Stratton collecting every bit of precious data that we could. I was lucky enough to find my first Bicknell's Thrush nest without the help of radio telemetry that summer, and I remember the feeling of elation as I ran back to share my exciting news with the crew. I continued doing field work with VCE in Vermont, the Dominican Republic, and Argentina until 2008, and I enjoy our ongoing collaborations on papers and reports.

In addition to acquiring hardcore field skills, my experiences on the Bicknell's project helped prepare me for the scientific rigors that I would face in the coming years of my career. I was lucky enough to continue with Bicknell's work for my Master's degree at the University of Vermont, where I investigated the importance of scale for habitat selection and occurrence patterns of Bicknell's Thrush in Vermont. I attribute many of the field and technical skills I gained over the years to working with VCE staff, and I am very grateful to have such outstanding mentors.

Sticking with the mountain theme, I am currently working on my PhD at Oregon State University studying the temporal and spatial dynamics of bird distributions in the central Cascade Mountains of Oregon. Unfortunately, there are no Bicknell's Thrush in these mountains, but there are plenty of other interesting bird species to study. Similarly, the terrain is no easier (I may even say *less* forgiving in some cases) so I still get the chance to increase the circumference of my quads every summer hiking all over the mountains.

Sarah Frey in the Cascade Mountains of the Pacific Northwest.

## Drink Coffee for the Birds!

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# VCE Project Updates

## Vermont Loons Enjoy Banner Nesting Season

Despite a wet summer and an unfortunate increase of loon entanglement in fishing line, Vermont's loon population thrived in 2009, setting a modern record with 66 nesting pairs and 74 chicks surviving through August. At least 7 of Vermont's 228 adult loons either took live bait or lures, or became snagged in discarded or broken-off fishing gear. One of these birds was found dead on Lake Champlain in South Hero, while 2 were captured and released on Neal Pond in Lunenberg and Lake Willoughby. The outcome of the other entangled loons is uncertain. The Vermont Loon Recovery Project (VLRP) urges anglers to reel in when loons are diving nearby, and to retrieve and dispose of broken line. Attempts to catch a free-swimming loon with fishing line around its head are rarely successful and require much time and expense.



A Common Loon entangled in fishing line.

Of note, a color-banded adult was found dead for unknown reasons on Stiles Reservoir in Waterford. This bird had been banded in 1994 as a chick on Azischohos Reservoir in Maine, about 55 miles distant; the recovery documents one of the longest known dispersals of a chick from its natal lake. VLRP and volunteers documented 2 multiple-lake territories this summer. The loon pair on Lake Dunmore shifted its nest site to a 23-acre pond about a ¼ mile away. Usually only 1 adult would stay with the chick on this small pond, but in September, the chick flew to Lake Dunmore where its parents continued to provide care. In Glover, a loon pair nested on a large beaver pond near Daniels Pond. Loon volunteer Rita Pitkin documented a hatch of 2 chicks on June 24 and their disappearance on June 30. Earl Elliot, the loon volunteer on Daniels Pond, was delighted to observe 2 chicks on July 1, especially since we had not confirmed a loon pair, let alone a nest, there. Did the family make the ¼ mile trek through swamp and forest between the 2 ponds, or did we miss the Daniels Pond nest? We'll never know for sure, but our hunch is that the loons made an incredible overland journey. We'll be watching very closely in 2010!

*—Eric Hanson*

## In the Thick of It: Vermont Breeding Bird Atlas

As daunting and immense as the task may be, the Vermont Breeding Bird Atlas publication is taking shape. Most of the funding is in-hand, hundreds of quality photos have been submitted, most species accounts have been written, and about half have survived the first round of editing. Authors have generously donated their time to churn out thought-provoking, interpretive accounts for 207 bird species.

We are fortunate to have recruited both experience and talent on our editing team. Kim Corwin co-edited the recent New York Atlas, and we are lucky to have her honed skills from firsthand immersion in the entire process. Vermont naturalist Ted Levin brings a professional writer's flair to the Atlas, as well as a solid background in the natural history of wildlife.

We are simultaneously preparing chapters that will present relevant information in a broader context. These will cover long term land-use patterns, changes in habitat-associated bird groups and foraging guilds, and the future of bird conservation in Vermont. And of course, the review process on the 207 species accounts will continue.

We are very excited to announce that Cornell University Press, who recently published New York's beautiful second Atlas, has approved the Vermont Breeding Bird Atlas for publication. Cornell has an outstanding reputation and a proven ability to produce and market a top-quality product. That the company has already produced a recent atlas and worked out the kinks helped make it our number one choice of publishers. If all goes as scheduled, we expect publication date of 2011.

Also, thanks to funding from the Vermont Fish and Wildlife Department State Wildlife Grants Program, we are developing a companion website that will provide quick access to Atlas data, ensuring that the information is readily available for any conservation need.

