



# *VES NEWS*

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The Newsletter of the Vermont Entomological Society

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Number 117  
Winter/Spring 2023



Calligrapher Fly (*Toxomerus geminatus*)  
Missisquoi NWR Stephen Young Marsh,  
Swanton, VT  
Photo: Laurie DiCesare

## VES NEWS

### The Newsletter of the Vermont Entomological Society

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The **Vermont Entomological Society (VES)** is devoted to the study, conservation, and appreciation of invertebrates. Founded in 1993, VES sponsors selected research, workshops and field trips for the public, including children. Our quarterly newsletter features developments in entomology, accounts of insect events and field trips, as well as general contributions from members or other entomologists.

VES is open to anyone interested in arthropods. Our members range from casual insect watchers to amateur and professional entomologists. We welcome members of all ages, abilities and interests.

You can join VES by sending dues of \$15 per year to:

Deb Kiel  
147 Allen Irish Road  
Underhill, VT 05489

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### Newsletter Schedule

Spring: Deadline April 7 – Publication May 1  
Summer: Deadline July 7 – Publication August 1  
Fall: Deadline October 7 – Publication November 1  
Winter: Deadline January 7 – Publication February 1

Want to submit an article?

Please contact Michael Sabourin at [mothvet@yahoo.com](mailto:mothvet@yahoo.com)  
“VES News” on subject line, for Guidelines.

### Membership

#### Check Your Mailing Label

The upper right corner of your mailing label will inform you of the month and year your VES membership expires.

Dues are \$15 and can be sent to our Treasurer:

Vermont Entomological Society  
c/o Deb Kiel  
147 Allen Irish Road  
Underhill, VT 05489

## President's Message



Seasons Greetings everyone and Happy New Year! Welcome to another year of Vermont entomology. As we welcome in the year, I would be remiss not to reflect on the past. While we wish everyone the best, we acknowledge that it has been a difficult time for many. Probably everyone knows someone that got Covid or got sick themselves; lost a friend or relative or suffered some kind of bodily injury. So everyone take care and do your best from day to day; and call me if you think it would help you.



#RIP BioQuip: As we recover from the Covid pandemic, many of us are also recovering from the closing of Bioquip, a company in California that was the premier supplier of entomological supplies. We had to rethink everything entomology from how to kill things to where we would get supplies such as insect pins, labels, killing jars, nets, etc. Some sources for entomological supplies that I stumbled upon during the past year were Forestry Suppliers, Inc. (some insect pins), Indigo Instruments (stainless-steel pins), Carolina Biological Supply Company (Minutens, = extra small insect pins), and Australian Entomological Supplies (genitalia vials). I was also informed by JoAnne Russo of a new American start up, [ecologysupplies.com](http://ecologysupplies.com), that “was created to fill a gap in the market that BioQuip is leaving behind.” At last a potential American source for genitalic vials!

#RIP Torrey Hall: It has been common knowledge the past few years that the Zadock Thompson Zoological Collection (ZTZC) would not be returning to Torrey Hall. The collection is currently housed in the Blundell House on the University of Vermont (UVM) Redstone campus. Recently I learned from the Interim Curator, Dr. Sara Helms Cahan, the good news that the collection has finally found a more permanent location. Dr. Cahan informs that the collection will be moving to Delehanty Hall on the old Trinity College campus. The ZTZC collection will occupy a large, climate-controlled space that was formerly a cafeteria. The collection is anticipated to be housed on a compactor system there which will increase the overall storage space. Blundell House will

retain the teaching collection and continue to provide classroom and research space.

Save the date: April 23rd, for the VES Annual Meeting which will be held this year at Blundell House (ZTZC) and University Heights North on the UVM Redstone campus. This will give us an opportunity to check out the university collection as well as discuss our plans for the year. Details to follow.

This year, March is the 30th anniversary of the Vermont Entomological Society. Come join us at our annual meeting as well as share memories of the society throughout the year in our newsletter.

FYI, VES is betwixt and between how many newsletters to publish a year. In the past we have done four, but we have been considering doing three because of financial and time constraints. The thought is to change the schedule to the following 3 newsletters a year :

Winter/Spring : Deadline Feb. 7 – Publication March 7

Spring/Summer : Deadline June 7 – Publication July 7

Summer/Fall : Deadline Oct. 7 – Publication Nov. 7

If you have thoughts on the subject please bring them to our annual meeting where we will discuss the newsletter and calendar events, etc.

VES also maintains a [Facebook site](#). It's reported to have 278 members and is a good venue for sharing daily activities, events, news items, etc. in between our newsletters.

Reminder, VES is a membership organization, so **please keep your dues up to date and participate**. For those that haven't noticed, VES leadership is aging and we're looking for some younger people to take over the reins.

*Michael Sabourin, President*



## Pink Star Moth (*Derrima stellata*)

By JoAnne Russo

On July 22, 2016, I was arriving for the Acadia National Park Bioblitz in Winter Harbor, Maine, while Laura Gaudette, a self-described obsessed naturalist, was photographing a very rare moth species. Laura was in Dummerston, in sweltering heat, heading back to her vehicle when she flushed a moth that dove into low vegetation. She was hot, tired and would need to get down on the ground to photograph the moth, so she was tempted to ignore it. Instead, she took a photo of this beautiful, yellow-and-pink moth and texted it to me. By checking Moth Photographers Group (MPG), an online resource for moths, Laura determined that it was the Pink Star Moth (*Derrima stellata*), a species that neither one of us had ever seen.



Pink Star Moth (*Derrima stellata*),  
Black Mountain Natural Area, Dummerston, VT.  
Photo: JoAnne Russo

Laura, who was living in Putney, VT, had gone to explore the Black Mountain Natural Area in nearby Dummerston, which is owned by The Nature Conservancy. This is an exceptional area in southeastern Vermont with unique habitat. The summit has granite outcroppings with pitch pine, oak and heath. Kent McFarland has a very interesting blog post about the area, written for Audubon Guides (see link in References). Laura found the moth along a power line cut that crosses through the parking area at the mountain base, paralleling the West River along Rice Farm Road. This area has sandy soil, oak, blueberry, heath and wet areas.

