

Field Notes

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

Shifts in seasonal timing of natural events, like the budding of this *Red Elderberry* (*Sambucus racemosa*), are indicators that climate change has far-reaching impacts on the natural world.

CLIMATE CHANGE

Changing Nature's Calendar?

From budding to migration, nature's seasonal events are being altered by our warming climate.

| BY JOHN LLOYD

Of the many impacts that climate change exerts on our planet, perhaps the most evident so far have been shifts in the seasonal timing of natural events. Some of these shifts are well documented and familiar to observers of the natural world, such as earlier arrival of some migrant songbirds to their breeding grounds and earlier flowering of spring wildflowers. The study of these seasonal events and how they are influenced by climate is called phenology, and it has become a central topic for scientific investigation. Phenological changes are meaningful not only because they provide a clear benchmark of how climate change is affecting the natural world, but also because they can have profound implications for conservation. The timing of important *(continued on page 6)*

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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.

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VCE VIEW



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In and of itself, attaching a numbered aluminum band to a Bicknell's Thrush or Blackpoll Warbler leg on Mt. Mansfield's ridgeline doesn't represent cutting-edge science. Nor does recording a fourth singing Ovenbird on a 10-minute point count in old-growth maple-beech forest of Vermont's Northeast Kingdom. But this past summer, as I reflected on my 25-year immersion in these two core VCE projects—our montane avian demographic research and our Forest Bird Monitoring Project (FBMP)—I realized their immeasurable value, first to me, then to our understanding of the natural world. On a personal level, these annual undertakings continue to fuel my passion for and engagement in our work—I wouldn't trade them for anything! In a larger sense, they and other longitudinal VCE studies constitute the very fabric of who we are, and why we exist.

A defining element of VCE's conservation science is our commitment to investigate long-term phenomena in wildlife populations. With your help, we accomplish this by collecting field data that yield insights into the dynamics of change. Although ecological change is constant and inevitable, documenting and interpreting anthropogenic causes of that change are essential to inform meaningful conservation action. Over the past quarter century, VCE data have tracked the upslope shift of Swainson's Thrushes on Mansfield, illuminated the steady decline of Canada

Warblers and Rose-breasted Grosbeaks in northern hardwoods, verified the disappearance of Rusty-patched Bumble Bees from Vermont, and helped draw attention to a severe, ongoing crisis in cloud forests of Hispaniola. These findings add vital information to catalyze and guide effective solutions.

Granted, VCE is only a small cog in the global conservation wheel, and our contributions alone cannot bring about the ecological healing we so urgently need. Yet our work is helping piece together a complex puzzle that would otherwise remain an unsolved mystery.

Just for fun, I delved into our Mansfield and FBMP databases. Since 1992, it turns out I've banded 432 Bicknell's Thrushes across the species' migratory range, and counted 345 Ovenbirds on my Northeast Kingdom FBMP route. On the one hand, these numbers accentuate how long in the tooth I am(!); on the other, they highlight a persistence and commitment that typify VCE's approach to conservation science. We believe deeply in the value of long-term investigations, as underscored by John Lloyd's piece on phenology in this issue. Rest assured that VCE will be at it for years to come, as will I, and I hope, you. Join us in our pursuit of science-based conservation goals, and the milestones that mark them. **FN**

Chris Rimmer
EXECUTIVE DIRECTOR

www.vtecostudies.org



Coming Full Circle

Sophisticated technology yields remarkable insights into grassland bird migration. | BY JASON HILL

A partnership between VCE and the Department of Defense (DoD) Legacy Program is expanding opportunities for year-round conservation actions directed at three grassland bird species: Upland Sandpiper, Eastern Meadowlark, and Grasshopper Sparrow. In an ornithological first, VCE biologists are tracking migration routes and documenting wintering areas of these grassland birds using sophisticated light-level geolocators, GPS tags, and solar-powered ARGOS satellite tags that send us precise location data in real time over the internet. We deployed these on breeding adults during the summers of 2015 and 2016 at seven DoD installations across the three species' breeding ranges, from Kansas to Massachusetts. Once these birds leave their breeding sites, our tracking devices allow us to identify the suite of landscapes they use before returning to nest again the following season. We often think of migratory birds as undertaking direct flights between their breeding and wintering grounds, but in actuality migrant birds may visit hundreds of individual sites (private and public) over the course of a year.

