FALL 2024

Field Notes

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

© RODRIGO SOLIS

eButterfly Project Flutters South

Rodrigo Solis Sosa introduces eButterfly's new mobile app to people in Central and South America. | BY ALEX JOHNSON

It was a warm, humid morning on a Colombian mountain when Rodrigo Solis Sosa stepped into the local butterfly house, Casa de Mariposas, to give his talk. The town on the mountain was small, but a dedicated local woman named Juliana Villada Saenz had created this beautiful space for children to learn about the world around them. Children ages 4 to 15 sat at their desks, eagerly asking Solis questions and listening to his presentation.

"They were asking so many questions, and I ended up talking to them for three hours," Solis states. "I offered

(continued on page 8)

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FIELD NOTES
Fall 2024 • Volume 17, No. 2

On the cover: a Transandean Cattleheart (Parides iphidamas)

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 community engagement.

Field Notes is VCE's free biannual newsletter.

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VCE VIEW

© CHARLES GANGAS

Cultivating Conservation

Growing a science program, especially a long-term monitoring program, is a lot like growing a garden. It starts with an idea and a vision of what the future could hold. It takes commitment and time, creative problem-solving when new challenges arise, plenty of resources, willingness to observe critically and adapt, and persistence through the vagaries of changing conditions. In both gardening and science, the motivator is the product, be it a crop of sweet corn or juicy tomatoes, or the conservation of a species made possible through years of inquiry.

In this issue, you'll find examples of every stage of conservation cultivation. The brand-new plant provenance study is planting seeds, both literally and figuratively, to help build a robust supply of native plants for landscaping across the Northeast. The wild bee research project is at the other end of cultivation, bearing fruit for conservation by incorporating bees in wildlife action plans in Vermont and nationwide, and educating farmers about the wild bee species most valuable for their particular crops. You'll read about this year's Julie Nicholson Community Science awardee, who began watching butterflies more than 20 years ago thanks to the seed of the first Vermont Butterfly Atlas. After decades of butterfly study, she is now a recognized expert and a member of the steering committee for the second Vermont Butterfly Atlas.

You will read about other projects that are in those middle years, projects being cross-fertilized by collaborations and reinforced with new ideas and resources on their way to new conservation heights. Our international work on eButterfly and with Caribbean partners are prime examples.

We could extend the metaphor to building an organization like VCE and cultivating a community of conservationists, both of which are critical to VCE's mission and our shared vision of science-driven conservation. There's nothing quite so satisfying as a plateful of hard-earned, home-grown vegetables. Except maybe returning to a previously degraded Caribbean forest to find a restored and functioning habitat replete with the calls of Bicknell's Thrushes, or glimpsing the fuzz of a newly fledged loon chick on a lake where previous nests had failed.

Wherever we look, we can find signs of a bountiful harvest. Thank you for being on our gardening team as we get our hands dirty and cultivate conservation together!

Susan Hindinger
EXECUTIVE DIRECTOR

Staff Biologist Allie Radin puts stakes in an experimental garden plot.

© ONOME OFOMAN

From the Field

Planting the seeds of a new VCE project | BY ONOME OFOMAN

This year, VCE launched an innovative new study to explore ecological effects of plant provenance, led by Conservation Biologist Desirée Narango and Director of Conservation Science Ryan Rebozo. In collaboration with Native Plant Trust and funded by the One Hive Foundation, this study investigates how a plant's geographic origin—specifically, where its seed was sourced from before planting—affects its vigor and value to insects. Many native plant species have large ranges that span multiple ecoregions, and this study will examine whether plants of the same species, collected from different regions of the United States, may differ in how they grow, flower, and produce resources for wildlife.

This September, with the help of many amazing volunteers, VCE planted six different experimental garden sites, with more than 1,000 individual plants put in the ground. I know this because I work with VCE as an ECO Americorps member and helped plant all of these gardens. Below is a peek at what it looks like to plant an experimental garden.

6:30 AM: Today is a big day. We're prepping our final garden for the plant provenance experiment at the Hartland Public Library. Unlike our five earlier gardens, we only have one day to prepare this plot because it rained on our first prep day. Fortunately, I won't be doing this alone!

© KENT MCFARLAND

9:15 AM: I arrive onsite with Staff Technician Amber Jones by my side, and we measure out the 15 m x 15 m garden in the shallow-tilled ground allocated to this project (it feels bigger when you are the one digging it). After carefully measuring the plot, Jones and I start digging the trench for the perimeter. We're also joined by Staff Biologist Allie Radin, and the task is done in record time thanks to Jones' digging prowess.