*—Rosalind Renfrew*

## Bobolinks Delivering the News

Bobolinks may spend the winter in South America, but we have gained many insights about their wintering ecology without ever leaving North America. Our most recent findings have come from feathers, which, remarkably, can tell us a lot about how much rice Bobolinks eat in winter.

A feather contains stable isotopes that can reveal what a bird was eating at the time the feather was grown (see *Field Notes* Fall 2008). Unlike most songbirds, Bobolinks molt all flight feathers twice each year: once just after breeding, and again while feasting in the grasslands and rice fields of central South America. Wing feathers are grown in sequence, providing an opportunity to reconstruct diet, via stable isotopes, throughout the 6-week molt period.

Each spring Bobolinks deliver these clues some 6,000 miles north of South America, free of charge. With a team of collaborators from the University of Vermont, University of Minnesota, and the Platte River Whooping Crane Maintenance Trust, we sampled feathers from 3 populations across the breeding range to determine whether winter diets differed among breeding populations.

Foraging in rice can be a risky proposition for Bobolinks due to pesticides, so our goal was to distinguish a diet dominated by rice from a diet of other grassland seeds. Moreover, while the Bobolink has been championed as one species to benefit from grassland conservation in South America, no one can yet say how important these grasslands are for them.

Data from all 3 breeding populations indicated that on average, ¼ of the Bobolink's diet during its winter molt consists of rice. Most rice is consumed during the late stages of molt, when it is more widely available and when birds are preparing for migration. A small proportion of birds appear to eat nothing but rice, while others never touch it. Most individuals switch back and forth. Preliminary analyses indicate that breeding populations do not exhibit obvious differences in winter diet, suggesting they may mix in winter and be subjected to similar threats.

Feathers with built-in clues aren't all the Bobolinks will be bringing to our doorstep. With geolocators (see article on page 1) promising to elucidate migratory patterns, we will also collect productivity data to evaluate whether factors during migration or winter are associated with reproductive success. By combining location, diet, and nest success data, we expect our findings to be as dramatic as the species' own impressive migratory feats.

*—Rosalind Renfrew*

## Vermont Vernal Pool Mapping Project

The Vermont Vernal Pool Mapping Project got off to a great start in 2009, remotely mapping over 800 potential vernal pools in six counties of northern Vermont. We hosted four well-attended volunteer training workshops throughout the region, educating nearly 150 community members about vernal pool ecology and project field protocols. We developed a variety of volunteer training materials, a project website (www.vtecostudies.org/VPMP), and we initiated a project listserv to facilitate communication with our growing corps of volunteers. We also initiated a partnership with the Vermont Agency of Natural Resources GIS Systems Developer to add our GIS layer of potential vernal pools to the agency's interactive mapping website (http://maps.vermont.gov:8080/imf/imf.jsp?site=ANR_NATRESeditor). This allowed project volunteers to view locations of mapped potential pools and produce field maps to help them locate and ground-truth

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Ecologist Michael Lew-Smith (left) and volunteers at a vernal pool training workshop.

these potential wetlands. In addition, we contracted with a computer programmer to develop a web-based data entry system. In 2010, our vernal pool mapping, training workshops, and field-verification will shift its focus to five central Vermont counties.

*—Steve Faccio*

## Monitoring Amphibian Productivity at Marsh-Billings

A three-year study was initiated in 2009 to monitor amphibian productivity and assess the effects of forestry operations on vernal pool-breeding amphibians at the Marsh-Billings-Rockefeller National Historical Park in Woodstock, VT. The monitoring will include population assessments of the Jefferson Salamander, a Vermont-listed species of special concern

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and a species of primary management concern for the park, as well as the Spotted Salamander and Wood Frog. Twice each spring, amphibian egg masses are counted at seven breeding pools using a double-observer dependent methodology. In addition, we are collecting data about each pool's hydrology and water chemistry.



BIOLOGISTS STEVE FACCIO (LEFT) AND PAUL WILSON COUNT AMPHIBIAN EGG MASSES AT MARSH-BILLINGS-ROCKEFELLER NATIONAL HISTORICAL PARK IN WOODSTOCK.

*—Steve Faccio*

## Mountain Birdwatch

2009 represented our 10th year of surveying montane birds across summits of the Northeast, adding to an already unique and robust dataset with limitless possibilities. Over the last 2 years, VCE has worked with statisticians and our Canadian partners to address some deficiencies in the original Mountain Birdwatch (MBW) protocols, and to develop a state-of-the-art monitoring program for Bicknell's Thrush that will be implemented across its U.S. and Canadian breeding range. Thanks to a 2-year, $150,000 grant from the Survey, Monitoring and Assessment program of the U.S. Fish & Wildlife Service, we are now poised to launch Mountain Birdwatch 2.0 in 2010. By early January we will have hired a new MBW coordinator to fill the vacancy left by Julie Hart, now attending graduate school in Wyoming. Our plans for the upcoming field season are to complete a final year of MBW 1.0, while a crew of field technicians establish the new survey routes, and conduct bird and vegetation surveys using the redesigned MBW 2.0 protocols.