During the summer of 2015, we attached 180 geolocators to Grasshopper Sparrows, and retrieved 34 units this past summer. These geo-tags record light levels every five minutes, and we can translate those data into latitude and longitude. Our analysis of the 34 geolocators this winter will reveal the previously unknown post-breeding movements of these sparrows to their wintering grounds: southern U.S., Central America, and the Caribbean.

In April and May of 2016, we shifted gears and attached GPS- and



© JASON HILL

ARGOS-satellite tags to 15 Upland Sandpipers and 29 Eastern Meadowlarks. These species frequent large expanses of grasslands, such as the firing ranges, training areas, and airfields on DoD installations. The ARGOS tags send us location data every few days over the internet, and they have already provided remarkable insights. For example, we now know that Upland Sandpipers, tagged in Massachusetts and Kansas, complete trans-Atlantic flights to Venezuela and trans-Pacific flights to Columbia, respectively. Ultimately, our research hopes to link management and conservation actions across these landscape expanses to ensure safe year-round travels for migratory grassland birds. **FN**



What lives here? Where is it? What's common? What's at risk? The Vermont Atlas of Life brings over 150 years of accumulated knowledge of the biodiversity of Vermont into currency for science and society. It's a biodiversity warehouse where anyone, anywhere, anytime, can explore, learn, and share Vermont's unique biodiversity.

**We hope you'll join
our efforts!**

iNaturalist Vermont

From backyards to mountain summits, hundreds of citizen naturalists and biologists document and share biodiversity at iNaturalist Vermont. Join the Fun!
www.inaturalist.org/projects/

Vermont eBird

Vermont eBird has revolutionized the way the birding community reports and accesses information about birds. Submit your observations or view results at Vermont eBird.
www.ebird.org/content/vt/

e-Butterfly

e-Butterfly is providing a new way for the butterfly community to report, organize, and access information about butterflies in North America.
www.e-butterfly.org

To learn more about the Vermont Atlas of Life and its projects, visit val.vtecostudies.org

Amber Wolf and field technician Grace Mitchum deploy loon nest rafts at Great Averill Pond.



© ERIC HANSON

A Learning Experience

Amber Wolf was our inaugural Alexander Dickey Conservation Intern. Her enthusiastic spirit embodied Alexander's deep-rooted interests and abiding respect for the natural world. | BY AMBER WOLF

After many months away from my home state, immersed in books and classrooms as a junior at College of the Atlantic, I longed for a field-based summer learning experience back among Vermont's peaceful lakes, dense forests, and mist-filled valleys. But, I wasn't seeking a routine internship; I was determined to work outdoors, closely connected to nature, studying animals and their habitats, and contributing to their conservation. I was thrilled when I discovered the Alexander Dickey Conservation Internship. It seemed perfect, and it put me close enough to home that I could spend the summer with my family.

Working with VCE for 10 weeks this summer proved every bit as enriching, rewarding, and educational an experience as I hoped. Working predominantly on Mountain BirdWatch and the Loon Conservation Project, I found opportunities to both enhance my knowledge and to practice the skills I already had in a hands-on environment. Engaging with VCE biologists, local Vermonters, and summer visitors to the region, all of whom had observations and stories to share, provided a cherished opportunity to learn from others. And thanks to all I gained from these interactions, I was able to serve as an ambassador for those unfamiliar with VCE's mission and the work it does.

These experiences, while utterly enjoyable, were also invaluable tools on my path to becoming a conservation biologist. Over the course of the summer, I realized that I really enjoy the outreach dimensions of conservation biology, especially the chance to interact with others. Each person brings a unique perspective, and each has a "story" worth listening to. These interactions increased my self-confidence, my passion, and my conviction that the work we do is vitally important.

The Alex Dickey Conservation Internship was a perfect way for me to better understand how conservation work is carried out in the real world. Learning about conservation science in a classroom definitely has its place, but living and breathing the life of a field conservation biologist makes it so much more authentic. For me, the process of studying and planning my career can't be complete until I've immersed myself more fully in that realm, through a diversity of experiences. I couldn't have asked for anything more enriching, fun, and exciting than my VCE internship to launch me feet first into that world! **FN**



A Common Loon surveys its surroundings from a nest raft in Goshen.