10:30 AM: Next, we assemble the perimeter planks using plates and drill brackets to connect the corners. At this point, we're joined by Narango, who takes over while we eat lunch. Meanwhile, Rebozo starts delivering several truckloads of compost and wood chips to prepare for tomorrow's planting.

1:00 PM: After lunch, we measure and portion the planting plots using dowels and string. Each plot will contain one species from one ecotype with five individual plants. Across the whole garden, we are planting 12 species of plants from three different ecotypes: the Northeast (our local ecotype), the Midwest, and the Southeast.

4:00 PM: Throughout the afternoon, vendors have been setting up at the nearby Hartland Farmers Market, and the vendor at the pizza oven, Jeffrey Hamelman, offers us a tasty cheese pizza as thanks for the work we are doing in the community. All that's left now is clean-up. FN

Hodali Almonte sets up a mist net.

International Collaborator Training

© KEVIN DERNIER

VCE conservation partner from the Dominican Republic visits to learn and work with Bicknell's Thrush.

BY JIM GOETZ

Supporting the professional development of students, early-career professionals, and colleagues has long been a pillar of VCE's organizational strategy. Over the years, these opportunities have ranged from internships to fellowships to informal mentorships. This summer, we continued this professional development tradition with our Caribbean program's strategic goal of supporting our colleagues working for avian conservation in the Greater Antilles. With support from the U.S. Forest Service International Programs, we developed our 2024 international collaborator training. This program allowed our Dominican colleague Hodali Almonte to join us in our work on Bicknell's Thrush breeding grounds with the goal of expanding her knowledge and experience through the full annual cycle.

For three weeks this summer, we were fortunate to share our office and banding stations with Almonte. Almonte is a seasoned conservation professional who has worked alongside VCE for 10 years. She has conducted much of the foundational research on Bicknell's Thrush at Reserva Privada El Zorzal and joined our fieldwork at the reserve last winter with the support of Environment and Climate Change Canada and the U.S. Forest Service International Programs. She currently manages the vertebrate section and curates the bird collection at the National Museum of Natural History in Santo Domingo.

With VCE Caribbean Conservation Coordinator Jim Goetz, Conservation Biologist Desirée Narango, and Biodiversity Data Scientist Mike

Hallworth taking the lead, we worked with Almonte to identify a set of goals for her visit. These included gaining a deeper understanding of the Bicknell's Thrush full annual cycle, practicing advanced field techniques, developing data-analysis skills, advancing museum-curation knowledge, and forming new professional relationships. During her stay, which took her to both Vermont and New York, we partnered with Cornell University's Museum of Vertebrates to develop a schedule of activities to address each of these intentions.

Although Almonte is tremendously experienced working with Bicknell's Thrush in the Dominican Republic, she had never worked with this species or seen its habitat on the breeding grounds. She was able to join Drs. Narango and Hallworth on both Mount Mansfield and Mount Washington to set up mist nets, catch and band birds, and attach GPS tags. After spending time in the high-elevation breeding grounds, she then joined Jim Goetz to visit Cornell and gain additional experience preparing bird skins, recording data, and collecting tissue samples.

We at VCE are thrilled to have this ongoing opportunity to partner with our Caribbean colleagues and to have had Hodali Almonte join us this summer. Please stay tuned for more updates from our Caribbean collaborations as we approach our next Dominican Republic field excursion this winter. FN

© DESIRÉE NARANGO

© JIM GOETZ

A Year of New Hires and Promotions

It has been quite the flurry of staff changes at VCE in 2024, with six new hires and two promotions to boot. The organization welcomed **Elexa Phillips** this spring as our new development assistant to manage our development database and coordinate VCE's summer field trips. She's a North Carolina native with family ties to Woodstock and came to us by way of Hawai'i, where she served as the Hawai'i Foodbank's member agency coordinator. In her spare time, she crafts, paints, and crochets, and is especially looking forward to her first Vermont winter. Welcome, Elexa!