*—Steve Faccio*

## Bicknell's Thrush Symposium

VCE coordinated an invited symposium titled "Ecology and Conservation of a Rare, Declining Species: Bicknell's Thrush" at the 2009 annual meeting of the American Ornithologists' Union, held from August 11-15 at the University of Pennsylvania. VCE staff Chris Rimmer and Kent McFarland co-organized and presented at the symposium, which featured five 30-minute lectures on the latest scientific findings. The symposium was well-attended and offered an invaluable opportunity to network with other conservation scientists. The symposium abstracts and slide presentations are available at http://www.bicknellsthrush.org/aou09.html.

*—Kent McFarland*

## International Bicknell's Thrush Conservation Group

The International Bicknell's Thrush Conservation Group (IBTCG) moved north of the border for its third annual meeting in September. Over 20 biologists and natural resource managers met (with several others phoning in) at the Canadian Wildlife Service headquarters in Quebec City, where our host Yves Aubry rolled out the red carpet and organized a memorable gathering. Over two days we hammered out a strategy to finalize our near-complete Bicknell's Thrush Conservation Action Plan, disseminate and communicate it to diverse target audiences, and make final methodological adjustments to launch Mountain Birdwatch 2.0 across the entire breeding range in 2010. The group agreed unanimously and enthusiastically to hold the fall 2010 meeting in the Dominican Republic to help encourage much needed conservation initiatives on the specie's wintering grounds. We departed Quebec City with heightened enthusiasm and resolve for our multinational initiative to conserve Bicknell's Thrush. The road may be steep and the odds against us, but the forthcoming Conservation Action Plan will provide a much-needed road map to guide collaborative efforts across the Americas.

*—Chris Rimmer*


MEMBERS OF THE INTERNATIONAL BICKNELL'S THRUSH CONSERVATION GROUP ATTENDED A TWO-DAY MEETING IN QUEBEC CITY.

# Look What the Cat Dragged In

During the course of recent work on Bobolinks across the western hemisphere, my colleagues and I have captured 433 of these charismatic songbirds as research subjects. On the right leg of each, we place a tiny aluminum "bracelet" bearing a unique number, a bit like an avian Social Security number. Then we release them to the winds of fate, hoping against all rational odds that someday, somewhere, one of these banded birds will be encountered.

One such bird was Bobolink No. 0961-10071.

A male Bobolink in breeding plumage after being banded in Bolivia.

Frankly, we have a better chance of winning the lottery several times over than recovering one of these banded Bobolinks. By my estimation, we have banded 0.00043 percent of the world's Bobolink population. And because most of them were banded on their South America wintering grounds, we had no idea where they might return to breed. They could be anywhere in their range, which spans almost 3,000 miles from east to west and up to 1,000 miles north to south across North America. The chance that one of these individuals would be found anywhere, dead or alive, was essentially zero.

Then, on June 15, 2009, three and a half years after he'd been banded, Bobolink No. 0961-10071 turned up in Chelsea, VT, just 12 miles from my home, but at least 4,300 miles from where he was banded in the rice fields of Bolivia. This marked the first time a Bobolink banded on its wintering grounds had been recovered on its breeding grounds (or vice versa).

In the three years after he was banded, Bobolink No. 0961-10071 flew at least 35,000 miles in migration before that fateful summer day in Vermont. After flying all those miles, he came to our attention only because he was brought to the doorstep by a house cat whose owner was thoughtful enough to report the band number to the Bird Banding Lab in Maryland.

Carried on the wings of this amazing songbird, Bobolink No. 0961-10071 unwittingly provided a direct link between Vermont and Bolivia. And there is poignancy to the fate of this particular Bobolink. We're all well aware of the genuine threats that cats pose to birds. But, beyond that, the fate of Bobolink No. 0961-10071, no matter how skilled he was in migration, also serves as a metaphor and a reminder of the perils that songbirds encounter throughout their short and vulnerable lives.