When Things Go Right

Planning, quick responses, and most of all, dedicated volunteers made 2016 a successful year for the Vermont Loon Conservation Project. | BY ERIC HANSON

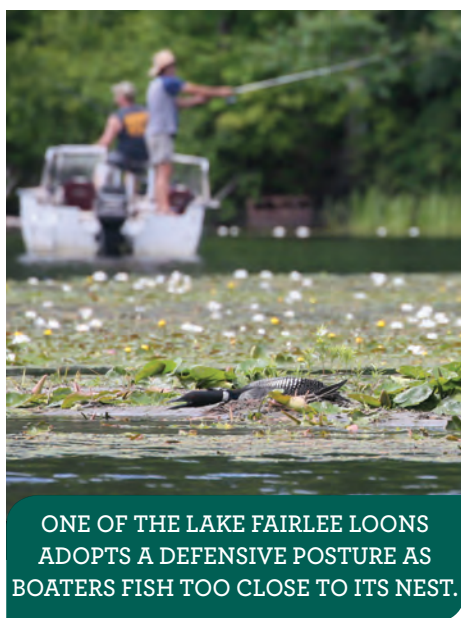
It's always gratifying when our "systems" work, but that doesn't happen as often as it might, especially in the arena of field biology. During 2016, the Vermont Loon Conservation Project (VLCP) achieved several successful outcomes that highlight the benefits of planning, training, and engaging a corps of dedicated volunteers.

Increased volunteer recruitment in 2016 enabled VLCP to conduct more loon surveys, which in turn allowed us to detect early nesting on Lake Raponda, Curtis Pond, Sugar Hill Reservoir, Lake Iroquois, and Chittenden Reservoir. Big surprises came in the form of new nesting pairs on Caspian Lake and Lake Fairlee; in both cases, thanks to VLCP outreach efforts, observers who discovered the nests were aware enough to immediately contact VCE. Many of these lakes provide very limited nesting habitat and/or are heavily used, such that their loon pairs benefitted from landowner visits, broader education efforts, and nest warning signs. In all, we detected seven new nesting pairs in 2016, with five of them producing chicks.

In late summer, when I was on vacation, residents on Lake Groton came across an intruder loon attacking a seven week-old chick. They disrupted

the attack and called the local VLCP volunteer, Darlene Sprague, who put the injured chick in a padded box and called Vermont Fish & Wildlife game warden, Mark Schichtle. Mark transported the loon to the Vermont Institute of Natural Science avian rehab facility, where Lauren Adams determined that it had suffered a broken wing and minor head wounds. Upon my return two days later, Lauren and I consulted with Maine waterbird rehabbers, Diane Winn at Avian Haven and Kappy Sprenger. I transferred the loon to Kappy, who oversaw healing of its wing, and the chick was successfully released on the Maine coast in September.

From lake residents and volunteers to game wardens and rehabbers, VLCP relies on a vast and ever-growing network of people to make loon conservation successful. We provide training and guidelines in anticipation of scenarios like these, and that outreach has paid off in spades by establishing a strong network of action-oriented individuals. Our 2016 loon successes demonstrate that laying the groundwork today for what might happen tomorrow is a highly effective approach to conserving a vulnerable species. Thank you to everyone involved. **FN**



ONE OF THE LAKE FAIRLEE LOONS ADOPTS A DEFENSIVE POSTURE AS BOATERS FISH TOO CLOSE TO ITS NEST.

© TIG TILLINGHAST

CHANGING NATURE'S CALENDAR?

continued from page 1

seasonal events has been shaped by natural selection, such that organisms engage in the right behavior at the right time. If timing is disrupted, survival and reproduction may suffer. Nearly every phenological event is influenced in some fashion by climate. Rapid change in climate, such as we've experienced during the past 50 years, therefore has the potential to act as a disruptive force, knocking organisms out of sync with their environment. This worrisome phenomenon is termed "phenological mismatch."