This fall, VCE welcomed five new members to the science team—**Brian Kron, Megan Massa, Onome Ofoman, Allie Radin**, and **Dana Williams**. Brian is our postdoctoral researcher working on using VAL data to inform statewide conservation efforts. He joins us from Bowling Green State University, where he completed his PhD earlier this year. Megan, VCE's data manager, is developing and improving systems for collecting, organizing, storing, retrieving, and analyzing ecological data. Megan brings both database design and grassland bird conservation experience to our team. Onome is VCE's ECO Americorps member taking on an important role in our plant provenance study, among other VCE projects. Onome most recently served as an Americorps member for the Friends of the Mad River. Allie joins as a staff biologist, conducting fieldwork, data management, and lab work for a variety of projects. Allie's experience taking on multiple roles for the National Park Service is an asset to this position. As our first community science coordinator, Dana Williams is working with her colleagues to expand the community of people who participate in VCE's science. She brings a wealth of research and outreach experience to this role. We've further reinforced the science team with the promotion of **Amber Jones** from a seasonal position to staff technician. She supports several projects from her desk in VCE's biodiversity lab. All have injected new ideas and excitement into our work, and we are happy to have them on board.

Toni Luff joined the VCE staff in May of 2023 as an administrative coordinator and, by dint of hard work and initiative, earned a promotion to office manager in just over a year. She now handles reception, recordkeeping, event hospitality, and facilities upkeep, all while coordinating the onboarding of new employees. Her colleagues especially appreciate her ability to troubleshoot the rare problem that she hasn't solved before it happens.

Since **Emily Anderson** began directing science communications at VCE three years ago, she has overseen the production of our monthly eNews and field guide, semiannual Field Notes, and annual report. Together with Communications Coordinator Alex Johnson, she has conveyed VCE science results and conservation messages to an expanding online audience. Her gift for connecting with people has enriched her work as a mentor to interns and as a resource for environmental journalists and policymakers. Emily will now build on relationships that she and Director of Science Ryan Rebozo have cultivated with state legislators and other conservation groups as VCE's first science-to-policy manager. In this role, she will help VCE biologists deliver the biodiversity knowledge that government officials need to craft and implement science-based public policy. FN

Staff Biologist Spencer Hardy at a pollinator workshop at the University of Vermont

Pollinator Group for Impact

BY EMILY ANDERSON

Bombus insularis

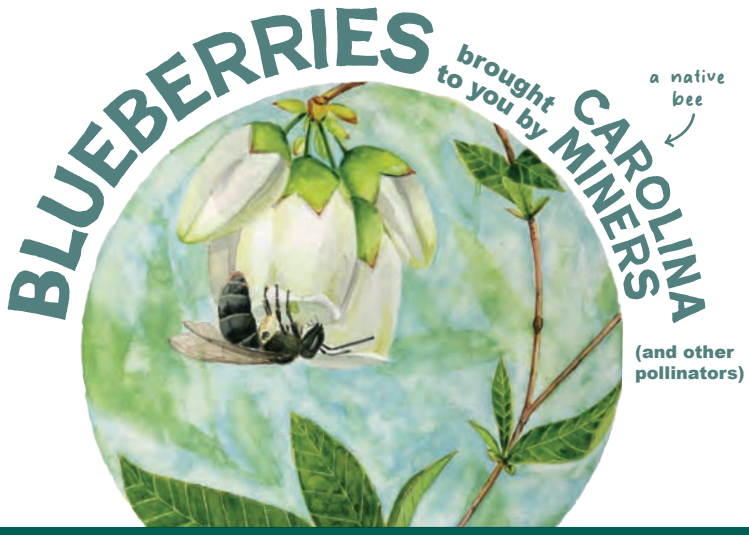
© SUSAN SAWYER

At least 55 of Vermont's native, wild bee species need significant conservation action.

This bold statement headlines the Vermont Atlas of Life's *State of Wild Bees Report 2022*. For the uninitiated, this groundbreaking report synthesized more than a decade of Vermont wild bee data gathered through targeted surveys and community-science observations. The report's release led to several new bee-centered initiatives in Vermont and beyond (see **vtecostudies.org/blog/vce-is-abuzz-with-high-impact-bee-work**), including the launch of the Vermont Pollinator Working Group, which was founded by bee expert and VCE Staff Biologist Spencer Hardy, University of Vermont Assistant Research Professor and Vermont Bee Lab Director Samantha Alger, and UVM Extension Pollinator Support Specialist Laura Johnson.

Today the Pollinator Working Group is an emerging powerhouse for Vermont's pollinator knowledge, allowing experts and stakeholders to pool resources for statewide impact. "I think there's a lot to be gained by having all the pollinator people in the same room," Hardy says. "There's so much happening in the pollinator space in Vermont right now."

