

NATURAL HERITAGE HARMONIES



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Vermont Fish & Wildlife Department
Agency of Natural Resources

Conserving Vermont's fish, wildlife, and plants and their habitats for the people of Vermont

Changing Times and New Beginnings

By Lauren Hwang-Finkelman and Roz Renfrew

In life, one of the few reliable constants is change. Amidst the unusual and difficult changes, we have also been experiencing lots of transitions—thankfully, of a more ordinary kind: longtime, beloved biologists retiring.

In this issue we feature dedicated, talented people who have been part of the backbone of the Wildlife Diversity program in the Fish & Wildlife Department. With your help, they forged their care and passion for plants and wildlife into conservation successes for decades. They leave us their lasting legacies, having laid the foundation and vision that propels us forward. As we bid them a fond farewell with deep gratitude, naturally we welcome those who will carry on the work.

Steve Parren

After 35 years of service to Vermont's wildlife, conservation biologist Steve Parren retired in May of 2021. Graduating from University of Vermont with a master's degree in Natural Resource Planning, Steve first joined the department in 1987 as a wildlife statistician. In 1991 he became the coordinator of what is now the department's Wildlife Diversity Program.

(continued on page 3)



INSIDE HIGHLIGHTS

Bat Tick Discovered	page 2
Wildlife Diversity Snapshots	page 4
Remembering Linda	page 6
Amphibian Mortality	page 7
Cornall Swamp Foray	page 8

Bat Tick Documented in Vermont: What Does it Mean?

By Alyssa Bennett, *F&W Small Mammals Biologist*

Small mammals biologist Alyssa Bennett recently coauthored the first report of the bat tick, *Carios* (originally *Ornithodoros kelleyi*), in Vermont with entomologist and lead author Cheryl Frank Sullivan from the University of Vermont. Unlike the familiar deer tick, the bat tick is a soft-bodied, long-lived tick species.

The bat tick has been documented in 31 other states, but the reason for the recent confirmation in Vermont is not yet known. It could merely be due to increased public awareness of parasites and an interest from the scientific community to investigate such reports. “Our partnerships with experts at institutions like UVM are key for monitoring species and responding to increased public reporting,” said Bennett, “In this case, a homeowner and a rehabilitator reported the bat ticks.”

Bat tick occurrence is monitored because the species has been shown to harbor bacterial pathogens capable of infecting humans (e.g., *Rickettsia*, *Bartonella*, and relapsing fever *Borrelia* species). It is unknown whether the pathogens transmitted by a bat tick bite have or can cause human disease, but the chance is considered low due to the elusive nature of bat ticks and their preference to feed on bats.

To manage bat ticks, bats must first be located and safely managed using the same tried and true practices recommended by Vermont Fish & Wildlife to protect both humans and bats. Concerned homeowners can contact a professional nuisance wildlife control operator and follow the best management practices for bat exclusion/eviction. After bats are safely evicted from a building, any bat ticks remaining in the dwelling can be managed by an experienced pest control company. Homeowners can still take advantage of the flying insect-eating benefits of bats by putting up a bat house for the displaced bats.

Bennett says the public as has an essential role in disease monitoring. “I believe our efforts to increase public interest in the natural world around us, including bats, is a great asset for documenting any future changes.”



HELPING VERMONT'S BATS

Vermont is home to nine bat species. Five are listed as either threatened or endangered. Here are some resources to help you live safely with bats.

- ❖ FAQs about living with bats:
www.bit.ly/VFWD-got-bats
- ❖ Best Management Practices for excluding bats from your home:
www.bit.ly/VFWD-BMP-for-bats
- ❖ Profession help for excluding bats from your home:
www.bit.ly/VFWD-bat-NWCO-list
- ❖ Attracting bats with bat houses:
www.bit.ly/VFWD-attracting-bats

Learn more about the first report of a soft tick species from Vermont:
www.bit.ly/VT-bat-tick-report

If you suspect you have found a bat tick, it is important the tick is properly identified. Contact Cheryl Frank Sullivan at cfrank@uvm.edu (802) 656-5434 or Margaret Skinner at miskinner@uvm.edu (802) 656-5440.

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Cover image: Spiny softshell turtle hatchling by Tom Rogers



Steve Parren shares his appreciation for spiny softshell turtles with young volunteers.

Tom Rogers

Changing Times *continued from page 1*

Steve dedicated his career to the conservation of a wide array of threatened and endangered species. Steve’s efforts were crucial to the recovery of Vermont’s populations of common loon, osprey, and peregrine falcon. He helped spearhead the installation of critical amphibian road-crossing in the Champlain Valley to protect seasonally migratory frogs and salamanders. He spent countless hours helping to develop and execute recovery plans for threatened and endangered species, writing annual technical reports to secure federal funding, and crafting outreach messages to raise funds for nongame wildlife conservation. Known by some as the “father of turtle conservation in Vermont,” Steve also worked tirelessly to protect the state’s spiny softshell turtle and wood turtle, and their habitats.