Take nesting birds as an example. Birds time their breeding so that young hatch when insect prey is most plentiful. The emergence of insects, itself a key-stone phenological event, depends on a complex, and largely unstudied, interaction of winter and spring temperatures. We can predict, and in fact have already documented, that as temperatures change due to human disruption of Earth's climate, so too will the timing of insect emergence. If a warmer climate means that insects emerge earlier each spring, how will the birds that depend

Long-distance migrants, like this Bicknell's Thrush, may have no cues that help them respond to phenological changes.

on them for food fare? Some species appear capable of adapting by changing their own phenology, thus maintaining synchrony between nesting and insect emergence. Others cannot. For bird species unable to adapt, or at least adjust rapidly enough, the timing of nesting no longer coincides with peak food availability, reproductive success is diminished, and population declines ensue. These species live in a world to which they are no longer well-adapted.

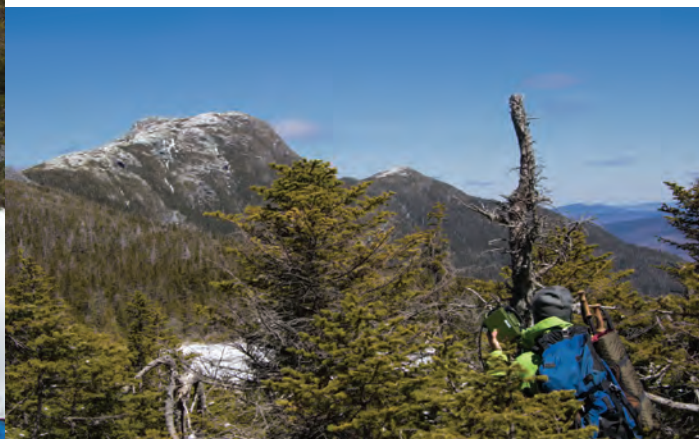
The challenges of adapting to phenological change are far from trivial. Although it is not hard to imagine how a resident species like Black-capped Chickadee might take advantage of a premature spring by nesting early, it is more difficult to imagine how a long-distance migrant like Bicknell's Thrush might cope. Timing of migration is tied closely to changes in day length, with shortening days triggering flights to wintering areas, and lengthening days signaling that the time has come to return to breeding grounds. Day length, of course, does not change with climate, meaning that a cue shaped by eons of natural selection is no longer reliable, at least in the short run.

Even if climate can modify the cue provided by day length—shortening days stimulate the urge to migrate, but it's the first blast of fall air that provides the real trigger—challenges remain. How, for example, is a Bicknell's Thrush on a Dominican mountaintop to know that spring has arrived early on Mount Mansfield, and that it should start moving north earlier than usual? Short of a predictable relationship between weather conditions on the breeding and wintering grounds, migratory birds, especially those that travel long distances, may have no cues that help them recognize and respond to phenological changes.

Given the importance of phenological changes, we have initiated a new project that seeks to document annual events in the natural calendar of Mount Mansfield, one of VCE's long-term study sites. We are using time-lapse cameras to track snowmelt and leaf-out, automated audio recorders to document the arrival of migrant breeding birds, weekly surveys to track the emergence of arthropods, and constant-effort mist-netting to track changes in the timing of avian reproduction. Our hope is that this will become a long-term

project, enabling us to annually monitor key phenological events and better document impacts of climate change. Doing so will offer insights into the challenges faced by species like Bicknell's Thrush and, hopefully, lead to more informed conservation actions. **FN**

JOHN LLOYD AND CHRIS RIMMER SETTING AN AUTOMATED RECORDING DEVICE ON MOUNT MANSFIELD, MAY 2016



© KENT MCFARLAND (2)

© CHARLES GANGAS

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John Lloyd and Remy Lambert enjoy a day in the sun while surveying for the Vermont Butterfly Big Year.

Below: A flamboyant species, the Red Admiral was one of 76 species documented during the Vermont Butterfly Big Year.



Vermont Butterflies Tally Big Numbers

e-Butterfly and the Vermont Butterfly Big Year take tracking Vermont's most enchanting species to a new level.

