



# VES NEWS

The Newsletter of the Vermont Entomological Society

Number 118  
Spring/Summer 2023



Appalachian salmonfly (*Pteronarcys proteus*)  
Pettigrew Brook, Essex Co., NY  
Photo: Whitney Cranshaw

# 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/Summer: Deadline May 7 – Publication June 1  
Fall/Winter: Deadline September 7 – Publication October 1  
Winter/Spring: Deadline February 7 – Publication March 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



Hello and welcome to another invertebrate field season in VT. This year will be the Vermont Entomological Society's 30th. We held our annual meeting April 23rd at the Zadock Thompson Zoological Collection at UVM. We were graciously hosted by Sara Cohen and a number of her students. Ben Camber gave a presentation on his hymenoptera research. The Northeast Natural History Conference (NENHC) was held in Burlington this year. VES led a field trip as well as having a booth at the conference. The conference was



successful in gaining us some exposure and selling a fair number of books. At the Herrick's Cove Wildlife Festival in Rockingham on May 7<sup>th</sup>, VES led a walk and had a table. I find it amazing as to how much ticks are a topic of conversation and a part of people's every day lives; tick paraphernalia vanishes pretty quickly. I'll be keeping the president's message short as this newsletter has a lot of content, but don't forget to check out our facebook

page:

<https://www.facebook.com/groups/596551887484863>

and to participate in a VES activity. Note the solicitations for stonefly and butterfly records further on in the newsletter.



**Doug and Mary Burnham at NENHC**

Photo: Michael Sabourin



**Firefly larva at NENHC Geprag's Park fieldtrip**

Photo: Michael Sabourin



**VES table at Herrick's Cove Wildlife Festival**

Photo: Michael Sabourin



**Looking for insects at Herrick's Cove Wildlife Festival**

Photo: Michael Sabourin

## Anecdotes on Pine Imperial Moth (*Eacles i. pini*)

By Judy Welna

A pine imperial moth (*Eacles imperialis pini*) visited us once again last summer. It's been seen more commonly around northwestern VT in recent years than in the past. The earliest iNaturalist record (a larva) is from 2011. We saw our first adult moths in 2017.



**Pine Imperial Moth (*Eacles i. pini*) and broom bristles**

Photo: Judy Welna

I still love to see it here. I'm not positive, but I think it has been seen in fewer numbers at our location the last couple of years. We were watching particularly hard for it last summer.

The night the moth appeared, I found it trapped within the bristles of a broom on the deck. The moth was in the process of laying eggs, some of which were falling between the deck floorboards, while others were being taken by some large ants.

I managed to release the moth from the broom, and placed it inside a paper bag.

In the morning, I removed the moth and eggs from the bag and relocated them to nearby white pines. I recovered

some eggs from the broom's surface and the floorboards as well. I set aside 15 eggs, all of which hatched, and photographed them daily



**Pine Imperial Moth eggs and larvae**

Photo: Judy Welna

When the larvae were fully grown, I released them into several backyard white pines, where they fed for several days. I placed them on separate branches, to ensure adequate food supply, and possibly to lessen predation. I marked their locations, which made it easier to find them each day. They ate ravenously, and never wandered very far. Frass on the ground beneath them also made them easy to find. On the day I did not see any of them in the trees, we searched the ground beneath their locations, and found one which had settled well into the grass, and appeared ready to "dig in". We hope they'd all gotten that far and will be looking for adult moths in late June to mid-July of this year.



**Pine Imperial Moth (*Eacles i. pini*) caterpillar in white pine**

Photo: Judy Welna

We did think it interesting that the bristles (a synthetic material) of the broom so closely resembled the white pine needles...just an observation.

## Effectiveness of Simple, Economical Insect Traps for Insect Survey of El Charco del Ingenio, San Miguel de Allende, Guanajuato, Mexico.

By Jim Talbot

El Charco del Ingenio Botanic Garden, El Charco del Ingenio is a 170-acre botanical garden and nature preserve just a few minutes from the historical city of San Miguel de Allende, Mexico. The name comes from a spring-fed pool nestled in an impressive canyon. A great biodiversity of different species of native plants and animals are in the canyon, surrounding wetlands and the dry scrubland. El Charco hosts an extensive botanical collection made up of cacti and other succulent native Mexican plants, many of which are rare, threatened or in danger of extinction.

The botanic garden is located in the central highlands of Mexico at an elevation of approximately 6500 feet above sea level in an ecological zone characterized as high desert scrub dominated by *Opuntia* and other cacti, mesquite and acacia trees, various succulents, and over 500 species of flowering plants and ferns. There is a 7-month dry season, with some insect activity, and a 5-month wet season when the majority of insects are active. Rainfall is approximately 20 inches per year.

In 2004, the preserve was sanctified as a Peace Zone by the Dalai Lama. Here you can enjoy a Conservatory of Mexican Plants, scenic overlooks, historic sites, trails, Interactive Garden for Children, camping, cafeteria, gift shop, as well as different activities like guided tours, sweat-lodge, workshops, concerts, full moon ceremonies and more.

The main objective of this effort was to demonstrate to the botanists at the garden the ability and effectiveness of simple traps to study the insect fauna of terrestrial habitats, including pollinators, predators, herbivores and ground-dwelling insects. Insects in aquatic habitats were not sampled. The author was asked to perform this task as a volunteer at the garden.

All of the work was done during January-March 2023, basically considered the dry season. Despite this factor, numerous insects were active and collected using the traps described herein. Most specimens were preserved in 70% alcohol for further study, while only a few specimens were

identified and dry-mounted due to time limitations.

An effort was made to reduce the potential costs of a long-contemplated, extensive insect survey of the garden's habitats by using local materials to fabricate various types of insect traps. A photo showing the array of traps used (Fig. 1) is shown.