A tremendous asset to people and wildlife alike, Steve was awarded the prestigious Zetterstrom Award for his life-long commitment to Vermont’s endangered species. The department’s herpetologist Luke Groff remembers Steve as “a great supervisor and excellent biologist as well as mentor.” According to former colleague Jon Kart, “Steve fussed endlessly over turtles, birds, bugs, chipmunks, mosses, fish, and people, doing his best to make Vermont safer for all of biodiversity.”

Eric Sorenson

Eric Sorenson, the department’s Natural Heritage Inventory (NHI) Natural Community Ecologist, retired

in September 2021. His 25 years included exploring Vermont’s fields and forests to identify and describe the state’s more than 90 natural communities. After graduating from the University of Maine in 1986 with a master’s in botany and wetland ecology, Eric dedicated his career to the conservation of Vermont’s diverse natural habitats.

A wealth of knowledge, Eric co-authored *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont*—an indispensable book for northeastern naturalists. He also was a key contributor to the department’s Vermont Conservation Design, a landscape map with conservation strategies to protect forest blocks and habitat connectivity across the state to provide a home for all our native wildlife.

Eric greatly influenced his colleagues. Aaron Marcus, the department’s assistant botanist, reflected “What really struck me with awe was his amazing determination and commitment to maintain and support the much-needed resilience of our ecosystems. Eric revels in Vermont’s ecosystems down to the most inconspicuous peat moss, but also always challenges us to think holistically, and decades into the future.”

“It’s because of this vision and collaborative spirit, that a few decades off when I retire, I’m sure I’ll still be thanking him for what we’ve built together with his foresight. A lot of our plants, mosses, fungi, and so many other creatures will have a lot more space to move

(continued on page 6)



Eric Sorenson was happiest when he was afield exploring Vermont’s many natural communities.

Tom Rogers

Wildlife Diversity Program Highlights - Supported Through Verm

Your donation to the Nongame Wildlife Fund helps the future of Vermont's wild animals and wild places, protecting everything from
 We leverage your donation for additional federal funds, so one dollar to the Nongame Wildlife Fun

T & E Listing Update

Seven species received updated conservation designations on Vermont's Endangered and Threatened Species List, including the highly anticipated de-listing of the bald eagle as well as the de-listing of the short-styled snakeroot, a flowering plant of dry woodland habitats. The American bumblebee, a freshwater mussel called the brook floater, and two plant species, Houghton's sedge and rue anemone, have been listed as endangered. The Eastern meadowlark has been designated as threatened.



John Hall

Bruce Winter - CC 4.0

Eathn Nedeau

Arthur Haine

Bald Eagle

Short-styled snakeroot

American Bumblebee

Brook Floater

Houghton's Sedge

Rue Anemone

Eastern Meadowlark

USDA-FS

Marilee Lovit

USFWS



Surveys are conducted during peak singing hours, which are dusk or dawn on clear nights, particularly with at least a half-full moon during late May and June.

Laura Gooch - CC 2.0

Whip-poor-will Surveys

Since 2014, the Vermont Fish & Wildlife Department has contracted the Vermont Center for Ecostudies (VCE) to carry out annual surveys of the state-threatened whip-poor-will. In 2021 volunteers completed 21 surveys at 14 pre-established routes throughout Vermont. They found 35 whip-poor-wills. The 2021 surveys also examined a region with sparse historic data in the southeast corner of the state, where they found no evidence of whip-poor-wills. These surveys over several years continue to confirm that western Rutland County is a "hotspot" for this species, but elsewhere in Vermont they are few and far between.

Critical Habitats

Three important sites received new designations as "Critical Habitats" for some of Vermont's endangered and threatened species. The designated areas are essential for the survival of these species in Vermont: common tern, Eastern spiny softshell turtle, and three bat species—little brown, northern long-eared and tricolored bats.



VFWD

Tom Rogers

USFWS

ont's Nongame Wildlife Fund

little brown bats to American bumblebees. Many thanks to all our supporters who donate each year! and can yield two to three dollars more for conservation in Vermont.