BY KENT MCFARLAND

Naturalists love a challenge. For years, birders have ardently (sometimes obsessively) racked up species via county or state lists, year lists, and Big Days. Recently, that trend has encompassed butterflies. In 2016, VCE challenged “lep” enthusiasts with the Vermont Butterfly Big Year.

Armed with digital cameras, iPhones, and e-Butterfly accounts, more than 100 citizen scientists scoured meadows, mountains, even their own backyards to document as many species of butterfly in as many locations as possible throughout Vermont. e-Butterfly, much like eBird, is an online checklist program that collects observer effort and exact location, allowing for more rigorous use of data for science and conservation. Our intrepid volunteers documented 76 species and tallied over 11,300 individual butterflies in 2016, making the inaugural Vermont Butterfly Big Year a huge success.

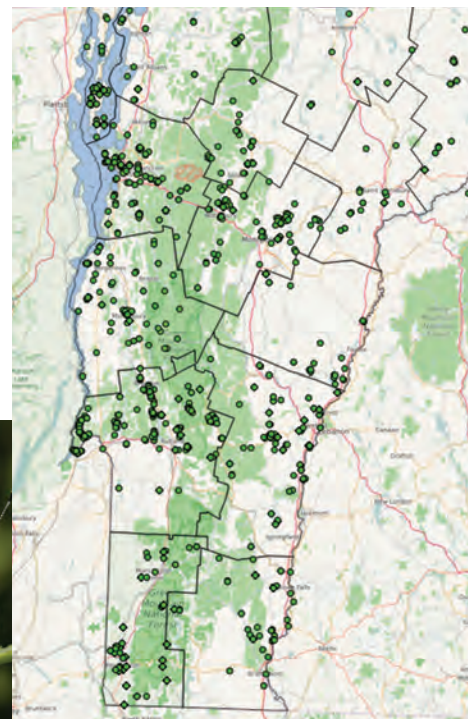
Butterfly action kicked off on March 27th with observations of Gray Comma, Mourning Cloak, and Milbert's Tortoiseshell flying on a warm spring day. We can only guess what the year's final winged gem will be.

Terri Armata led all volunteers by documenting 66 species, mostly in southwestern Vermont, one of the state's butterfly hotspots. David Hoag, VCE's 2013 Julie Nicholson Citizen Scientist Award recipient, recorded 51 species in the Champlain Islands, and Sue Elliott, who shared the award with her husband Marv in 2014, found 45 species.

The Big Year featured a blend of science, education, com-

petition, and a quest to help monitor the state's changing nature. Climate change, invasive species, habitat loss, and other environmental factors are altering Vermont's biological diversity, but with volunteers submitting their observations statewide, VCE can examine what these changes might mean for butterflies.

In the decade since the Vermont Butterfly Survey (VBS)—the state's first-ever, six-year atlas of butterfly diversity—some species' ranges have undergone dramatic change. Wild Indigo Duskywings, found only in southern Vermont during VBS, now inhabit the entire state. A warming Vermont and the addition of Crown Vetch to their palate has led them steadily northward. They're not alone. Common Sootywing, Giant Swallowtail—a recent southern arrival to the state—and others appear to be marching slowly northward. Thanks to the help of enthusiastic citizen scientists and tools like e-Butterfly, we can now accurately track Vermont's butterflies. **FN**



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E-BUTTERFLY AT A GLANCE!
EACH GREEN DOT IS A BUTTERFLY OBSERVATION
SUBMITTED FOR VERMONT IN 2016.

Reserva Silvestre Privada El Zorzal, provides habitat for Hispaniola's vulnerable overwintering population of Bickell's Thrush (bottom left).



Bridging the Conservation Gap

Through hard work, a strong bond, and lasting friendship, two colleagues from different nations unite countries and science for conservation on Hispaniola.

BY HODALI ALMONTE AND
FRANÇOISE BENJAMIN

Last February, as part of a collaborative project “Building Capacity for the Conservation of Bicknell’s Thrush on Hispaniola,” VCE conservation colleagues Hodali Almonte from the Dominican Republic (DR) and Françoise Benjamin from Haiti spent two weeks conducting bird surveys in Reserva Silvestre Privada El Zorzal. This initiative, jointly spearheaded by Haitian NGO Fondation Seguin and VCE, with collaboration from the National Museum of Natural History of Santo Domingo, was forged to build stronger binational ties between institutions and individual scientists on the island of Hispaniola.