The Pink Star Moth (*D. stellata*) is rarely seen, and little is known about its life history, including host plant(s) and larval stage. The moth has been reported in dry-xeric stands of hardwoods; open rock outcrops; xeric oak/pine scrub; maritime dunes and heathland; and a sea-level fen. *Derrima stellata* flies during the day and is attracted to Ultraviolet (UV)/Mercury Vapor (MV) lights at night.

Laura and I returned to the location numerous times to search for this elusive moth to no avail. When my naturalist friend, Tim Reichard, decided to

visit during July, I knew I wanted to take him to Black Mountain Natural Area. Tim, an astrophysicist and naturalist, was doing an intensive Northeast trip to document moths, other invertebrates, plants and birds, and to have a great time with naturalist friends. I received permission from The Nature Conservancy to survey the area, collect species that needed further identification and set up UV lights at night.

On July 26, 2022, Tim and I started with a daytime search for the Pink Star Moth. As I walked through the low vegetation along the power line cut, Tim saw a small pink-and-yellow moth fly up and back down into the scrub. We re-located it and excitedly took pictures then continued our search but did not turn up any others. That night, with two UV light set-ups at different locations in the same area, another *Derrima stellata* showed up on one of the sheets.

More work needs to be done to find out about this mysterious moth's life history. I plan to return to this site this coming season to further survey and hopefully shed some light on this rare moth.

### References/Resources/Literature:

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## New Pond at Nature Haven

By Laurie DiCesare

This past July, when I mentioned my longtime desire to have a pond excavated out of the brook and small frog pond in my back yard, my friend and contractor, Nathan MacAlpine, replied “I can do that.” The following week, once I had secured the finances and Nathan had enlisted the help of his friend and fellow contractor, Nikolis Holly, the dig commenced.

The Town of Milton regulations required that we move no more than 400 yards of soil; leave the banks at a mild slope of 1:2 feet to avoid erosion; and not encumber the outlet.



**Nathan and Nikolis clearing vegetation with an excavator.**  
Photo: Laurie DiCesare

Nathan and Nikolis dug out the center of the small stream, removing a lot of goldenrod and some sumacs from the banks. They uncovered a white pipe, part of the former dairy farm’s drainage system, which they left in place. By mid-afternoon, there was a definite 20-yard long depression with a broad, mud border...but no water. Within the next day or two, the water level began to rise. After a short rain, I was glad to see that the small stream below the pond was again trickling with overflow water. With a wide-open palette of cleared land, I planted several bags of wildflower seeds, some gifted to me by friends, hoping to encourage more insects to help pollinate the flowers on nearby plum trees and red-raspberries.

Within the next few days, many species of local wildlife came to check out the new wetland oasis. A Clouded Sulphur (*Colias philodice*) was the first butterfly I noticed on the mud flats. Several species of dragonflies, including egg-dipping Common White-tails (*Plathemis lydia*) and 12-Spotted Skimmers (*Libellula pulchella*), possibly from the nearby Beaverpond on Mallett’s Creek, began alighting on the drain pipe and the few



**Common Whitetail Dragonfly (*Plathemis lydia*)**  
Photo: Laurie DiCesare

sticks remaining around the shore. Easter Forktail damselflies (*Ischnura verticalis*), with distinctive blue “F” marks on Segments 8 and 9; and Fragile Forktail damselflies (*Ischnura posita*) with an exclamation point on the thorax (!), appeared after I added some water hyacinths and pond lilies for landing sites. A dozen Green Frogs (*Lithobates clamitans*) and several American Bullfrogs (*Lithobates catesbeianus*) became regulars.



**American Bullfrog (*Lithobates catesbeianus*)**  
Photo: Laurie DiCesare

The week after I invited my friend, Dave Goodwin, to “NatureHaven Pond”, he sent me a box containing the parts of a two-seater butterfly bench. I was able to fit most of the parts together except for the last support piece. After much pulling and pushing, the last two pre-drilled holes remained about a quarter of an inch shy of matching. The next time Dave came over for an evening of card and board games, he helped me pull the bench together...by first loosening all the bolts, using the slack to match the holes and insert the final bolt, then slowly re-tightening each of the bolts in succession. I was glad that the finished product was both sturdy and beautiful.

With a lawn chair only a yard from the water, I spent many hours watching and photographing the wildlife. One of my favorite visitors was a Solitary Sandpiper (*Tringa solitaria*) that I noticed on the far side of the pond. I was snapping photos as it slowly made its way around the shore, occasionally dipping into the water, but not apparently noticing me. When it was within a yard of my seat, it looked up into my eyes. When I slowly blinked once to let it know I was alive, it crossed its legs, turned around and quickly walked away. What a beautiful moment.

By early September, the red clovers and many wildflowers were in full bloom. I planted a border of recycled “knock-out” roses that Nathan gave me. He was visiting a local garden center and noticed that a large number of these roses were being tossed out as

## New Pond at Nature Haven (continued)

compost because they had passed their prime. With permission, he rescued dozens of these “less than perfect plants and shared some with me. With a little fertilizer and compost under them, they started blooming again. On Sept. 9 a Great Blue Heron (*Ardea herodias*) visited. I watched it a



Great Blue Heron (*Ardea herodias*) & Dave's Butterfly Bench  
Photo: Laurie DiCesare

at a distance for awhile, snapping several photos, but lacked the patience it had for remaining still. It flew off when I tried to move to a folding chair closer to the shore. I've also seen deer prints in the mud and, later, in snow, along the shore.

I am very grateful to Nathan, Nikoli, Dave, and all the people who helped make NatureHaven Pond a beautiful, wildlife-friendly resource. I hope many VES members will come visit this Summer... possibly for a pot luck lunch and field trip to nearby Milton Town Forest. Watch for our Summer calendar. Namaste!