Earlier this year, the working group hosted its first-ever event for National Pollinator Week. Even an unrelenting June drizzle couldn't keep attendees away. Throughout the daylong program, more than 70 participants heard from three knowledgeable speakers—Taylor Rickets of UVM, Emily May of the Xerces Society, and Jane Sorenson of River Berry Farm—and attended engaging



© EMILY MAY

The Know Your 5 campaign informs fruit and vegetable growers in Vermont about the five pollinators most closely associated with specific crops.

workshops geared for pollinator enthusiasts and experts alike.

"The enthusiasm and collective knowledge present at the event were impressive, especially given how little attention wild bees had received in Vermont until the last few years," Hardy says. "An event like this would have been unimaginable not too long ago!"

So far, the group has also used its breadth of expertise to provide evidence-based support for state-level policy. Many pollinator-conscious Vermonters watched with great interest in early 2024 as the state's legislature deliberated a bill restricting neonicotinoid insecticide use, a class of pesticides widely used for commercial row crops that are considered highly toxic for bees and other nontarget insects. What Vermonters may not realize is that Pollinator Working Group member organizations, led by Dr. Alger's research, played a significant role in the drafting of bill H.706 and its successful passage into law.

"The working group has expanded research on the unintended spread of neonics to bee hives and wild bees via contaminated pollen and nectar and is sharing that research with growers, policymakers, and advocacy groups," Hardy says. "There's the science, and we have to connect that through educating people. As this bill demonstrates, having a working group to connect all those pieces is incredibly valuable."

Hardy wasn't the only VCE staff member involved—visit **vtecostudies.org/blog/val-director-provides-testimony-on-proposed-neonicotinoid-ban** to read VCE Conservation Biologist Kent McFarland's testimony.

Other initiatives taken up by the Pollinator Working Group include its Know Your 5 campaign, an educational outreach program informing fruit and vegetable growers in Vermont about the five pollinators most closely associated with specific crops. Focusing on five bee species—out of Vermont's approximately 350—makes it easier for growers to provide what each crop's key pollinators need to thrive. The working group hopes that simplified guidance will empower farmers to implement targeted steps to support native bees in agroecosystems.

The Vermont Pollinator Working Group has much to be proud of as they look to the future. A symposium and roundtable discussion occurred in November, and they plan to organize a second Pollinator Week event next year. Please visit **vermontbeelab.com/page/index.html** to stay up to date with the Vermont Pollinator Working Group and learn about opportunities to get involved. FN

eButterfly workshop participants practice wth the mobile app.

© RODRIGO SOLIS

Juliana a contract to be our ambassador in Colombia because of the incredible work she had done there already."

Solis is a team member for eButterfly, a global community science initiative focused on documenting butterfly abundance and fostering a love for butterflies by providing users with a platform to track their observations, store their photos, learn about butterflies, and interact with other butterfly enthusiasts. The project is similar to other data-sharing platforms like iNaturalist and eBird, but it's specifically focused on developing a better understanding of butterfly distribution and population trends worldwide. eButterfly is a collaboration between VCE; Espace pour la vie, a service of the city of Montreal; Mila-Quebec Artificial Intelligence Institute; and the University of Ottawa.

Solis is part of an outreach effort on behalf of eButterfly to educate people in Central and South America about the project's mobile app—released just a few weeks earlier—and encourage them to use it. But he didn't originally choose butterflies when he decided that he wanted to work with animals. He trained in veterinary medicine at the Cuautitlán Faculty of Higher Studies in Mexico, then practiced for a few years, specializing in horses.

His introduction to butterflies was with a gateway species: the Monarch. Solis soon began a master's degree in sustainable development at the Monterrey Institute of Technology and Higher Education. Pursuing the degree led Solis to World Wildlife Fund, which was working in Monarch sanctuaries in Mexico.

"That was my very first interaction with butterflies. Before that, I didn't even know the difference between a butterfly and a moth," Solis says.

He participated in some Monarch surveys and ultimately decided to pivot his career to ecological research. His doctoral research at Simon Fraser University also centered on Monarchs (his favorite butterfly species to this day), and he ended up working for Espace pour la vie, where he was introduced to the eButterfly project.

Many of Solis' tasks for the project revolve around outreach and accessibility. The platform was originally curated for butterfly experts, who were more likely to understand and engage with its complex identification system.

© RODRIGO SOLIS

© RODRIGO SOLIS

However, the project wanted to attract new participants from around the world, who would be invaluable in adding observations. Solis' task was to make eButterfly user-friendly and accessible to almost anyone.