Ultimately, the objective of this work is to conserve Hispaniola’s vulnerable overwintering population of Bicknell’s Thrush (BITH), but many ingredients must come together to accomplish this overall goal. In the course of crafting a partnership across political boundaries, training local colleagues at Reserva Zorzal, and conducting rigorous field surveys on difficult terrain, Hodali and Françoise documented a total of 3,169 individual birds of 54 species from 22 different families. Below are their abridged field stories and reflections on this ambitious effort to unite two disparate but neighboring countries for conservation.



THOUGH CONDITIONS WERE DIFFICULT, DOMINICAN BIOLOGIST HODALI ALMONTE STILL FINDS A REASON TO SMILE WHILE SEARCHING FOR BICKNELL'S THRUSH.

© FRANÇOISE BENJAMIN



HAITIAN BIOLOGIST FRANÇOISE BENJAMIN TAKES A BREAK FROM FIELD WORK TO APPRECIATE THE NATURAL BEAUTY OF RESERVA SILVESTRE PRIVADA EL ZORZAL.

© HODALI ALMONTE

HODALI

This trip was very exciting and held many surprises; for example, we found the first Bicknell's Thrush during our second day of surveys in a place full of ferns and shrubs mixed with flowering plants, but with no actual forest. That was totally unexpected! Our first truly close encounter with "el Zorzal" took place on the fourth day, when we had several birds flying over and around our heads. One perched on a small nearby shrub for more than five minutes; even after we finished our census, it barely noticed our presence.

This expedition taught us a great lesson in life. I call it: "How to get lost with a guide, a GPS, and compass in hand on a cloudy day." On March 29, Françoise, Bernardo (our local guide), and I headed towards the most distant part of the reserve. Rain forest with

tall trees is the dominant vegetation, and the forest is so thick, with ravines so deep, that sunlight barely reaches the ground. On this day, the skies were cloud covered, causing us to lose our GPS signal. Nevertheless, we believed that we had something more effective than a GPS or compass: we had Bernardo. But after an hour walking in all directions, we had to admit we were lost. We arrived at our camp five hours later in total darkness. Everybody was concerned, and some neighbors from nearby farms were already out searching for us. Poor Bernardo had to go back to the forest to find them. I guess that experience really taught us to orient ourselves in the field, because we never got lost again!

In summary, I feel this project shows how important it is to create a network of private protected areas, and

to connect institutions and individuals working for bird conservation in the DR and Haiti. I am sure this is the best way to support recovery of Bicknell's Thrush habitat on our shared island, one step at a time.

FRANÇOISE

Field work requires a lot of sacrifice and enthusiasm. You must love what you do. If you don't, it may be impossible to accomplish your goals, because the difficult conditions will often discourage you. Fortunately, Hodali's and my love for the conservation of biodiversity and our desire to find Bicknell's Thrush was so strong that it overcame our tiredness. This was our motivation to keep going every day, even when we were tired and wanted to take a day to rest. The first time we identified the BITH was a blessing day for us. It was as if we were looking for a treasure and finally found it. That day we could not take photos, but the second time we were not only surprised to find the bird in a very open habitat, but to have an opportunity to photograph it for the first time.

Every morning our motivation came from the hope that we would be able to find other BITH, and also to have a new adventure.

This entire experience proved so fruitful for my colleague Hodali and me. We had a very interesting time despite the many challenges encountered on our study sites. It was for us a perfect opportunity to prove to ourselves and to others, who don't think that a working relationship between Haiti and the Dominican Republic is possible, that they are wrong. If the conservation of a single bird can allow Hodali and me to work together, to create a strong bond and a lasting friendship, imagine what it can do for biodiversity conservation on Hispaniola. We learned so much from each other, about the relationship between our two countries, and about collaboration. The success of this project proves that cooperation between Haitian and Dominican scientists is possible, you only need to want it. **FN**



Mike Zimmerman

© EMILY ZIMMERMAN



Steve Chorvas

© ALAN BEEBE

Dedication to Mountain Bird Conservation

The Julie Nicholson Citizen Scientist 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. It is given annually to an individual or individuals who exemplify Julie's dedication to the cause of citizen science and conservation.