**Fig 1. simple insect traps made from local materials.**

It should be noted that all samples collected in this effort were not analyzed for total number of specimens, nor for species numbers or diversity. That task would be recommended for one of the local collaborating universities.

Malaise Traps (Fig. 2): Recycled water and soda bottles in sizes varying from 20 ounces to 2 liters were used to make these traps. Traps were either hung from vegetation or placed on the ground



**Figure 2. Malaise Trap used to collect pollinators.**

surface in different habitats. Simple insect attractants such as apple cider vinegar, rose water, and simple sugar solution were soaked onto a cotton ball and hung inside the

trap, along with a weak preservative in the bottom of the container, such as polypropylene glycol-water in a 50-50 mix with a few drops of dish detergent to break the surface tension. Traps were

## Effectiveness of Simple, Economical Insect Traps for Insect Survey of El Charco del Ingenio, San Miguel de Allende, Guanajuato, Mexico. (continued)

placed in La Canada (Matorral habitats) (Fig. 3) for two days, then collected to assess effectiveness. All of these traps were effective in one way or another.

Ground malaise traps tended to capture ants, hemipterans, and some flies, while hanging traps captured bees, flies, butterflies, and beetles. Insect



Figure 3. El Charco “matorral” habitat

samples were preserved in 70 percent ethanol for future study.

**Pan Traps :** Small recyclable 6-ounce dessert plates. The paper plates were spray-painted yellow and blue (their existing color was an off-white color) because these three colors are those most likely to attract flying insects. The plates were filled with a 50-50 mixture of polypropylene glycol and a few drops of dish detergent were used as pan traps. When an insect is attracted to a pan they land on the water, but are trapped due to lack of surface tension. The pan traps were placed around a standing pool of water in La Canada below the cortina de la presa near the ruins of El Ingenio (Fig. 4 ). During the rainy season this location would be a flowing stream of water. However, during the dry season standing pools form capturing water and attracting a host of vertebrates and invertebrates. The standing water also is used by aquatic insects and other



Figure 4. Pan traps placed around aquatic habitat.

invertebrates as breeding and living habitat.

The pan traps were left out for only three hours on 8 February 2023 in an effort to test their effectiveness.

Plates were placed in and around the water pool and were filled with the trapping solution. Dishes were left out in the open from 1100 to 1400 hours. During this time and due to the existing ambient temperature (25 degrees Celsius) much of the liquid had evaporated, but not after insects had landed and were trapped. If the dishes were to be placed out again, more dishes with a full 6 ounces of liquid should be used to reduce evaporation; and, they should be placed out from dawn to dusk, or at least one hour prior to sunset. This sampling effort was repeated over a 4-day period from February 28-March 4, 2023 using 6 ounces of 50-50 propylene glycol-water, with a drop of dish detergent. More specimens were collected this time than the previous effort.

**Light Traps (Fig. 5) :** Simple light traps were also tested using battery-operated LED lights stuck inside recycled soda and water bottles. Two types of traps were tested with varying degrees of success. These lights were: UMECORE brand push Lights, Under Cabinet Lights



Figure 5. Simple hanging LED light trap.

Tap Push Button Light Battery Operated Puck shaped; Lights Stick On after removal of paper backing; 60-lumen LED Night Light for Closet Counter Kitchen Cabinet RV Indoor Outdoor. Lights were attached either to the inside wall of a plastic milk carton hung from a tree branch, or in the bottom of a 2 L plastic soda bottle left on the ground. These lights were placed in the same general locations as the other traps. Their effectiveness varied with the type of traps used, with the hanging light traps capturing more insects than the one placed on the ground.

Larger, home-constructed light traps are possible to build for less than \$50 USD with locally available or online-purchased materials.

## Effectiveness of Simple, Economical Insect Traps for Insect Survey of El Charco del Ingenio, San Miguel de Allende, Guanajuato, Mexico. (continued)

Pitfall Traps (Fig. 6): Ground-dwelling insects are difficult to collect, and many are nocturnal requiring setting traps overnight. The pitfall traps were a simplified version of the traps shown in the above photo using soda cups; wine corks attached to a square of thick fiberboard to act as a debris block for dirt and leaves falling in to the trap; an attractant/scent (vinegar, rose water, sugar water, banana juice) soaked into a cotton ball, which was them hung over the trap cup. In this manner, insects attracted to the scent would fall into the trap.



Figure 6. Simple pitfall traps.

Two cups were used in this device, one being the base cup which is always left in the ground, and a second cup used as the recipient for preservatives and falling insects. This second cup is removed to collect the sample. Each cup was filled with a 50-50 mixture of polypropylene glycol-water, and a few drops of dish detergent to break the surface tension so that insects would not escape.

Three traps were placed in the following locations: Conservatorio along the lower wall; along the shoreline of the reservoir; and off a trail near the Bóveda under a desert olive tree where there was an abundance of leaf litter. Samples were placed on one day and retrieved the following day, resulting in a 24-hour sampling period. A rock was placed on the debris cover to hold it in place should there be strong winds. Once the sample was collected, contents were strained of solution and placed into 70 percent alcohol specimen jars, and labeled appropriately.

The pitfall traps were extremely effective. The trap placed at the Conservatorio had more ants than any other species, while the other two traps collected a more diverse number of species, probably because they were located well within the matorral habitat.

Butterfly Live Trap : Local schoolchildren visit the botanic gardens weekly and live traps provide an opportunity to observe a colorful subset of the pollinator community so abundant there. Using tulle (a type of mosquito net), rope and wire it is possible to build a simple trap and bait it with a rotten banana, which attracts a host of active insects. The plate at the bottom is baited and a space is left between the plate and the cloth so that insects alight on the banana, feed, then fly upward where they are trapped. The children remove butterflies, take photos, and release them after identification and discussion with their teacher. The Charco website has a wonderful photo gallery of butterflies, which are the only insect group studied extensively in this region.