Monitoring Eastern Ratsnakes ↻

The state-threatened Eastern ratsnake is primarily found only in western Rutland County and parts of southwestern Addison County. In 2017, a small disjunct population was found in northern Addison County. Since then, the department has collaborated with Cindy Sprague, an independent researcher, to monitor this population. Cindy uses radio telemetry, miniature transponders known as PIT tags, and trail/game cameras to identify annual movement patterns, individuals and hibernacula. In 2021, a large male ratsnake was implanted with a radio transmitter and its movements tracked. Four ratsnakes were also captured and PIT-tagged. To date, 18 ratsnakes have been PIT-tagged and 8 have been recaptured.



Radio telemetry, miniature transponders and trail cameras are used to identify movement patterns, individual ratsnakes and their hibernacula.

Lilla Stutz-Lumbr



VFWD

Acoustic detector set up at Steam Mills Brook WMA to help detect the presence of state-endangered northern long-eared bats and other bat species on state lands.

Summer Acoustic Surveys

The Vermont Fish & Wildlife Department conducts stationary acoustic surveys on state lands to detect the presence of northern long-eared bats. The surveys aid in ongoing conservation and recovery of Vermont's bats by protecting maternity colony habitat and contributing to developing occurrence maps of know species. Northern long-eared bats and tricolored bats have been detected at 6 percent and 4 percent of the sites surveyed respectively, while big brown and hoary bats have each been detected at 45 percent of the sites.

Partnering with NatureServe ↻

In early October, NatureServe's CEO Sean O'Brien toured Delta Park in Colchester and Smugglers Notch State Park in Stowe, where the Vermont Fish & Wildlife's Natural Heritage Inventory (VNHI) program and NatureServe data has helped protect rare species while also enabling public access. VNHI program is part of NatureServe's network, collecting data on Vermont's rare species to inform conservation planning and wildlife management. NatureServe aggregates data from over 60 natural heritage programs across the U.S. and Canada, including ours, for bigger-picture conservation planning and biodiversity protection.



NatureServe's CEO Sean O'Brien (front left) and VT's Natural Heritage Inventory program staff celebrated their partnership in protecting biodiversity with a vist to Smugglers Notch.

Josh Morse

Changing Times *continued from page 3*

around in, to evolve, and perhaps most importantly to adapt to a dramatically changing world,” added Marcus.

Eric was also recognized as both a great teacher and student of ecology. NHI colleague Dan Farrell offered “I’m always amazed by how succinctly and clearly Eric expresses the complexity of natural systems, while acknowledging all that’s left to learn.”

Other Program & Department Updates

Dr. Rosalind (Roz) Renfrew assumed the helm as manager of the Wildlife Diversity Program in the fall of 2021. Roz earned her Ph.D. in Wildlife Ecology at the University of Wisconsin, Madison and joined the Vermont Institute of Natural Science and later the Vermont Center for Ecostudies as a conservation biologist. While with these conservation organizations, Roz spent decades working with many of the Fish & Wildlife Department’s biologists.

“I know from direct experience the unsurpassed dedication, knowledge and skills of the Wildlife Division’s staff,” says Roz. “I am absolutely thrilled to have the honor to now work alongside them, supporting their vital efforts to conserve Vermont’s wildlife.”

Following Community Ecologist Eric Sorensen’s retirement, Bob Zaino is moving over from the Lands

and Habitat Program to take his place, but Bob will continue his work with both programs. For ten years Bob has been contributing his talents to natural community inventories, especially on state Wildlife Management Areas, and he has been instrumental in realizing the goals of Vermont Conservation Design.

This year we are so fortunate and grateful to have Americorps member Lauren Hwang-Finkelman lending her exceptional botanical skills. Lauren has traveled from the west coast, is fast learning our eastern plant species, and looks forward to helping with projects on a variety of taxa during the field season.

Lil Lumbra, who is the magic behind this and many other Harmonies issues, is phasing out her work with the department. She has served as the department’s web master and promoted the Nongame Wildlife Fund and the Conservation License Plate.

Last but certainly not least, Governor Scott appointed Christopher Herrick as the new Vermont Fish & Wildlife Department Commissioner in the fall of 2021, following on Louis Porter’s service of more than seven years. Chris often speaks of how fortunate he feels to be working with this department, and considers it his number one priority to support staff so they may carry out the mission.

Remembering Linda

By Steve Parren

Back in the 1990s, when I was the coordinator of the Wildlife Diversity Program (then known as the Nongame and Natural Heritage Program), we had a very small budget given the conservation needs of nongame wildlife, native plants, and significant natural communities in Vermont. We had a terrific staff that was committed to making a difference with the help of supporters like you, but we were all biologists of some sort and communicated in dialects of English that were not always readily understood.

We needed someone who spoke a version of English everyone would understand, and that is when Linda Henzel joined the program as a part-time outreach conservationist. Linda created the Natural Heritage Harmonies newsletter and shared our story with all of you, promoted the Nongame Wildlife Fund, and the Conservation License Plate. We had lots of good stories and Linda told them well.