*—Rosalind Renfrew*

# Citizen Science Opportunities

If you enjoy watching wildlife and wish to contribute to protecting our natural heritage, then it's time to join the VCE team. Consider becoming a citizen scientist.

| Project | Website/email | Leader | Season | Ability |
|---|---|---|---|---|
| **Vermont and Hispaniola eBird**<br>Report and explore bird sightings with this online checklist. | ebird.org/content/vt/<br>ebird.org/content/hispaniola/<br>kmcfarland@vtecostudies.org | Kent McFarland | Year-round | Beginner to expert |
| **Mountain Birdwatch**<br>Adopt a mountain and survey Bicknell's Thrush and other mountain songbirds. | www.vtecostudies.org/MBW/<br>mbw@vtecostudies.org | Steve Faccio | June | Beginner to expert. Hiking required. |
| **Loonwatch**<br>Participate in the annual one-day census of Vermont's breeding loons. | www.vtecostudies.org/loons/<br>ehanson@vtecostudies.org | Eric Hanson | mid-July | Beginner to expert |
| **Vermont Loon Recovery Program**<br>Help monitor nests and lakes. | www.vtecostudies.org/loons/<br>ehanson@vtecostudies.org | Eric Hanson | Spring-Summer | Beginner to expert |
| **Forest Bird Monitoring Program**<br>Help track long-term changes in populations of interior forest songbirds. | www.vtecostudies.org/FBMP/<br>sfaccio@vtecostudies.org | Steve Faccio | June | Able to identify forest birds by sight and sound. Hiking required. |
| **Vernal Pool Mapping Project**<br>Help map vernal pool locations statewide by conducting field visits to potential pools. | www.vtecostudies.org/VPMP/<br>sfaccio@vtecostudies.org | Steve Faccio | Primarily Spring, also Summer and Fall | Beginner to expert |

Field Notes
Vermont Center for Ecostudies
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# Monarch (*Danaus plexippus*)

Hey, where did all the Monarchs go? That question was on many peoples' minds this fall. By many accounts, 2009 was a disappointing year for Monarch enthusiasts, and several of us are wondering…well…where DID all the Monarchs go? Was there as dramatic a decline in numbers as it seemed, and if so, why?



A tagged Monarch ready for release. Seven Monarchs tagged in Vermont have been found in Mexico.

## Cool Monarch Info

We know that Monarchs undergo a truly spectacular migration. Beginning in mid-August they embark on a 2,500 mile journey from their northern breeding grounds to remote overwintering sites in the Oyamel fir forests of mountainous central Mexico.

Once in Mexico, Monarchs form dense clusters on Oyamel fir trees, often congregating by the millions and covering an area of 50 acres. Before departing in March or April, Monarchs mate, and as they journey northward, females deposit eggs on milkweed, thus beginning that year's first generation of Monarchs.

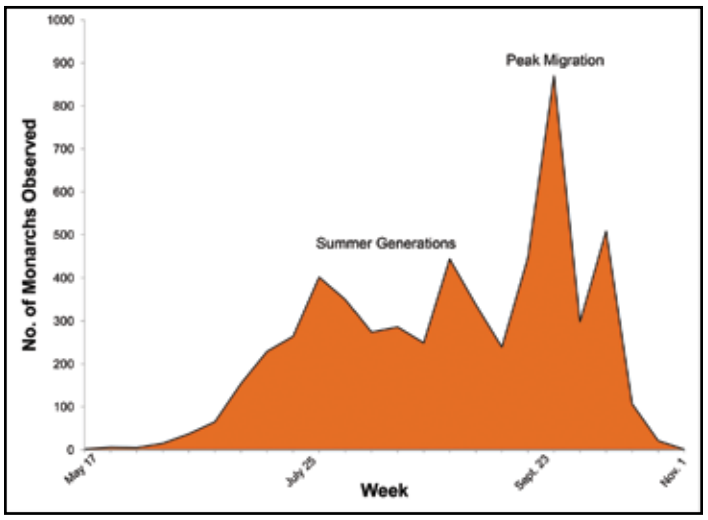
## Remaining Questions

Chip Taylor, director of Monarch Watch (www.monarchwatch.org), predicted in early September that 2009 would feature the smallest migration since 2004, when wintering butterflies occupied only five and a half acres in Mexico. This winter he predicts fewer than 10 acres of overwintering Monarchs. What is the cause of this dramatic decline?

Spring droughts throughout Texas and much of the Southeast may have resulted in scarcity of Monarch nectaring sources during migration. And since butterflies are solar-powered, the wet weather that plagued the Northeast in June and July may have hindered their ability to fly, mate and lay eggs. However, while natural weather variations may be responsible in part, we also know that during the 1990s wintering Monarchs occupied an average of 22 acres. Over the past decade, that number has dropped to roughly 14. Factors that may be contributing to this long-term decline include illegal logging of the species' Mexican wintering grounds, and human development along their migration route in the southern United States.

According to experts, the primary concern is not loss of the entire species, but loss of the migratory population. Though that may not seem as urgent as extinction, Monarch migration ranks as one of the most awe-inspiring events in the natural world. If it is within our power to halt this downward trend, is it not then worth the effort to do so?

*—Sara Zahendra*




Weekly observations of adult Monarchs during the Vermont Butterfly Survey (2002-2007). The two peaks during the summer months probably represent different generations in Vermont, followed by a peak in migration during the third week of September.