**Summary:** Most of these simple traps were effective at capturing a large number of specimens, and representative species. Most of the hanging traps, placed below flowering plants such as *garambullo* and *huisache* (*Acacia* sp.), attracted and captured the insects that flew inside. Sampling locations should be marked with fluorescent orange to improve relocation because when a large number of traps are placed in a habitat, it may be difficult to find them again after one to several days left in the sampling area. Samples were not analyzed for numbers and diversity, as it is recommended this task be done by a local collaborating university. It is also recommended that the Charco staff consider using traps of a similar nature to reduce sampling costs and improve capture effectiveness.

**Note:** Jim Talbot is Adjunct Curator of Insects at UVM's Zadock Thompson Natural History Museum in Burlington. While he was on vacation in Mexico he volunteered 1-2 days a week at the botanic garden in San Miguel. This work is a summary he prepared for the technical staff of the garden with the purpose of demonstrating the use of simple, effective methods for collecting insects at the garden, where little is known of the insect fauna.

## The Butterfly Live Trap

by: Michael Sabourin

A butterfly live/bait trap as referenced in the previous article, is a unique way of looking for and collecting insects. They are a live trap that does not require a battery and can be placed in a variety of habitats and heights; such as a tree canopy. These traps take advantage of an insect's natural tendency to fly upward after feeding or when startled. Bait is placed in a pan at the bottom of a mesh container leaving enough room for insects to fly in. A colleague, Don Tangren, visited me this spring with the hopes of collecting winter noctuid moths in bait traps. Winter moths are known to come to bait. A bait trap gives



Don Tangren preparing bait

you the advantage of leaving bait out for days without having to check it that night. When Don checked his bait traps three days later, he was successful in getting a few moths, lots of flies, and no bears. Don's bait recipe is chopped fruit (especially something local), brown sugar (a lot), crushed bananas and a small amount of beer. Put contents in baggie till it balloons up and it is ready. You can put it in a gallon jar and just add to it from time to time.



Don Tangren preparing a Leroy C. Koehn bait trap

## VES Calendar



**June 3, 2023 (11:00 a.m.)** Adamant : Blackfly festival. Join us and a display table at an annual free, family-friendly, bug-centric celebration; contact Michael Sabourin (802) 522-7992

**June 11, 2023 (11:00 a.m.)** Springfield: A day of aquatic invertebrate ventures. Meet at Park & Ride at Exit 7 off I-91 (intersection of VT 11 and US 5), byo lunch, and pack rain gear, a towel, and a change of clothing; contact Michael Sabourin (802) 522-7992

P.S. For those who wish to arrive a bit early for the Springfield trip and explore other local wetlands at a slow pace, mostly in search of dragonflies but including all flora and fauna, VES member Laurie DiCesare will be arriving early afternoon Friday (June 9). She will be staying at the Best Western at Exit 7 and might be interested in sharing a room with someone. For more information, please contact Laurie: [NatureHaven@MyFairPoint.net](mailto:NatureHaven@MyFairPoint.net) or (802) 893-1845.

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

**July 8, 2023 (10 a.m.)** Huntington : Birds of Vermont Museum (BOV) Annual butterfly and bug walk, 900 Sherman Hollow Rd; rain date July 9; contact: BOV, (802) 434-2167

**August 11, 2023 (7 p. m.)** Shrewsbury Meeting House. Potluck, moth presentation and lighting at dark; rain date Aug. 12; contact: JoAnne Russo (802) 289-2476

**August 26, 2023 (10 a.m.)** Dummerston, Black Mountain NA field trip, meet at Rice Farm Rd parking lot, contact JoAnne (802) 289-2476





Sam Cranston recently accepted a position as a research associate at the Center for Regenerative Medicine (CRoM) of Boston University and Boston Medical Center. He will be working in the Murphy Lab studying hematopoietic stem cell biology and blood disorders

At the NENHC conference, Lauren Berkley was a NENHC recipient for Graduate Student Poster Award for her poster on Emerging Vector-borne Pathogens in Northeastern US Cervids. Award winners receive a stipend from \$100- \$300.

Samuel Cranston and Ben Camber also had posters at the conference. Laura Hatmaker was a NENHC Poster Judge. Laura, Lindsey Pett, Art Gilman, Spencer Hardy, and Chris Runcie presented at the conference. Scott Smyers was the moderator for a session on “*The value of professional organizations for wetland scientists.*” In addition to the field trip at led at Geprags Park in Hinesburg, Declan McCabe led a trip to Saint Michael's College Natural Area, and Sean Beckett conducted a Lake Champlain Waterfowl Watch.

## Field Notes



### **A Preliminary List of Vermont Stoneflies (Plecoptera) and a call for Volunteers to Collect Specimens in Vermont and other Northeastern States**

**by: L. W. Myers, R. E. DeWalt, S. A. Grubbs, and M. Graziosi**

The stonefly fauna of Vermont has been poorly documented and studied by stonefly researchers. No significant or notable efforts to inventory and assess the complete diversity of this group in the state have been undertaken. Most reports originate from material examined in species descriptions, generic treatments, and revisions. To date, 43 species have been reported from Vermont in the scientific literature (Table 1).