BY STEVE FACCIO

As one of VCE's signature volunteer projects, Mountain Birdwatch (MBW) is definitely not for the faint of heart. Designed to track breeding songbird populations in montane forests across the Northeast, MBW demands extensive hiking, ungodly hours, and tolerance of tough conditions. This year's citizen science awardees, Mike Zimmerman and Steve Chorvas, have more than earned their "keep" in the VCE pantheon of deserving volunteers. Combined, Mike and Steve have conducted a total of 69 MBW surveys on 16 different routes over a total of 27 years—that's a truly impressive commitment of time and effort—not to mention countless miles of hiking!

Mike Zimmerman grew up in Buffalo, NY, but "moved to Maine a long time ago," where he and his wife Barbara live in the woods on a tidal cove and are continually immersed in nature. A retired rural letter-carrier for the U.S. Postal Service, Mike began hiking and mountain climbing with Barbara and their two kids, Rob and Emily (Emily also does MBW surveys), in the 1990s.

After Mike section-hiked the Appalachian Trail in Maine in 2006, he began looking for other ways to get out and enjoy the woods. That's when he found MBW. "I'm not a birder," Mike says, "rather more of an amateur naturalist; it's important to understand what is out there, whether it be fungi, insects, animals, topography, geology, etc." Mike finds MBW surveys interesting "because the bird counts are supplemented with counts of predators (red squirrels) and conifer cones, which tie together the ecology of high-elevation forests. It also gets you out to some really remote places."

In addition to MBW, Mike volunteers as a trail maintainer for the Maine Appalachian Trail Club and the Appalachian Mountain Club. When he's not working part-time at Porter Memorial Library in Machias, Mike spends a lot of time hiking, backpacking, and searching for traces of the original A.T. route in Maine. Of this last activity, Mike quips, "it involves a lot of bushwhacking and tromping through muddy places, which hones the skills one needs to get to some MBW routes." It's no wonder that Mike has completed 37 MBW surveys over the last 11 years!

Steve Chorvas was interested in nature from a very early age—and it shows. An accomplished amateur naturalist, Steve says that a chance encounter with "an old

National Audubon Society field guide to birds, combined with a strong interest and many hours of field observation," catalyzed his self-taught approach. Steve still lives just outside of his hometown of Saugerties, NY, and feels "fortunate to live and have grown up in an area so rich in flora and fauna."

Steve got involved with MBW in 2001—its second year of existence. "I was compelled to participate by my concerns for what I was seeing on Catskill Mountain summits related to the effects of acid rain and climate change," Steve recalls. Over the last 16 years, he has conducted MBW surveys on two Catskill peaks every year without fail. Thinking back, Steve says, "Every MBW survey produced memorable moments, but one that stands out was encountering an Early Hairstreak butterfly while descending through a stand of American Beech. It was my first and only sighting of this rare and elusive species outside of Mt. Greylock in Massachusetts."

In addition to MBW, Steve is a board member of the John Burroughs Natural History Society and chair of its Avian Records Committee. He participates in Christmas Bird Counts, Breeding Bird Surveys, New York State January Waterfowl Counts, and Fourth-of-July Butterfly Counts. Steve also chairs the Esopus Creek Conservancy's Stewardship and Land Management Committee, which oversees the operation of a 160-acre nature preserve in Saugerties.

Steve's current passion is butterflies, and he spends much free time creating a pollinator habitat on his property, which he describes as a work in progress. "I'm not sure 'enjoy' is the right word for my butterfly gardening efforts," he laments, "I have come to the conclusion there is nothing White-tailed Deer will not eat, if just out of spite!"

VCE sends sincere congratulations and thanks to both Mike and Steve for their perseverance, dedication, and significant contributions in support of montane bird conservation. **FN**



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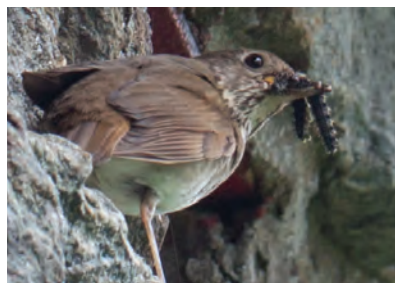
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Milbert's Tortoiseshell {*Aglais milberti*}

The astonishing beauty of this butterfly has made it my favorite flying gem.