## New Lady Beetle Discovered in Vermont By Julia Pupko, VT Center for Ecostudies

On July 10, Kent McFarland and Nathaniel Sharp were sweep netting their way around Underhill, Vermont with a group of excited BioBlitzers. As they walked and chatted with the group, Kent said, “You just never know when you are going to find something cool. New species are discovered all the time.”

Kent's words turned out to be prophetic for that very day. As they were all walking back toward the cars, Nathaniel saw something and swung his net. When he looked inside, he saw a small, black beetle with elongated spots. “I walked over to Kent and asked if he knew what species this was,” said Nathaniel. “Kent responded that he was not sure, so he took the beetle home to identify it.”

“Yeah, as soon as I saw the thing I just had this feeling that this lady beetle was something special and knew that I had to take it back with me,” said Kent. After hours poring over a key, Kent had a tentative identification - the Disk-marked Lady Beetle (*Hyperaspis disconotata*). Putting the images of the small beetle into iNaturalist.org confirmed the identification and that a new species of lady beetle had just been recorded in Vermont for the first time.

The Disk-marked Lady Beetle is native to North America and is relatively rare - there have only been a handful of records throughout history and only two notations on iNaturalist. This species can be found from the upper-midwestern states, such as Minnesota, to the New England coast, then north into Canada. There is some indication that the Disk-marked Lady



Disk-marked Lady Beetle (*Hyperaspis disconotata*)  
Photo: Kent P. McFarland

Beetle primarily utilizes arboreal (forest) ecosystems. Other than that, little else is known about this species.

Other species in the *Hyperaspis* genus, such as *Hyperaspis binotata*, are typically arboreal and are voracious predators of scale insects. Species within the *Hyperaspis* genus are encountered most frequently from late spring to mid-summer. It is possible that the Disk-marked Lady Beetle's life history is similar to that of others in the *Hyperaspis* genus. This cannot be determined without more data ... but you can help! Photograph any lady beetle you see and upload your photos to iNaturalist, where they will be included in the [Vermont Lady Beetle Atlas](#). You may just find a new species too.

**Bio:** Julia Pupko is the former Community Science Outreach Naturalist at the Vermont Center for Ecostudies. During her two years with VCE, Julia coordinated the Vermont Lady Beetle Atlas. Currently, Julia works as a teaching assistant for a Tropical Ecology class in Costa Rica and volunteers for Sosyete pou Rebwaze Duchity Haiti (SRDH) - a community-based reforestation and agroforestry organization working in Duchity, Haiti. To learn more of SRDH, please visit the website: <https://www.srdhaiti.org/>.



## The Brown-tail Moth – How Irritating Can You Get?

By Judy Rosovsky

The brown-tailed moth (*Euproctis chrysorrhoea*) is an invasive denizen of Maine that causes unpleasant conditions for the people who reside in that fine state. They were first seen in Somerville, Massachusetts in 1897, and those of you who know New England geography may note that Somerville, MA is adjacent to Medford, MA, the site of the accidental release of the equally notorious and recently renamed spongy (formerly gypsy) moth. In the earlier part of the 20<sup>th</sup> century, the brown-tail moth (B-TM) occupied the eastern seaboard from Nova Scotia to Long Island but suffered a major population collapse in the 1920s, leaving only small remnant populations on a few islands of Maine and at the end of Cape Cod (Beckwith, 2018). In the 1990s, the ME populations started to recover. Now the populations in ME have expanded, and the hair-shedding habits of the brown-tail moths are creating serious public health issues.

For a good range map, including the historic range, go to <https://www.forest-pests.org/vd/144.html>.

There are similarities between the brown-tail moth (B-TM) and the spongy moth beyond the state of introduction to the U.S. Both species are in the family *Erebidae*, one of about 14 Lepidopteran families that have ur-



**Brown-tail moth (*Euproctis chrysorrhoea*) Male adult brown-tail moth with plumose antenna and a brown 'tail' (exposed tip of brown abdomen)**

Photo © Chelsea Gottfried,  
<https://creativecommons.org/licenses/by-nc/4.0/>



**Brown-tail moth (*Euproctis chrysorrhoea*) caterpillar with two red dots on the tail end of the insect**

Photo © Nathaniel Sharp,  
<https://creativecommons.org/licenses/by-nc/4.0/>



**Spongy moth (*Lymantria dispar dispar*) photo for comparison. The head has yellow markings; the characteristic blue dots appear in the fourth instar.**

Photo: Judy Rosovsky

ticating hairs (Urticating hair, Wikipedia). Both species of moths can reach outbreak levels, and those outbreaks can crash (suffer steep population reductions) due to natural enemies that include a nucleopolyhedris virus (NPV) and a fungus (Beckwith, 2018). For spongy moths, the fungus is *Entomophaga maimaiga*, and for the B-TM the fungus is *E. aulicae*. B-TM is invasive in India where it is a major pest of apricots, but a recent outbreak was curtailed by NPV (Hussain *et al.*, 2019). It is possible that the fly introduced to the U.S. in 1906 to control the spongy moth, *Compsilura concinnata*, may have played a role in B-TM population crashes (Elkin-

ton, 2006).

In addition to sharing natural enemies and a geographic origin in the U.S., the two caterpillars have other similarities. Superficially, they look alike. Mature B-TM larvae have two red spots on their dorsal surface and are hairy, while mature spongy moths have 6 blue and 6 red spots on their dorsal surfaces and are hairy. B-TM caterpillars have distinctive white stripes along their sides, so they can be mistaken for forest tent caterpillars, too. B-TM make nests but spongy moths do not. Both

## The Brown-tail Moth – How Irritating Can You Get? (continued)

types of moth have cyclic outbreaks and can be serious defoliators. In 2021, the B-TM in Maine defoliated almost 200,000 acres between the spring and fall feedings (Schmeelk, 2022).