We report a preliminary list of 79 species including 36 species recorded from Vermont for the first time (Table 1). This number is based on a relatively small number of collections in the 2022 field season by Luke Myers and Boris Kondratieff (deceased), specimens obtained from volunteer collections from 2014-2016, and specimen data obtained from Vermont Agriculture and Environmental Laboratory (VTDEC). Specimens examined for this list are currently housed at (VTDEC), Lake Champlain Research Institute Collection (LCRI), Illinois Natural History Survey Collection (INHS), Brigham Young University (BYUC), and Western Kentucky University (WKUC). We currently have collections from all 14

Vermont counties; however, further effort is needed to fully document the fauna. A survey of the Adirondack Park in New York (Myers et al., 2011) documented 100 species of stoneflies in the park. We expect to find an equal or possibly greater number of species present in Vermont given the diverse array of freshwater habitats in the state. These efforts will further our understanding of the distribution, diversity, habitat and threats to these understudied species in the state of Vermont and the northeastern US.

The authors are funded by a consortium of Northeast states (VA, WV, MD, PA, RI, DE, NJ, NY, MA, CT, VT, NH, ME) to study 33 Regional Species of Greatest Conservation Need (RSGCN) of stoneflies. The study runs summer 2023 to early 2027. We are seeking volunteers to help collect stonefly adults and mature nymphs from springs, small streams, large rivers, and high elevation lakes in the northeastern US. Contact us if you know of unique habitats or high quality streams, or can suggest organizations who might provide access or housing for our team.

## A Preliminary List of Vermont Stoneflies (Plecoptera) and a call for Volunteers to Collect Specimens in Vermont and other Northeastern States (continued)

Contact Luke Myers ([myerslw@plattsburgh.edu](mailto:myerslw@plattsburgh.edu)) if you're interested in collecting for us. We can provide details on how to collect and safely ship stoneflies. In some cases we can arrange a pickup at particular locations that correspond to our collecting efforts in the NE region..

Please mail specimens to:  
 Luke Myers  
 Lake Champlain Research Institute  
 SUNY Plattsburgh  
 101 Broad Street  
 Plattsburgh NY 12901

Table 1. Preliminary list of Vermont stoneflies (Plecoptera). New state records indicated by an asterisk “\*”, records from recent collections are indicated with a “C” in the Source column, species reported in the scientific literature are reported with a “L”.

	Source	Literature Source/Collection Source
<b>Family: Capniidae</b>		
* <i>Allocapnia granulata</i> (Claassen, 1924)	C	LCRI
<i>Allocapnia maria</i> Hanson, 1942	L, C	Ross & Ricker, 1971; LCRI
<i>Allocapnia minima</i> (Barnston, 1848)	L, C	Ross & Ricker, 1971; LCRI
<i>Allocapnia nivicola</i> (Fitch, 1847)	L, C	Ross & Ricker, 1971; LCRI
* <i>Allocapnia pechumani</i> Ross & Ricker, 1964	C	LCRI
<i>Allocapnia pygmaea</i> (Burmeister, 1839)	L, C	Ross & Ricker, 1971; LCRI
<i>Allocapnia recta</i> (Claassen, 1924)	L, C	Ross & Ricker, 1971; LCRI
<i>Capnura manitoba</i> (Claassen, 1924)	L, C	Nelson & Baumann, 1987; LCRI
* <i>Paracapnia angulata</i> Hanson, 1961	C	LCRI
* <i>Paracapnia opis</i> (Newman, 1839)	C	LCRI
<b>Family: Chloroperlidae</b>		
<i>Alloperla atlantica</i> Baumann, 1974	L, C	Hitchcock 1968 as <i>A. imbecilla</i> ; Baumann, 1974; LCRI
* <i>Alloperla chloris</i> Frison, 1934	C	LCRI; WKUC
<i>Alloperla concolor</i> Ricker, 1936	L, C	Hitchcock, 1968; Surdick, 1985; LCRI; WKUC
* <i>Alloperla ideii</i> (Ricker, 1935)	C	LCRI
* <i>Alloperla leonarda</i> Ricker, 1952	C	LCRI
<i>Alloperla petasata</i> Surdick, 2004	L, C	Hitchcock, 1968; Surdick, 1985; LCRI
<i>Alloperla voinae</i> Ricker, 1947	L, C	Hitchcock, 1968; LCRI

## A Preliminary List of Vermont Stoneflies (Plecoptera) and a call for Volunteers to Collect Specimens in Vermont and other Northeastern States (continued)

<i>Haploperla brevis</i> (Banks, 1895)	L, C	Surdick, 1985; WKUC
<i>Rasvena terna</i> (Frison, 1942)	L	Frison, 1942; Surdick, 1985; Bilger, 1986; Grubbs & Singai, 2018; INHS
<i>Suwallia marginata</i> (Banks, 1897)	L, C	Hitchcock, 1968; Surdick, 1985; LCRI
<i>Sweltsa lateralis</i> (Banks, 1911)	L, C	Needham & Claassen, 1925; Hitchcock, 1968; Surdick, 1985; LCRI; WKUC
<i>Sweltsa naica</i> (Provancher, 1876)	L, C	Surdick, 1985; LCRI; WKUC
<i>Sweltsa onkos</i> (Ricker, 1936)	L, C	Hitchcock, 1968; Surdick, 1985; Kondratieff & Kirchner, 2009; LCRI; WKUC
<b>Family: Leuctridae</b>		
* <i>Leuctra duplicata</i> Claassen, 1923	C	Grubbs & Wei 2017; LCRI; WKUC
* <i>Leuctra ferruginea</i> (Walker, 1852)	C	LCRI; WKUC
* <i>Leuctra grandis</i> Banks, 1906	C	WKUC
<i>Leuctra maria</i> Hanson, 1941	L	Grubbs & Wei 2017; Hitchcock, 1974
* <i>Leuctra sibleyi</i> Claassen, 1923	C	WKUC
* <i>Leuctra tenella</i> Provancher, 1878	C	Grubbs 2015; BYUC; LCRI; WKUC
<i>Leuctra variabilis</i> Hanson, 1941	L	Hanson, 1941
* <i>Paraleuctra sara</i> (Claassen, 1937)	C	LCRI
<b>Family: Nemouridae</b>		
* <i>Amphinemura wui</i> (Claassen, 1936)	C	LCRI
* <i>Amphinemura nigrutta</i> (Provancher, 1876)	C	WKUC
* <i>Nemoura arctica</i> Claassen, 1923	C	LCRI
* <i>Ostrocerca albidipennis</i> (Walker, 1852)	L	Young et al., 1989
* <i>Ostrocerca complexa</i> (Claassen, 1937)	L, C	Young et al., 1989; WKUC
<i>Paranemoura perfecta</i> (Walker, 1852)	L	Baumann, 1996
* <i>Prostoia completa</i> (Walker, 1852)	C	LCRI
* <i>Prostoia similis</i> Hagen, 1861	C	LCRI
<i>Shipsa rotunda</i> (Claassen, 1923)	L	Grubbs & Baumann, 2021
* <i>Soyedina vallicularia</i> (Wu, 1923)	C	LCRI
<i>Soyedina washingtoni</i> (Claassen, 1923)	L	Grubbs & Baumann, 2019