"We translated all of the website and other information into Spanish, we took to social media, and we began offering 'eButterfly 101' webinars to spread the word," Solis says.

The outreach was successful. More amateur naturalists began using the app. Still, the project was having a tough time breaking into certain geographic regions that held a lot of butterfly diversity.

This led to the series of workshops that took Solis and the trip's organizer, Kevin Gauthier from the Montreal Insectarium and University of Sherbrooke, to Panama to preach the work of eButterfly. After Gauthier returned north, Solis continued to Colombia to get more people involved. The audiences varied greatly from workshop to workshop, and Solis spoke with land managers, academics, amateur enthusiasts, and children.

His favorite workshop took place on that Colombian mountaintop, where he found the community's engagement truly inspiring. "This kind of outreach is my favorite because I get to talk about something I love and a mission I believe in. To see new people engage in eButterfly is very rewarding," Solis says.

He has since returned from his excursion, but work is far from over. It's only through persistence that eButterfly will achieve its ultimate goal of crowdsourcing high-quality butterfly data from around the world. Solis plans to return to past outreach locations and hopes the presence of local butterfly ambassadors can sustain enthusiasm for the project.

"I do feel quite committed to eButterfly and spreading the message," Solis explains. "If I can get someone new hooked on butterflies like I was, then I feel like I've done my job." FN

© NICKI STEEL

Terri Armata

One of Vermont's most ardent butterfly experts | BY KENT MCFARLAND

If you've ever had the pleasure of watching butterflies with Terri, you know her passion, excitement, and love for sharing butterflies with others.

Since her time as a neophyte butterfly watcher during the first Vermont Butterfly Atlas in 2002, Terri Armata has seen nearly every butterfly species known to occur in Vermont. She has also documented four species new to the state on her way to becoming one of Vermont's most ardent and accomplished butterfly experts.

"I remember receiving a letter announcing the first butterfly atlas, and it interested me immensely," Terri recalls. "What better way to spend time outdoors and contribute a bit to science?" She took on the atlas and immersed herself in butterflies, contributing nearly 1,000 records to the effort. Today, she has not only tallied thousands of her own butterfly checklists on our eButterfly platform, but she has also helped many other community-science volunteers with more than 11,000 identifications.

© JOE ZIGMONT

Terri might have been new to butterflies in 2002 but not to science and nature. She grew up in the heart of the northern Berkshire Hills in western Massachusetts with Mount Greylock dominating the western skyline. She spent her childhood wandering woodlots and fields, picking wild berries with her sisters and brothers.

She fondly remembers her father asking, "Who wants to go mushrooming?" on summer Sundays after brunch. "We would jump up, go to the garage, select a mushrooming stick (from branches that Dad had cut and trimmed into walking sticks of various lengths), and set off down the road with him toward the woods." They searched for mushrooms in the Boletus family, as those were what her Polish grandparents knew from the old country. "This mushroom hunting taught me to look closely, move slowly, and crouch quietly to see the mushrooms under the leaves."

In addition to atlasing for butterflies and contributing to eButterfly, Terri regularly contributes to eBird, iNaturalist, and Mission Monarch. For a few years she completed the annual USGS Breeding Bird Survey in North Pownal in June. She is a counter for the Putney Mountain Hawkwatch and the site coordinator for the East Adams Hawkwatch where she grew up. And in the spring, you may also find her surveying for the Vermont Vernal Pool Atlas!

"I love being outdoors and learning more about the plants and animals around us," says Terri. "I have been retired since 2016 and now have freedom to spend time both enjoying myself and adding in a small way to what we know about the natural world. Community-science projects provide valuable data that can be used to shape actions to preserve ecosystems."

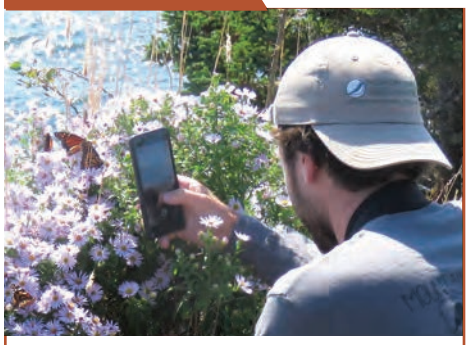
If you've ever had the pleasure of watching butterflies with Terri, you know her passion, excitement, and love for sharing butterflies with others. She's led butterfly walks for the Green Mountain Club Bennington Section and at places like Merck Forest and Farmland Center and Hildene. She hopes to lead more in the future.