New world tarantulas are another arthropod that uses urticating hairs for defence, in some cases to protect eggs from predators, (Bertani and Guadanucci, 2013), a technique which some Lepidoptera have adopted. The Latin word for nettle is *urtica*, and stinging nettles, another human health hazard, are in the genus *Urtica*, (Urticating hair, Wikipedia). These hairs can affect humans in two ways: we can have a chemical reaction to the toxins in the hairs, and we can be irritated by the physical structure of the hairs because they have a barbed end that sticks into our skin. Each individual may have a different response to each specie's hairs (Mirus, 2020). For example, some people show no reaction from swatting tussock moths (another moth in the family *Erebidae*) bare-handed and others experience itchy reactions.

The urticating hairs are more prevalent at certain times in their life cycle. B-TM larvae build small, palm-sized nests at the tips of branches and twigs that

are secured with white silk and venture forth to skeletonize hardwood tree leaves (Schmeelk, 2002). The young caterpillars return to the nest at night, much like certain phases of the spongy moth, but once they are older, like daring teenagers, they become bolder and stay out of the nests. In late June or July, once the larvae are well fed, they will spin cocoons covered with toxic hairs, on most handy surfaces (Murray). The adults emerge from their cocoons in July and usually lay their 200 to 400 eggs on the underside of host tree leaves, often oak. Other common hosts are cherry, elm, polar, apple and other fruit trees (Maine Forest Service; Schmeelk, 2022). The eggs hatch in late August or early September. The larvae feed a bit before making their winter nests (Murray).

The defoliation, which can be considerable between the spring and fall feedings (Schmeelk, 2002), is not the issue which puts B-TM on the map, though. If touched, the hairs from living or dead caterpillars or their molts (shed skin), or the hairs on the pupae, can cause rashes that last from hours to weeks, and can sometimes cause respiratory distress (Maine Forest Service). If you are vacationing or living near these moths, avoid areas of heavy infestation if you can. Don't hang your laundry outside, and wear protective clothing and possibly respirators if you are stirring leaves. Take other sensible precautions (Maine Forest Service). Just don't swat them with your bare hands!



**Skin rash from brown-tail moth caterpillar**

Photo: Jan Samanek,  
Phytosanitary Administration,  
Bugwood.org,  
<https://creativecommons.org/licenses/by/3.0/us>

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**March 3 – 5, 2023: The Vermont Flower Show** at Champlain Valley Expo, Essex Junction, VT. Vermont Urban & Community Forestry Program and Vermont Agency of Agriculture will be sharing a display table with invasive species and pollinator information on it. Benjamin Dillner and Judy Rosovsky plan to do an interactive workshop comparing native and invasive garden and landscape insects, and Spencer Hardy will give a talk about bees. Tickets, workshop and seminar schedules can be found on [The Vermont Flower Show](#) website.

**March 8, 2023 (6:30 p.m.):** Vermont's Wild Bees: past, present, and future with Spencer Hardy (IN-PERSON) at North Branch Nature Center on Elm St. in Montpelier; tickets required, you can register online at [The North Branch Nature Center](#).

**March 25, 2023 (10:30 a.m.):** Spring meeting of New England Entomological Society, Framingham, MA, meeting at the McAuliffe Branch of the Framingham Public Library (746 Water St). contact: [New England Entomological Society](#).

**April 21 - 23, 2023:** Northeast Natural History Conference (NENHC) is back in Burlington at Doubletree by Hilton! You won't want to miss the Northeast's largest regional forum for researchers, natural resource managers, students, and naturalists to present current information on the varied aspects of applied field biology and natural history for the region. Register at: [Eagle Hill Institute](#).

VES will have a display table at the conference! If you would like to participate, please contact Michael Sabourin at (802) 522-7992 or [mothvet@yahoo.com](mailto:mothvet@yahoo.com).

**April 23, 2023 (11 a.m.):** Burlington: VES Annual Meeting potluck at Blundell House (ZTZC) and University Heights North on UVM's Redstone campus. Meet at Blundell house; we'll later have lunch at University Heights North. For more information, contact Michael Sabourin at (802) 522-7992 or [mothvet@yahoo.com](mailto:mothvet@yahoo.com).

**April, 2023:** The Vermont Butterfly Atlas returns and is scheduled to kick off in April. Kent McFarland of Vermont Center For Ecostudies (VCE) reports "It is hard to believe that 2023 marks 20 years since we started the first butterfly atlas. But wow things have changed since then. Digital cameras were just coming of age back then and now many of us have them in our pockets wherever we go. We can now share observations and digital images with databases like eButterfly and iNaturalist and share it with projects and friends in an instant. And of course, the butterflies have changed too. New species have been found in Vermont, while others have undergone what seem to be substantial populations and range changes. The good news is, we can use all this great technology to make our atlas even better now and we are going to be able to have a comparison of butterfly change over the decades for the first time in Vermont and the region at this scale." For those not familiar with the first atlas check out the [VCE website](#). For those wishing to participate in this butterfly atlas contact Kent McFarland at [mcfarland@vtecostudies.org](mailto:mcfarland@vtecostudies.org).

**June 3, 2023 (11a.m.):** Adamant : Blackfly festival. Join us and a display table at an annual free, family-friendly, bug-centric celebration. For more information, contact Michael Sabourin at (802) 522-7992 or at [mothvet@yahoo.com](mailto:mothvet@yahoo.com).

**June 24, 2023 (10 a.m.):** Northfield: Burnham's Cilohocla property. Meet at the I-89 Exit 5 commuter lot. Explore the Burnham's family camp and pond, and hopefully discover some Showy Lady Slippers. Rain date is June 25; For more information, contact Doug or Mary Burnham at (802) 229-9578 or [burnham.doug@gmail.com](mailto:burnham.doug@gmail.com).