## A Preliminary List of Vermont Stoneflies (Plecoptera) and a call for Volunteers to Collect Specimens in Vermont and other Northeastern States (continued)

<b>Family: Peltoperlidae</b>		
* <i>Tallaperla maria</i> (Needham & Smith, 1916)	C	LCRI
<b>Family: Perlidae</b>		
<i>Acroneuria abnormis</i> (Newman, 1839)	C	Bilger, 1986; VTDEC
<i>Acroneuria carolinensis</i> (Banks, 1905)	C	Bilger, 1986; VTDEC
<i>Acroneuria lycorias</i> (Newman, 1839)	C	Bilger, 1986; VTDEC
<i>Agneta capitata</i> (Pictet, 1841)	L, C	Bilger, 1986; Stark, 1986; LCRI
* <i>Hansonoperla appalachia</i> Hanson, 1979	C	VTDEC
<i>Paragnetina media</i> (Walker, 1852)	C	Bilger, 1986; VTDEC
<i>Paragnetina immarginata</i> (Say, 1823)	C	Bilger, 1986; LCRI
* <i>Perlesta nelsoni</i> Stark, 1989	C	LCRI
<i>Perlinella drymo</i> (Newman 1839)	L, C	Bilger, 1986; LCRI
<b>Family: Perlodidae</b>		
<i>Cultus decisus decisus</i> (Walker, 1852)	L, C	Bilger, 1986; LCRI
<i>Cultus verticalis</i> (Banks, 1920)	L, C	Stark et al., 1988; LCRI
<i>Helopicus subvarians</i> (Banks, 1920)	L	Bilger, 1986
* <i>Isogenoides doratus</i> (Frison, 1942)	C	LCRI
* <i>Isogenoides frontalis</i> (Newman, 1838)	C	LCRI
<i>Isogenoides hansonii</i> (Ricker, 1952)	L, C	Bilger, 1986; LCRI
* <i>Isoperla holochlora</i> Klapalek, 1923	C	WKUC
* <i>Isoperla kirchneri</i> Szczytko & Kondratieff, 2015	C	LCRI
* <i>Isoperla montana</i> (Banks, 1898)	C	LCRI
<i>Isoperla orata</i> Frison, 1942	L	Frison, 1942
<i>Isoperla pseudosimilis</i> Szczytko and Kondratieff, 2015	L, C	Szczytko & Kondratieff, 2015, LCRI
* <i>Isoperla signata</i> (Banks, 1902)	C	INHS
* <i>Isoperla slossonae</i> (Banks, 1911)	C	LCRI
* <i>Isoperla transmarina</i> (Newman, 1838)	C	LCRI
<i>Malirekus iroquois</i> Stark and Szczytko, 1988	L, C	Stark & Szczytko, 1988; LCRI

## A Preliminary List of Vermont Stoneflies (Plecoptera) and a call for Volunteers to Collect Specimens in Vermont and other Northeastern States (continued)

<b>Family: Pteronarcyidae</b>		
<i>Pteronarcys comstocki</i> Smith, 1917	L, C	Myers & Kondratieff, 2017; LCRI
<i>Pteronarcys dorsata</i> (Say, 1823)	L, C	Bilger, 1986; LCRI
<i>Pteronarcys proteus</i> Newman, 1838	L, C	Nelson & Hanson, 1971; Bilger, 1986; Myers & Kondratieff, 2017; INHS
<i>Pteronarcys biloba</i> Newman, 1838	L, C	Bilger, 1986; Myers & Kondratieff, 2017; INHS
<b>Family: Taeniopterygidae</b>		
* <i>Bolotoperla rossi</i> (Frison, 1942)	C	LCRI
<i>Oemopteryx glacialis</i> (Barnston, 1848)	L, C	Bilger, 1986; LCRI
* <i>Strophopteryx fasciata</i> (Burmeister, 1839)	C	LCRI
<i>Taenionema atlanticum</i> Ricker and Ross, 1975	L, C	Bilger, 1986; Stanger and Baumann, 1993; LCRI
<i>Taeniopteryx burksi</i> Ricker and Ross, 1968	L, C	Bilger, 1986; LCRI
<i>Taeniopteryx maura</i> (Pictet, 1841)	L, C	Bilger, 1986; LCRI
<i>Taeniopteryx nivalis</i> (Fitch, 1847)	L, C	Ricker & Ross, 1968; Bilger, 1986; LCRI
* <i>Taeniopteryx parvula</i> Banks, 1918	C	LCRI

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- Special thanks to M. Sabourin, T. Hanson, D. Burnham, M. Blust, and K. Chang for volunteering to collect adult specimens from 2014-2016 and for contributing many specimens for inclusion in this list. Additional thanks to S. Fiske VT DEC for providing records and specimens for examination.