"VCE has been instrumental in igniting my passion for nature through community-science projects, newsletters, blogs, and field trips," says Terri. "I want to continue to learn more about raptors, butterflies, moths, and more. I hope to be out there in the field exploring this wonderful state and working with great organizations like VCE as long as I can!"

Terri Armata's contributions to better understanding the conservation status of Vermont's wildlife (especially butterflies) have been extraordinary—and for this, the staff and board of VCE are proud to present her with the 2024 Julie Nicholson Community Science Award. FN

The Julie Nicholson Community Science Award honors Julie Nicholson's extraordinary passion and commitment to birds and wildlife conservation through her many years of tireless work as a community scientist. It is presented annually to an individual who exemplifies Julie's dedication to the cause of community science and conservation.

COMMUNITY SCIENCE OPPORTUNITIES



© SUSAN HINDINGER

You don't need a background in science to be a community scientist!

From backyards and bogs to mountains and meadows, you'll find many ways to get involved and make a real contribution to wildlife conservation. If you'd rather not muck around a swamp or hike to a summit, you can still volunteer for VCE—even from the comfort of home.

We hope you'll join us!

iNaturalist Vermont

Volunteers share observations of all Vermont biodiversity in this digital project of the Vermont Atlas of Life.

www.inaturalist.org/projects/vermont-atlas-of-life

Mountain Birdwatch

Each June, volunteers hit the trails to complete bird survey routes on 123 mountain ridgelines across the Northeast.

vtecostudies.org/projects/mountains/mountain-birdwatch

Vernal Pool Monitoring

In April, May, and September, volunteers visit their "adopted" vernal pools and collect data, following standard protocols and using VCE-provided equipment.

vtecostudies.org/projects/forests/vernal-pool-conservation

To learn more about volunteering with a VCE project, visit vtecostudies.org/volunteer.

FIELD NOTES
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Wood Turtle {*Glyptemys insculpta*}

Despite its widespread distribution, the Wood Turtle is under threat in both the U.S. and Canada.

BY DESIRÉE NARANGO

The Wood Turtle is an iconic northeastern reptile found throughout New England and adjacent regions. It's identifiable by the wood-grain pattern on its shell and orange-red markings on the underside of its neck and legs. Despite being slow travelers, Wood Turtles are known to wander across the landscape. One Vermont female radio-tracked by the Orianne Society traveled more than a kilometer from her capture location in a few short months! These semiaquatic turtles typically inhabit slow-moving rivers and streams near sandy habitats for breeding, but they're also known to nest in sandy upland habitats hundreds of meters from their river. Naturalists have also documented Wood Turtles nesting in sandy human-made habitats, such as sand and gravel pits, boat ramps, powerline corridors, roadsides, golf courses, and specially designed artificial nest sites.

Wood Turtles are omnivores, feasting on plants and invertebrates alike. They are known to be especially fond of earthworms and will even stomp the ground to rouse and catch their dinner.

Despite its widespread distribution, the Wood Turtle is under threat in both the U.S. and Canada. All 13 states that make up its U.S. range consider it a species in greatest need of conservation, and our northern neighbors classify it as threatened under the Species at Risk Act. Wood Turtles are also red-listed as endangered by the International Union for Conservation of Nature.

As with many turtles, Wood Turtle populations are declining due to habitat loss, agricultural disturbances, and human-induced mortality. Deaths from road strikes, increased mesopredator populations (e.g., raccoons), and illegal poaching are even more impactful given the slow maturation and reproduction rates of this species. Females don't reach sexual maturity until they're 12–20 years old but can live more than 60 years in the wild. Scientists suspect that females breed throughout their adulthood and that preserving older individuals is critical for increasing populations.

Partnerships with local landowners and recreationists are key to Wood Turtle conservation. Because Wood Turtles travel through forests, wet meadows, and agricultural land, working forests and farms can protect essential habitats by preserving natural vegetation and connecting streams. Avoiding mowing in September or increasing mow height to 5 inches or more can also help reduce mortality. Make sure your friends and family know that you should never collect turtles in the wild, and report any illegal collecting you see to a game warden or other official. For a more comprehensive review of Wood Turtle conservation, check out the conservation plan by the Northeast Wood Turtle Working Group (www.northeastturtles.org/wood-turtle.html). FN