**June 25 - July 1, 2023:** Eagle Hill Summer Field Seminar, Steuben, ME. Natural History of Native Bees: Biology, Ecology, Identification, and Conservation with Nicholas Dorian and Max McCarth. Register at [Eagle Hill Institute](http://Eagle Hill Institute).

**July 8, 2023 (10 a.m.):** Birds of Vermont Museum, Huntington. Annual butterfly and bug walk, 900 Sherman Hollow Rd; rain date July 9. Contact: <https://birdsofvermont.org/> or (802) 434-2167.

## Field Notes



### Tom and Laurie's Late Summer Adventures

By Laurie DiCesare and Tom Scavo

#### Groton State Park, Groton and Peacham, VT (July 29, 2022):

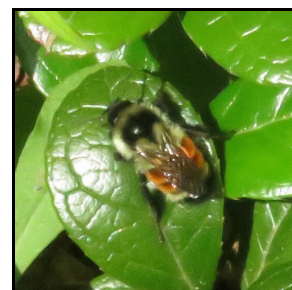
On a sunny, 70° Summer day, Tom and I drove to Groton State Park on VT Rte. 232 to check out the flora and fauna. Our first stop was at **Ricker Pond**. Although we saw several common dragonflies including a Slaty Skimmer (*Libellula incesta*), Blue Dasher (*Pachydiplax longipennis*) and a fly-by Wandering Glider (*Pantala flavescens*), my favorite sighting of the afternoon was a bountifully-flowered Broad-leafed Helleborine (*Epipactis helleborine*) orchid.

At **Boulder Beach** on Lake Groton, Tom first pointed out a yellow-flowered Pinesap (*Monotropa hypopitys*, “one turn, below pines”) then a red-flowered one nearby. Both were first-time sightings for me. Pinesap is also called “False Beechdrops” but actually looks more like its close relative Ghost Pipe (*Monotropa uniflora* or “one turn, one flower”). Pinesap has multiple flowers on every stem, whereas the Ghost Pipe (formerly called Indian Pipe or Corpse Plant) has only one.



Above: Yellow Pinesap (*Monotropa hypopitys*)  
Below: Red Pinesap (*Monotropa hypopitys*)  
Photos: Tom Scavo

Another surprise was finding Silverrod (*Solidago bicolor*) growing out of a rocky outcrop. That Goldenrod relative was another first sighting for me. I also discovered a Tricolor Bumble Bee (*Bombus ternarius*) on a Teaberry (*Gaultheria procumbens*) leaf nearby.



Tricolored Bumble Bee (*Bombus ternarius*)  
Photo: Laurie DiCesare

#### Chickering Bog, Calais, VT (August 3, 2022):

From the trailhead on George Road, the long, wooded walk to Chickering Bog revealed a bountiful number of diverse plant species. We noted five fern species (and many more we have yet to name), Creeping Snowberry (*Gaultheria hispidula*), Side-flowering Wintergreen (*Orthilia secunda*) and Lesser Rattlesnake Plantain (*Goodyera repens*). The delicate, pale-blue flowers of Kalm’s Lobelia (*Lobelia kalmii*) and the yellow-flowered Horned Bladderworts (*Utricularia cornuta*), with protozoan- and rotifer-trapping bladders on their stolons (running branches), were blooming in the bog.



Kalm’s Lobelia (*Lobelia kalmii*)  
Photo: Tom Scavo

## Tom and Laurie's Summer Adventures (continued)



**Horned Bladderwort**  
(*Utricularia cornuta*)

Photo: Tom Scavo

other Odonates I saw. A Funnel Weaver Family spider (*Agelenidae*) with characteristic elongated spinnerets; a slant-faced, Two-striped Grasshopper (*Mermiria bivittata*); a Waved Sphinx Moth larva (*Ceratomia undulosa*); and a Monarch (*Danaus plexippus*) larva were also noted. On our way out, Tom spotted the Lesser Rattlesnake Plantain (*Goodyera repens*), a plant I had only seen once many years ago. He also photographed an Eastern Band-winged Hover Fly (*Hypocritanus fascipennis*).



**Waved Sphinx Moth**  
(*Ceratomia undulosa*)

Photo: Tom Scavo



**E. Band-winged Hover Fly**  
(*Hypocritanus fascipennis*)

Photo: Tom Scavo

I had hoped to see the diminutive Elfin Skimmer (*Nannothemis bella*) dragonflies that I had photographed on July 24, 2017, but a patrolling darner (*Aeshna* sp.) and a pair of mating Meadowhawks (*Sympetrum* sp.) doing “the wheel” were the only

### Adamant Music School Pond, Adamant, VT (Aug. 3, 2022):

On our way home from Chickering Bog, we stopped by the Adamant Music School on Haggett Road to check out its public pond (with a “welcome” sign) and roadside flower garden. It was late afternoon, so we only noted a few damselflies and



**Tom at Adamant Music School pond and gardens**

Photo: Laurie DiCesare

an Aquatic Leaf Beetle (*Donaciinae* subfamily) by the pond. The cultivated Culver’s Root (*Veronicastrum virginicum*), however, was still attracting many pollinators...including Tri-color Bumble Bee.



**Aquatic Leaf beetle**  
(*Donaciinae* subfamily)

Photo: Laurie DiCesare



**Culver’s Root**  
(*Veronicastrum virginicum*)

Photo: Laurie DiCesare



## Creating a 3-D Honeybee Model

By Brian Hanke

A few years ago, I took part in a digital art challenge and made a 3-Dimensional model of a bee for one of my entries. I revisited it a few times since then and gradually refined it to its current form. Organic models like insects can be time-consuming to create since they are very complex with almost infinite levels of detail. You always have to look for a balance between taking shortcuts and achieving an overall sense of photorealism.

For this project, I started by collecting dozens of photos of honeybees from all angles. If there was a detail that wasn't clear, I would read up on anatomy to try and understand what I was seeing.