**Ontario Stripetail (*Isoperia cotta*), male and female, Ulster Co., NY**  
Photo : Whitney Cranshaw





**Communities need to plan for Emerald Ash Borer (EAB).** EAB was first detected in Vermont in 2018. We have learned from municipalities in the American Midwest that the more time a town or city has to plan for the removal or treatment of ash trees on municipally managed lands, the better they are able to manage the financial costs and impact of the beetle. Towns may choose to treat some public ash trees with pesticides, which is costly, but may be the only viable option to save a tree. However, this must be done before the beetle is well-established in the tree. If not treated, ash trees will die and potentially create a hazard along roads and other public areas. It can take up to 10 years from when EAB first arrives in an area before ash trees begin dying off at a large or landscape scale. That is why communities throughout Vermont should start planning now for how they will deal with ash trees on municipal lands. The first step for any municipality to establish an ash management strategy is to inventory the ash trees on municipal lands. This includes shade trees on streets, parking lots and green spaces, town forests and municipal rights-of-way. Inventories can range from simple paper-based tally sheets to using GIS software to create digitized maps. These are excerpts from an article by Ginger Nickerson, UVM Forest Pest

Education Co-ordinator. For full article see :

<https://www.uvm.edu/news/extension/communities-need-plan-emerald-ash-borer-now>

**Scientists Seek Solutions to the Ever-Growing Problem of Ticks - and the Diseases They Carry :**

<https://www.sevendaysvt.com/vermont/scientists-seek-solutions-to-the-ever-growing-problem-of-ticks-and-the-diseases-they-carry/Content?oid=38244908>

**Why Are Insects Drawn to Light? A Perennial Question Gets a New Answer**

[https://www.nytimes.com/2023/04/27/science/moths-to-a-flame-insects-light.html?unlocked\\_article\\_code=elluSNpGT0n2NS60tuVs7-8tGzcmr84qHu78P0XrbIe1Cur7\\_B5qzUCxyp116zmkjTUE8tGCp-2GiU61M0S8BIkiXWZyUIucjbUnNnr9WXGHZizQkccPyeTg3IFTPdxGyGcXjYbRpmsbtGzRuc9M1znmmtYAOY-xVOg0oKkYimhdqFipo4vsAwWRNmFFVr\\_eFicpUd44r86AjV0zgaRQe4rSIuF5ZgXUy-\\_JGq6I9vPbtMWOdy8xtcg4KGkw\\_VT4iuRokeGyQSUBoQeRIgUVOIUd4xAZhfUfvs6HJxrFAPZL7ZPUSAW6\\_i3lBMWkuIAyQaU9sL\\_qDIMPk803UfDZE0C\\_BeCYUqX&smid=url-share](https://www.nytimes.com/2023/04/27/science/moths-to-a-flame-insects-light.html?unlocked_article_code=elluSNpGT0n2NS60tuVs7-8tGzcmr84qHu78P0XrbIe1Cur7_B5qzUCxyp116zmkjTUE8tGCp-2GiU61M0S8BIkiXWZyUIucjbUnNnr9WXGHZizQkccPyeTg3IFTPdxGyGcXjYbRpmsbtGzRuc9M1znmmtYAOY-xVOg0oKkYimhdqFipo4vsAwWRNmFFVr_eFicpUd44r86AjV0zgaRQe4rSIuF5ZgXUy-_JGq6I9vPbtMWOdy8xtcg4KGkw_VT4iuRokeGyQSUBoQeRIgUVOIUd4xAZhfUfvs6HJxrFAPZL7ZPUSAW6_i3lBMWkuIAyQaU9sL_qDIMPk803UfDZE0C_BeCYUqX&smid=url-share)

## Resources/For Extra Reading



A Field Guide to the Dragonflies and Damselflies of Massachusetts: A Guide to the species of eastern Canada and the northeastern U.S. by Blair Nikula et. al. Natural Heritage and Endangered Species Program, Mass. Div. of Fisheries and Wildlife, 1 Rabbit Hill Road, Westborough, MA 01581. See [www.Masswildlife.org](http://www.Masswildlife.org). @2003. This 6x8", spiral bound, 198-page field guide has photos of 166 species of odonates on water-repellent pages. Includes insect size lines and enlarged thoracic markings.

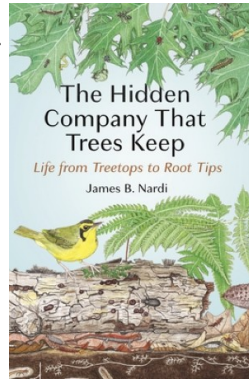
Field Guide to the Dragonflies and Damselflies of Algonquin Provincial Park and Surrounding Area by Colin Jones et. al. 14x21cm softcover, 263 pages with 135 species with key field marks. \$28.95 (~\$14 S/H.) This book covers most of the odonate species we encounter in the Northeast. Detailed descriptions; illustrations of male / female, color variations, dorsal and side views; identifying characteristics. Includes habitat, flight period. Algonquin Provincial Park Bookstore; type "Dragonflies" in search box. Highly recommended.