BY KENT MCFARLAND



Top: Milbert's Tortoiseshell eggs are laid on stinging nettle, the favorite food of their caterpillars. Though the caterpillars have spiny bodies, Bicknell's Thrush still feed on Milbert's Tortoiseshell larvae.

With wings closed, it's cloaked in camouflage. But with wings open, predators are shocked by cat-eye markings, and butterfly enthusiasts gape with astonishment at fire-rimmed splendor. And if its appearance doesn't capture your attention, this species' natural history certainly will. Milbert's Tortoiseshell has earned its place as my favorite butterfly.

Like some of its relatives in the brush-foot butterfly family, or Nymphalidae, Milbert's Tortoiseshells overwinter as adults. That's right, even in the depths of winter there are butterflies among us.

After finding a safe haven in a hollow tree, woodpile, or even an outbuilding, their metabolic and respiratory rates, fueled by stored body fat just like a hibernating bear, slow to a crawl. The cold itself isn't a problem; it's the formation of ice crystals in body tissue that can be lethal. To keep from freezing, Milbert's Tortoiseshells reduce the amount of water in their blood and thicken it with glycerol, sorbitol, and other agents. These chemicals lower the freezing point much like the

antifreeze we pour into our car radiators. Some butterflies can with-

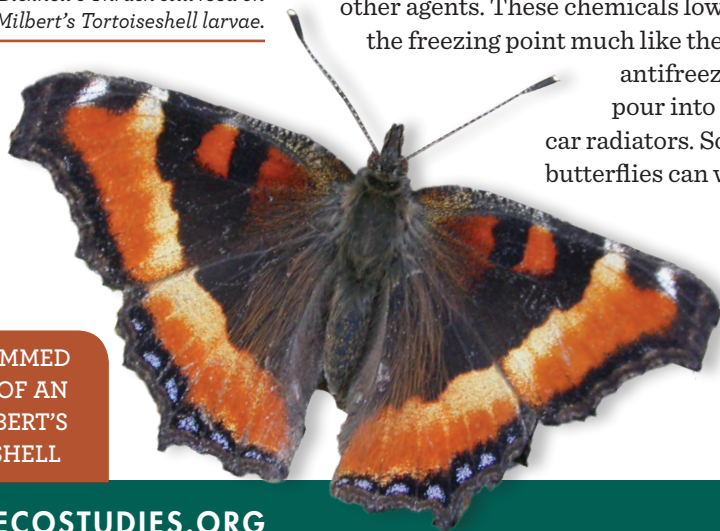
stand temperatures as low as -80° F.

After months of waiting, the longer and warmer days of spring bring them out to feed, mate, and lay eggs. These early spring adults may emerge with wings that are heavily tattered from their relatively long life of 8 to 10 months.

Milbert's Tortoiseshells lay hundreds of eggs in bunches on stinging nettles, the favored food of their caterpillars. Hollow hairs, called trichomes, on the leaves and stems of these nettles inject a histamine into anything that touches them, producing intense stinging and itching, but the caterpillars either avoid this or are not bothered by it. After hatching, they live in silky communal nests, but as they grow and leave the nest, they live in rolled leaves or in the open. These caterpillars can quickly defoliate a patch of nettles as they feed by the hundreds. Their spiny bodies likely protect them from some predators, but I have seen songbirds like Bicknell's Thrush visit colonies in the Green Mountains and carry them off to feed their nestlings.

Milbert's Tortoiseshell abundance often fluctuates widely from year to year. Such swings may be caused by parasitic wasps that attack the caterpillars. In some years, 80-90% of caterpillars can be infected. But when wasp populations wane, many more caterpillars reach adulthood, creating a boom-bust population cycle.

Reporting your sightings to e-Butterfly can help us better understand the life history and conservation status of Milbert's Tortoiseshell, my favorite flying gem. **FN**



THE FIRE-RIMMED
SPLENDOR OF AN
ADULT MILBERT'S
TORTOISESHELL

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