Next, I blocked out the overall forms to get the size and proportions right, often overlaying reference photos to check. From there I used software called ZBrush to create the medium and fine details. ZBrush allows you to "sculpt" 3-D models much like you would sculpt clay.

When the models of the body, legs, antennae and wings are ready, it's time to paint them. Honeybees don't have many colors, so this was mostly a matter of painting the yellow and black stripes and creating a mottled look for the body, since few things in real life are purely one color.

One of my most enjoyable parts of a project like this is applying the hair or fur. I was amused to discover that individual species of bees have their own unique hairstyles. In 3-D, you can "grow" hair from a model and then brush it into position.

The last step of the process is rendering all your hard work into a final image. This involves posing your model, creating realistic materials that display the appropriate roughness, translucency and colors, and adding virtual light sources and cameras that the computer uses to produce the scene. 3-D rendering is based on mathematical models of the physical properties of light and real-world materials. You set up a scene analogous to a photo studio, and the computer calculates light absorption and reflection to produce an image. The final model is a combination of many different types of honeybees, drawing on aspects that I found appealing in my reference photos. After

tweaking lots of details and seeing what looks good, you can sit back and enjoy your creation.

For those who are curious, I use the following software: **Maya**, **ZBrush**, **Substance Painter**, **RizomUV**, **Arnold** and **Photoshop**. Thanks for reading! You can follow me on Twitter to see more of my work: [twitter.com/brianhanke](https://twitter.com/brianhanke).



**Honeybee Model, lateral view**  
(The model is life size, approx. 1.5cm in length, rendered with a virtual 50mm lens.)  
Image: Brian Hanke



**Honeybee Model, frontal view**  
Image: Brian Hanke



**Honeybee Model, dorsal view**  
Image: Brian Hanke

## Exploring Co-infections of Pathogens in *Ixodes scapularis*

By Sam Cranston

Hi everyone! My name is Sam Cranston and I am a senior Biology major and Undergraduate Researcher at the University of Vermont. I am interested in infectious diseases and am currently a member of the Martinson Wildlife Pathogens Lab at UVM. For my independent senior research project, I chose to investigate the prevalence of co-infections of three different tick pathogens (*Borrelia burgdorferi*, *Babesia microti* and *Anaplasma phagocytophilum*) within Vermont's Blacklegged tick (*Ixodes scapularis*) populations. I'm also interested in how land use changes in the region may impact the levels at which these pathogens are present in Blacklegged ticks.

I grew up on Martha's Vineyard; a small island off the coast of Massachusetts. On the Vineyard, cases of Lyme disease and other tick borne illnesses have reached epidemic proportions due to out of control tick populations. Throughout my childhood, I witnessed members of my family and close friends come down with serious cases of chronic Lyme disease that put them out of commission for months at a time.

In high school, I had the opportunity to work on a project aimed at combating the tick problem on Martha's Vineyard. As you may know, the white footed mouse is the main reservoir host for *Borrelia burgdorferi* (the bacteria that causes Lyme). Ticks become vectors for Lyme disease when they take a blood meal from an infected mouse or other small rodent. The Mice Against Ticks project would use CRISPR/Cas9 (a gene editing system) to insert a naturally occurring



Field Collection with Assistant, Lena  
Photo: Ellen Martinsen  
[Mud Pond, Williston, VT]

DNA sequence into white footed mice that would cause the mice to be immune to a *Borrelia burgdorferi* infection (Buchthal et al, 2019). This process could have the potential to bring Martha's Vineyard's Lyme epidemic to a stop if the trait was successfully taken up into wild mouse populations. I worked as a laboratory technician for the Mice Against Ticks Project, providing baseline data on the prevalence of *Borrelia burgdorferi* infections and Lyme disease rates present in the Island's tick populations prior to the project's implementation.

Vermont has a similar tick problem to Martha's Vineyard. It ranks in the top three for Lyme disease incidence rates among US states and



Blacklegged Ticks  
(*Ixodes scapularis*)  
Photo: Lauren Berkley  
[Centennial Woods, Burlington VT]

tick borne disease rates continue to increase here every year (VT-Lyme.org, 2022). For my senior research project, I choose to build on my high school work and study tick borne pathogens in my new home state of Vermont. Through searching of the published literature, I found that studies put less of an emphasis on tick borne pathogens besides *Borrelia burgdorferi* (Lyme disease), and often ignore co-infections of other pathogens completely.

In order to gather data for this project, I selected 5 tick collection sites in forests with varied human disturbance of varying size levels within a ~15 mile radius of Burlington. At first, I really struggled to collect even a single Blacklegged tick

## Exploring Co-infections of Pathogens in *Ixodes scapularis* (continued)

sample from these sites. I was brand new to tick collection and had no knowledge of proper drag sampling techniques. However, VES president Michael Sabourin offered to teach me the in's and out's of drag sampling during one of his tick collection outings last June. Thanks to Michael's guidance and the help of my fellow lab mates, I was able to collect over 500 Blacklegged tick samples over the course of last summer and fall. This includes 240 nymphal Blacklegged ticks that are the subject of my study. I choose to focus on nymphs because their extremely small size makes

them easy to miss during tick checks and therefore the most dangerous life stage to humans.

I am currently in the middle of the lab work portion of this project, with preliminary results just starting to come in. It will be interesting to see how land use changes in Vermont have impacted the prevalence of pathogens within our state's Blacklegged tick populations. The results of my study should also provide insight into the rates at which Blacklegged ticks carry co-infections of multiple pathogens as well as how these pathogens associate with one another within a Blacklegged tick host. Look out for a more detailed write up of the results of this projected in the future!