## The Hidden Company That Trees Keep: Life from Treetops to Root Tips

Written by James B. Nardi  
Book Review by Laurie DiCesare

The Hidden Company That Trees Keep, “written by one of the world’s leading naturalists” (quoted from the book cover), is an ecological gem. The full-color, frame-worthy artwork on the cover, full of many identifiable arthropods, ferns and fungi, draws the reader into a world of tree-associated wild life. Almost every page has at least one detailed illustration; some have two or three. Many include enlargements, microscopic views and illustrations of parts of a tree that are usually inaccessible to the casual viewer, like tree-tops, under-bark, heartwood and root tips.



Each of the seven chapters describes a different aspect of the tree’s life and its physical and chemical interactions. Most associates are described by family name with helpful derivations of the genus names. For example, the Ichneumon Wasp (Family Ichneumonidae) description includes “*ichneumon* = tracker” and breaks down the meaning of a large, parasitic wasp name “*Megarhyssa* (*mega* = great, *rhys* = wrinkled)”. Many descriptions include several paragraphs of information like fascinating interactions with predators, chemical defenses (from the tree and its associates) and favorite habitat choices of the visitors.

With its user-friendly style and stories about often hidden or overlooked insects and microbes, this book would make a wonderful gift for a person who is generally interested in the natural sciences. It also provides an in-depth review of arthropod family members and can be used as an

armchair field guide for identifying many insects by family. For those who are into hi-lighting for future reference, the durable, acid-free paper stands up well to their use.

The back of the book also makes for interesting reading. The references for every chapter provide a cornucopia of both classic and modern books and scientific papers including J. H. Fabre’s *The Life of the Caterpillar*, Charley Eiseman’s *Leafminers of North America*, Berndt Heinrich’s *Maple Sugaring by Red Squirrels*, and J. Lowenfels’ *Teaming with Fungi: The Organic Gardener’s Guide to Mycorrhizae*. The nine-page index of common names makes it easy to look up burying beetles, tree frogs, fungivores, insect mimics or tree hormones like salicylic acid (which leads to an illustration showing how the aspirin-like acid converts to volatile methyl salicylate to warn neighboring trees about a sap-sucking insect invasion.)

From the back jacket: “James B. Nardi is a research scientist in the school of Integrative Biology at the University of Illinois, Urbana-Champaign. His books include *Life in the Soil: A Guide for Naturalists and Gardeners*, *Discoveries in the Garden*, and *Close Encounters with Insects and Spiders*.”

Princeton University Press, Princeton, NJ 08540, ISBN 9780691237978 (Hardback); 299 pages.  
<https://press.princeton.edu/books/hardcover/9780691237978/the-hidden-company-that-trees-keep>

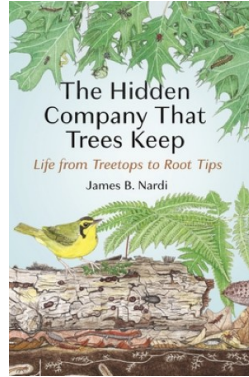


## The Hidden Company That Trees Keep: Life from Treetops to Root Tips

Written by Jame B. Nardi

Book Review by Rosanna Giordano

Of late, perhaps urged by the increasingly erratic weather patterns throughout the world, there has been an increased interest towards gaining a deeper appreciation of the interconnection of living organisms on our blue planet. We can thank James Lovelock and Lynn Margulis for bringing this global view to our attention, namely that living organisms and the physical earth, are intertwined and change each other.



Results from the studies of the systems that help make our existence on Earth possible, many of which are failing due to our societal excesses, lead us to conclude that organisms are part of multidimensional matrices that are themselves interconnected.

There are a myriad example of such networks with some notable ones being coral reefs and their inhabitants and grass beds and dugongs. The recent book by James B. Nardi, “*The Hidden Company that Trees Keep: Life from Treetop to Root Tips*” published this year by Princeton University Press, takes the reader on a journey into the intricate interrelational world that gravitates around trees. It is rare for a book to be scientifically accurate, have a ready absorbable narrative for expert and novice alike, and be beautifully illustrated at the same time, and by the scientist author no less.

Dr. Nardi is a self-taught artist who began his artistic pursuits illustrating his first book in 1988, “*Close Encounters with Insects and Spiders*” and went on to write and illustrate five subsequent books. “*The Hidden Company that Trees Keep*” is his seventh. In addition, he has also illustrated three other books authored by Gilbert Waldbauer.

His drawings of insects are exquisitely detailed and scientifically accurate and come to life on the page even as black and white pencil drawings.

They capture the eagerness of the yellow billed cuckoo on page 59 upon contemplating its tent caterpillar dinner, the tree frog waiting patiently on a leaf on page 52 or the delighted expression of the racoon on page 221 upon locating some mouthwatering persimmons.

As humans our perception of the environment is restricted by the limits of our senses and knowledge. This book expands our awareness by providing a roadmap to a tree’s view of the world in marvelous detail.

We learn that as trees extend themselves into their surrounding environment via roots, branches and leaves, they encounter a physical environment in the form of minerals, soil, rocks, rain and wind as well as a myriad of organisms from the micro to macro that can span the spectrum from beneficial to destructive. If we possessed finer senses, as we approached a tree, we would be aware of a cacophony of communications, from sugar and protein molecules moving between and in cells to volatile compounds emanated by the tree and its denizens.

If we labeled carbon atoms in the soil surrounding a tree with a fluorescent marker, with time, we would see the tree and all other organisms associated with it aglow! Including humans, if we fed on the trees fruit. The *lingua franca* used by the tree and its associates is chemical energy. In its circuitous path it moves from the bottom decomposers in the soil to the leaves of the tree, and from the tree leaves back to the soil. Nothing is wasted. No mountains of garbage here! Nor substances like plastic that take decades to breakdown. The efficiency with which a tree and its denizens use energy would make an industrialist “green” with envy.