Linda eventually moved on to do other work but always stayed in touch with those of us that remained in the program. Sadly, Linda succumbed to a chronic health challenge this past December. It is with fond memories that I say goodbye to my friend and colleague Linda Henzel. It says a lot about Linda that in her obituary she encourages people to make a donation to the Vermont Nongame Wildlife Fund. She is still making a difference.



photo courtesy of Michael Henzel

Investigating Amphibian Mortality

By Luke Groff, F&W Herpetologist

While we navigate Covid, frogs and salamanders have their own diseases to reckon with. We responded to three amphibian mortality events in 2021. The first event occurred in March in Winhall, where we counted 312 Eastern Newt and two American Bullfrog carcasses. In April, we responded to a Wood Frog mortality event in Burlington and counted 26 carcasses. In August, we received reports of more than 25 dead American Bullfrogs in Maidstone Lake.

To diagnose the causes of mortality, we submitted specimens from each location to the National Wildlife Health Center (NWHC) in Madison, Wisconsin. Diagnostic testing helps the Vermont Fish & Wildlife Department better understand the distribution and prevalence of amphibian diseases across Vermont. NWHC was unable to conclusively determine a single cause of mortality for these specimens, but their investigations shed light on potential contributing factors.

Specimens are tested for *Batrachochytrium salamandrovorans* (Bsal), the chytrid fungus that causes salamander chytridiomycosis. Bsal, which has the potential to severely impact salamander populations, has spread across countries through the pet trade, but it has not yet been documented in the U.S. NWHC also tests for *Batrachochytrium dendrobatidis* (Bd), another fungus that causes chytridiomycosis.



A healthy Eastern Newt

Dave Huth - CC BY-NC 2.0.

There was no indication that an infectious disease was the cause of the Winhall mortality event, but most Eastern Newts there tested positive for Bd. The presence of Bd may have been a contributing factor, but the ultimate cause may have been a change in water quality (such as low dissolved oxygen). Similarly, the cause of mortality at Maidstone Lake was undetermined, but multiple American Bullfrogs tested positive for Ranavirus. The Burlington mortality event is believed to have been the result of predator-inflicted trauma.

Fortunately, there were no positive cases of Bsal, but we must continue to test. Our disease response efforts, paired with those of other states, will help ensure early detection and subsequent mitigation of Bsal if it reaches the U.S. These days, people likely have an enhanced appreciation for the many advantages of disease prevention in humans, and the same applies to amphibians.



Together We Saved the Bald Eagle. Let's Not Stop Now!

Help Vermont's endangered wildlife by donating to the Nongame Wildlife Fund.

Look for the check-off on your Vermont income tax form or donate directly online at www.vtfishandwildlife.com

Doug Gimler



Wildlife Diversity Program

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Your Support Makes a Difference!

Please donate to the Nongame Wildlife Fund on your Vermont income tax form or online.



Cornwall Swamp Foray

By Bob Popp and Aaron Marcus, F&W Botanists

Cornwall Swamp contains at least four state significant natural communities, giving it the distinction as one of the largest and most ecologically significant forested wetlands in the Northeast. On a brutally hot day last summer, Fish & Wildlife Department Botanists/Ecologists, Bob Popp, Aaron Marcus, Everett Marshall and Dan Farrell, accompanied by Matt Peters and Grace Glynn, both members of the Flora Scientific Advisory Group, trekked into this Wildlife Management Area.

The mission was to search for the multitude of rare and endangered plants species known from the site, some of which had not been observed in over two decades. Not only did they need to determine the current status of the plants, but also how the plants are coping with changes in climate, invasives, deer browsing and hydrology. The verdict is that the rare plants and natural communities are still faring well, likely due to the large size and intact structure of the swamp.

With so many trained eyes on the search, the group had a banner day. They found populations of all four state-threatened plant species known from the swamp, including Appalachian Jacob's-ladder and three species of orchid. One of the orchid species had not been found there since 1996, and it was reassuring to even find some flowering individuals. They also discovered populations of plant species

not previously known from the swamp, including a large population of the state-threatened bog pyrola and the rare foxtail sedge. As a bonus they were able to collect seeds from the rare thin-flowered sedge for preservation at the Native Plant Trust, and definitively verify a number of occurrences of the very rare and very cryptic autumn willow. Their combined "accomplishments" for the day included five state threatened, six rare, and three uncommon plant species. And best of all, they were reassured that this magnificent feature is largely protected, thanks to the Fish & Wildlife Department and The Nature Conservancy.



State-threatened Appalachian Jacob's-ladder

Bob Popp