### References:

J. Buchthal, S. W. Evans, J. Lunshof, S. R. Telford, and K. M. Esvelt. 2019. Mice Against Ticks: an experimental community-guided effort to prevent tick-borne disease by altering the shared environment. *Phil. Trans. R. Soc. B.* 374: 20180105

VTLyme.org. <https://vtlyme.org> 2022

## News from the Zadock Thompson Zoological Collections at UVM

By Sara Helms Cahan, Interim Curator

Greetings from the Zadock Thompson Zoological (ZTZC) collection, home to the largest insect research collection in the state of Vermont. After a number of years of slow progress following the Torrey Hall fire in 2017, the collections have once again become a “hive” of activity. Interns, research students, staff and faculty are coming together to create an active, functional hub for the preservation and study of natural history specimens. We are always looking for community volunteers interested in helping out with museum activities and/or (most importantly!) helping to identify the many many unidentified specimens currently awaiting a pair of expert eyes. If you have an interest in a particular group, please get in touch me, Dr. Sara Cahan ([scahan@uvm.edu](mailto:scahan@uvm.edu)). I bet we have some specimens who could use your identification help, and they may be a hidden gem we did not know we had. As for example, a recent loan, of 270 *Scolytine* bark beetles from Vermont sent to Dr. Marc DiGirolomo, US Forest Service New Hampshire, for identification and georeferencing. That loan resulted in 28 different species, including *eight* new state records for

Vermont. Those records will be included in Dr. DiGirolomo's in-progress checklist of New England bark and ambrosia beetles.

This past fall we instituted a brand-new internship course for UVM undergraduates, designed to get students into the collections and learning about the history, importance, and utility of natural history specimens to scientific research, policy-makers, and the general public. They also learn valuable and transferrable skills, along with a new appreciation of what biodiversity really means. The 26 interns who have participated thus far have begun to tackle an enormous backlog of organizational tasks for the Parsons Insect collection, including inventorying the collection (we now know we have 26,347 Hymenoptera specimens!), organizing the collection phylogenetically and alphabetically, and cataloguing and digitizing specimen records. Current focus is on the Lepidoptera of Vermont in anticipation of a new Vermont Butterfly Atlas effort slated to start sometime in the next year.

Alongside the research collection, interns have put together a diverse and representative insect

## News from the Zadock Thompson Zoological Collections at UVM (continued)

teaching collection, which will be a valuable addition for the many future entomology students we hope will be taking courses in insect identification, taxonomy and ecology in the years to come. You can see the students' presentations of their work on the Zoological collections website:

<https://www.uvm.edu/vtnaturalhistory/current-collections-projects>

This spring, we'll be presenting at the Northeast Natural History Conference being held in Burlington and hosting an Open House for conference visitors. We are also looking forward to hosting the VES annual meeting that weekend at Blundell House, and showcasing the entomological research activities of some of our graduate students in Vermont and beyond. Hope to see you there.



**UVM undergraduate interns Rho Kackley and Brady Miller, showing off a drawer of digitized Coleoptera specimens that they completed this Fall**

Photo: Sara Cahan

## Some Lessons From Insect Collections

By Jeff Freeman

The first lesson is to place a sample of your own voucher specimens from recent collecting into a larger insect collection soon after your research is completed. Mine was decades late. I had never heard much about voucher specimens. By going to the Rutgers University Insect Collection (RUIC), I found specimens that summarized one study near Boonton, New Jersey (Tallamy, 1976) and another at the Great Swamp National Wildlife Refuge (Thompson, 1967). These and my own voucher specimens in the RUIC had made the RUIC a bit more complete.

Going to the RUIC another lesson was to find out there were more NJ Locations represented in the collection at the Academy of Natural Science at Philadelphia-Drexel Univ. (ANSP) than at Rutgers. New Jersey is a small state with 21 counties, 4 of these are very urban. Vermont has 14 counties and still show

a bias for the Chittenden County (UVM) and Rutland County (my own collecting). Both NJ and VT have been thinly collected. I learned that work in an insect collection is slow and one should allow for days.

With a 4-day work week, Tuesday through Friday, later trains to return home on Friday, and special funds to support such a trip, my trip to ANSP was on. At ANSP, I found the collection to be on compactors; where the cases are made compressible so as to eliminate aisle space (Fig. 1).



**Figure 1. ANSP cabinets are compressible to save aisle space**  
© Jeff Freeman.

## Some Lessons From Insect Collections (continued)

Among the genera of Tabanidae is *Goniops* containing just a single species *G. chrysocoma*. *G. chrysocoma* is known for the acute dorsal angle of the compound eye. Found in the Annette F. Braun collection at ANSP was a pinning tray (Fig. 2) with 16 examples of *Goniops chrysocoma*, with the label “Cin. O., 6-25-03” (Cincinnati, Ohio). The lesson here? I now have seen this species for the first time at ANSP as well as checking on further New Jersey collecting locations. This odd tabanid occurs in Vermont as well as reported by (Pratt and Pratt, 1976). The collection manager at the University of Georgia confirmed it is at their collection.



Figure 2. *Goniops chrysocoma* at ANSP © Jeff Freeman.

My own 3-year collecting project at Addison, VT (Freeman, 2017) provided a sample of voucher specimens placed in the Zadock Thompson Collection at UVM. But that was one trap in one place for 3 years. Bartlett (2002) placed canopy traps at 20 locations in Rhode Island. Wright et al. (1986) collected tabanids in Oklahoma at 18 locations emphasizing vegetation zones and in

search of changes in distribution already visible in the University collection. Vermont requires much wider collecting because now there are 2 specimens from Washington Co., one of my own specimens from Camels Hump (3800 ft.) and another from Barre (student at UVM).

The three counties with the most input into the Vermont collection are Rutland, Chittenden, and Addison. Those with the least are Franklin, Grand Isle, Orleans, and Orange. In Vermont more whole-season, one-location studies could help add to the state list. A recent by-hand collection of *T. limbatinevris* by Roy Pilcher at the Buckner Preserve in West Haven is a species new to Vermont and so far *T. calens*, common at Addison, is still not found at Buckner. In Addison Co. Freeman (2017) found 50 species including *T. calens*.