Dr. Nardi explores different regions of the tree and shares with us stories of who lives there and how they interact from the outer perimeter of twigs, leaves, and buds, to flowers and fruits and roots, as well as the circulatory system that moves water and nutrients.

## The Hidden Company That Trees Keep: Life from Treetops to Root Tips (continued)

There is no shortage of organisms with unique forms and habits among the tree's associates. Meet the bag worm who has forgone the bother of using its energy to fully pupate, transform into an adult, and form wings and antennae. Instead, she saves here energy to produce eggs. She retains an immature form and segregates herself in to a home festooned with plant material, to better hide herself, and when sexually mature let her availability and presence known to males via a chemical signal.

Or the insect who is sure to win any fashion show contest, the lace bug, illustrated on page 136. Small as they may be at 2-8mm, they pack a punch with the intricate pattern of their wings. But they have also evolved another trick. Unlike most insects who utilize sap, a low nutrient food source, lace bugs also have the capacity to feed on leaf cells providing a complementary and higher nutritional food source that likely explains why these insects are not associated with obligate nutritional symbionts commonly found associated with insect that exploit sap as a food source such as aphids.

The book holds many stories of unusual organisms, how they evolved and how they secure nutrients that allows them to thrive. The

book also provides information on the tools that the reader can use to investigate the realm of the tree first hand. How to collect and set up plant material such as galls and leaves to watch the development and emergence and closely observe the denizens of trees.

Dr. Nardi has had a highly productive career. He has authored sixty-nine peer-reviewed publications that have explored the morphology and microbiota of insect's guts, the working of the insect immune system, olfactory receptors as well as insect development. Throughout his career he has communicated the wonders and intricacies of science to the public via his books as well as short courses and various outreach programs.

*"The Hidden Company that Trees Keep"* draws from the wealth of knowledge, experience, and passion that Dr. Nardi has for our imperiled natural world. It is an invitation to us all to appreciate the many small organisms with whom we share this world so that we may gain an appreciation and knowledge of the intrinsic value and beauty of our interconnected and interdependent world.

## Remembrances



Boris Kondratieff, referenced in the Myers et al stonefly article, passed away last August at the age of 68. He was best known as an internationally recognized expert in the systematics of several groups of aquatic insects. His obituary can be viewed at :<https://www.dignitymemorial.com/obituaries/ft-collins-co/boris-kondratieff-10890375>

## Programs of Interest



**June 10, 2023 (9 a.m.):** North Branch Nature Center Biodiversity Jamboree, keynote by Doug Tallamy; more info:

<https://northbranchnaturecenter.org/event/biodiversity-jamboree/>

**June 17, 2023 (10:00 a.m.) :** Carver, MA, Myles Standish SF. Aaron McKee will lead a spider-hunting field trip for New England Entomological Society (NEES), a \$5 fee for non NEES members, register at : <https://forms.gle/z1SpiH9z1F5RunmA7>

**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 : <https://www.eaglehill.us/>

For additional information on Eagle Hill field courses see:

<https://www.eaglehill.us/programs/sems-weeklong/calendar-weeklong.shtml>

**July 6, 2023 (11 a.m.) :** West Rupert : Bumble Bee Workshop: Identification, Capture, Handling. Join VCE Conservation Biologist Jason Hill for an introduction to bumble bees followed by an optional visit to Slate Town Brewing Company; free, register at :

<https://www.eventbrite.com/e/bumble-bee-workshop-identification-capture-handling-tickets-629223302837>

**Vermont Butterfly Atlas, Part II** has begun :

<https://val.vtecostudies.org/projects/vermont-butterfly-atlas/>

## VES Odds and Ends



Blacklegged (deer) ticks (*Ixodes scapularis*) have been reported across the state. Ticks are commonly found in wooded and grassy habitats, however, they can also be prevalent in urban areas. This tick is responsible for transmitting disease such as Lyme disease, babesiosis and anaplasmosis. For more information about ticks in Vermont, including preventative measures, check out the VT Department of Health <https://www.healthvermont.gov/disease-control/tickborne-diseases> and the VT Agency of Agriculture, Food & Markets websites <https://agriculture.vermont.gov/public-health-agricultural-resource-management-division/plant-health-and-pest-management/ticks>. (excerpted from Vermont Forest Health Insect and Disease Observations - April 2023)

VT Center for Ecostudies (VCE) will be conducting a few new projects involving pollinators and songbirds in yards and gardens across Vermont, New Hampshire, and beyond. One of our their projects will evaluate plant-insect interactions in different managed green spaces like residential yards, community gardens, and nature trails.; for more info see:

[https://docs.google.com/forms/d/e/1FAIpQLScCQvKwL44z1BnVBpZbWrmTZ7CnNDxPyfzR\\_s\\_CdjkjDuD1aw/viewform](https://docs.google.com/forms/d/e/1FAIpQLScCQvKwL44z1BnVBpZbWrmTZ7CnNDxPyfzR_s_CdjkjDuD1aw/viewform)

Zadock Thompson Zoological Collections (ZTZC) held an open house for NENHC and hosted the VES annual meeting. The collection has become a beehive of activity and they are entertaining visitors as well as welcoming community volunteers and researchers. A current focus is on butterflies and getting their data into the Vermont Butterfly Atlas. To see a students' presentations of their current work at ZTZC see: <https://www.uvm.edu/vtnaturalhistory/current-collections-projects> To visit ZTZC contact: Dr. Sara Cahan, [scahan@uvm.edu](mailto:scahan@uvm.edu)



Dr. Sarah Cahan visiting with VES members

Photo: Michael Sabourin.



Ben Camber's presentation

Photo: Michael Sabourin



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



**Silvery Blue (*Glaucopsyche lygdamus*) East Rd, Milton, VT**  
Photo: Laurie DiCesare