I invested in trips to New Jersey and Pennsylvania to install my voucher specimens into the RUIC and found what lessons might be learned.

### References

- Bartlett, K., S. Alm, R. Lebrun, and H. Ginsburg 2002. The horse and deer flies (Diptera:Tabanidae) of Rhode Island. *Annals of the Entomological Society of America* 95(5): 547-551.
- Freeman, Jeffrey V. 2017. Seasonal abundance of *Tabanus calens* and other Tabanidae (Diptera) near Snake Mountain, Addison County, Vermont. *Northeastern Naturalist* 24(2):137-151.
- Pratt, G. K. and H. D. Pratt 1972. Notes on deer flies and horse flies (Diptera: Tabanidae) from southern Vermont. *Journal of the Mosquito Control Association* 2(3): 365-366.
- Tallamy, D., E. J. Hansens. F. Denno 1976. A comparison of malaise trapping and aerial netting for sampling a horsefly and deerfly community. *Environmental Entomology* 5(4): 788-792.
- Thompson, P.H. 1967. Abundance and seasonal distribution of the Tabanidae (Diptera) of the Great Swamp, New Jersey. *Annals of the Entomological Society of America* 60(6):1255-1260.
- Wright, R. E., R. K. Whittle, and L. L. Pechuman 1986. Range extensions, new state records and annotated checklist of Oklahoma (Diptera). *Journal of the Kansas Entomological Society* 59(2): 235-245.





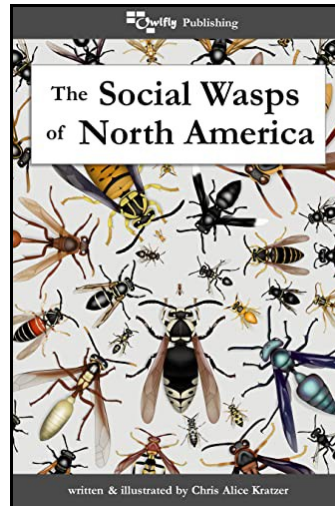
## The Social Wasps of North America

Written and illustrated by Chris Alice Kratzer

Book Review by Laurie DiCesare

This amazing new book, *The Social Wasps of North America*, contains over 900 full-color illustrations and a wealth of information about wasps in general including wasp life cycles; evolution; anatomy; predator-prey and parasitic interactions; and wasp behavior. It also highlights the usefulness of wasps as pollinators, and their beneficial aspects being studied and used in the fields of medicine (some venom proteins destroy cancer cells); forensics (yielding information about a crime scene); and engineering (studying wasp nest structure may help architects improve and strengthen structures.) The 15-page discussion of “Anatomy and Behavior” contains detailed information on the names of wasp body parts, a review of systems and information on nesting, castes (queens, workers and males) and mimicry (“Social wasps always have a “notch” in their eyes in line with their antennae.”)

A discussion of concerns about habitat loss and climate change is coupled with useful information on “How You Can Help.” The book also encourages peaceful interactions with humans including how to avoid stings. There is also information on inquilines (social parasites that use other animal’s nests for their own eggs or young), honeydew ranchers, wasp diseases and parasites. The evolution of narrow-waisted wasps (that cannot pass solid food through the constriction) to stinging insects with a discussion of various venoms is also interesting.



Although common names were used throughout the book, they were not included in the index. Someone searching for the Bald-faced Hornet will have to look under its scientific name (*Dolichovespula maculata*) or look through the hornet section in the Table of Contents (pages 73 to 87). For the Paper, Hilted or Honey wasps, with many more species listed for each genus, the search would be more extensive. The seven-page glossary and 12-page bibliography with books, periodicals and extensive online resources listed by topic (several sections on ecology; anatomy and behavior; interactions with humans, etc.) are very helpful.

The Owlfly website says this resource is “for beginners, experts and everyone in between.” It also notes that *Social Wasps of North America* won a National Indie Excellence Award.

This book was reviewed in depth by the Maine Entomological Society in The Maine Entomologist August 2022 issue. (The Aug. 2022 issue may not yet be archived.) By Googling “Social Wasps of North America” at Amazon.com, you can look through the Kindle version that sells for \$19.99. The soft-cover copy is \$24.99. @2022 Owlfly Publishing, Frenchtown, NJ 08825 [ISBN 978-1-7378927-0-0] 420 pages.

The author may be contacted at [humanbyweight@owlflypublishing.com](mailto:humanbyweight@owlflypublishing.com) on iNaturalist.org.

## Resources/For Extra Reading

### Natural History magazine (Feb. 2023):

The Gardening Bug: ambrosia beetles raising symbiotic fungi, pg. 6; Bees at Play: *Bombus terrestris* rolling balls, pg. 8.; and A Prairie Royal: The Regal butterfly holds onto its tenuous reign in the nation's heartland, pp. 16-23.

**Green Long-jawed Spiders**, The Invertebrate Bestiary by Declan McCabe. *Northern Woodlands* magazine, Winter 2022.

### A Collage of the Brown-fovea Miner (*Andrena rufosignata*), a common spring generalist



Photo: Spencer Hardy, VT Wild Bee Survey Coordinator

**What is It?**  
By Michael Sabourin



Answer: A syrphid fly larva and puparia on *Cannabis*

**Vermont Entomological Society turns 30 this year!**

St. Albans (Vt.) Messenger, Saturday, March 27, 1993

• VERMONT •

**NEW CLUB TAKES WING:** James Halbor, of South Hero, is president of a new society devoted to bugs. Here, he displays 25 types of underwing moths found in Vermont. The Vermont Entomological Society is open to new members, anyone interested may call 372-6917. (Photograph by Jay Talbott)



Vermont Entomological Society  
c/o Debra Kiel  
147 Allen Irish Road  
Underhill, VT 05489



Fragile Forktail (*Ischnura posita*) (!)  
at NatureHaven Pond, Milton, VT  
Photo: Laurie DiCesare