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The Entomological Society of Manitoba

Newsletter

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ABOUT THE ESM NEWSLETTER

The Entomological Society of Manitoba Newsletter is a forum whereby information can be disseminated to Society members. As such, all members are encouraged to contribute often. The Newsletter is interested in opinions, short articles, news of research projects, meeting announcements, workshops, courses and other events, requests for materials or information, news of personnel or visiting scientists, literature reviews or announcements and anything that may be of interest to ESM members.

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Editors' Comments

Welcome back from the field season! This summer/fall issue of the 50th edition of the Newsletter is packed! First, the ESM President and Regional Director provide updates, and the ESM Annual General Meeting is announced. Then, we read about intricate beetles in one our regular contributor's collection. Lastly – field trip! Three trips from our contributors each with intriguing stories.

Thank you to all of our contributors, and our readers! If you have an insect-related story or field trip from Manitoba to share, please consider contributing to the upcoming winter issue of the ESM Newsletter. Email us with any questions.

Enjoy!

Justis Henault and Phoenix Nakagawa
ESM Newsletter Co-Editors

President's Message

Dear fellow bug enthusiasts,

I hope you all had a nice summer season filled with insect encounters (hopefully not the biting kind), exciting field work, and adventures. As many of you wrap up your field season, my lab is beginning our field season. As stored product entomologists, our action begins when the harvest is over and the grain is "safely" stored in grain bins, where it can be at the mercy of hungry grain insects if the grain is kept too warm or too moist.

At last year's annual general meeting, the membership voted to change some wording on the society's by-laws regarding signatories. It appears that this year we will have to change this wording once again to reflect bank's requirements. Indeed, the bank requires that a maximum of 3 people have signing authority, while the ESM by-laws state that the President, the Past-President, the President-Elect, and the Treasurer should have signing authority. It also came to light that the person in charge of the society's guaranteed investment certificates (GICs) requires signing authority. The Executive discussed this matter at its last meeting and concluded that it would make the most sense if the President, the Treasurer, and the person in charge of the GICs have signing authority; this matter will be brought to the members for a discussion and vote at the next AGM. Otherwise, the last few months have been fairly uneventful for the ESM so I don't have much to report, but soon there will be action with the upcoming ESM annual meeting, for which the preparations are well underway. You will be able to find an announcement for the ESM annual meeting in the following pages.

I would like to remind everyone that the next ESC meeting will be held jointly with the ESAb in Calgary, Alberta, from October 5-8, 2025, so if you haven't yet marked your calendar, now is your chance to do so. I should also let you know that the following ESC meeting will be held jointly with our own society in Winnipeg in the fall of 2026, either on October 4-7 or on October 18-21. Kateryn Rochon has stepped into the position as Chair, and she greatly needs help to organize this meeting, so anyone interested in helping with the organization of the 2026 Joint Annual Meeting, please get in touch with Kateryn (Kateryn.Rochon@umanitoba.ca); the sooner the better.

This is my last report as ESM President, and reading through previous ESM fall Newsletters it appears that this is often a time for the President to reflect back on the year gone by. Among the things that I have learned, it appears to me that the main issue with our society is the lack of system to transmit knowledge from one person to the next person stepping into a position. This leads to inefficiencies when a new person steps into a position because they are not sure what to do and how to do it. Therefore, it would be ideal if everyone who has a role in the society writes a short document, such as a standard operating procedure, on what to do, how to do it, and when to do it. These documents could be held on each position's associated Google Documents, held by the Secretary, and/or stored on a repository that all the ESM volunteers can access.

Also reflecting back, I would admit that being the ESM President has not been as big an undertaking as I thought it might be, partly because the ESM is a relatively small organization, partly because this year the ESM is not involved with a Joint Annual Meeting with the ESC, and partly because many ESM members volunteer for the society so the work is divided among volunteers; in the end, it is not too much work for any one of us. As the saying goes: "teamwork makes the dream work"!

Talking about volunteering, I should share with you that finding volunteers to refill the vacant positions within the ESM is not an easy task and often requires approaching many people. Perhaps because as a small society, the same people are often asked to volunteer time and again, and perhaps because new people may be worried that too much work may be involved. I would therefore take advantage of this message to say a big THANK YOU to everybody who volunteering or has volunteered for the society.

Vincent Hervet
President of the Entomological Society of Manitoba

Regional Director's Message

The **Joint Annual Meeting** of the Entomological Societies of Canada (ESC) and Quebec are just around the corner. The Joint Annual Meeting will take place from October 20th to October 23rd in Québec City, Québec. The theme of this year's meeting is *The Good, The Bad and The Ugly - A Matter of Perspective*. Aside from all the great presentations, posters, and other activities at the meetings, there are some important items that will be discussed and voted on by the executive of the Entomological Society of Canada (ESC).

The Executive Council of the ESC has been preparing for a review of ESC operations:

- The first objective is to review and possibly revise the **ESC committee structure**. The proposed committee restructuring would result in fewer committees, with some amalgamated, and others becoming subcommittees. This will be voted on at the Board of Directors meeting on the Sunday (October 20th) at the Joint Annual Meeting.

- The second objective will be to **review ESC activities**, a task that will be assigned to actual and/or ad hoc committees (once the first objective is completed).

The new **Strategic Plan** for the ESC will be presented at the Joint Annual Meeting. The strategic plan will first be presented for approval at the Board of Directors meeting on Sunday (Oct. 20th) morning, as well as an implementation plan. Then ESC membership will be asked to ratify the new strategic plan at the AGM at lunchtime on Monday, Oct. 21st.

For those getting ready to publish some of their results, there are a few things that may be helpful or noteworthy **from ESC website**. An article on "How to Publish a Scientific Paper", by Hugh Danks, is posted on the ESC website. There is also a call for papers for a new collection for the Canadian Journal of Plant Science titled "Bugs in the North: Insect-Crop Interactions in Continental Climate Agriculture". Both of these can be found on the ESC website at: Entomological Society of Canada – – (esc-sec.ca)

For those that like to plan ahead, a reminder that the 2025 joint annual meetings are in Calgary, and the 2026 joint annual meetings are in Winnipeg.

John Gavloski
Regional Director to the Entomological Society of Canada

From the ESM Executive

80th Annual Meeting: Call for Papers

Parasitic Life: Behind the Feathers, Fur and Setae
1 – 2 November 2024

Please join us at the 80th Annual Meeting of the ESM! We welcome our keynote speaker Dr. Terry Galloway, the 2024 recipient of the Gold Medal by the Entomological Society of Canada, who will discuss the biodiversity of avian lice. An array of researchers will deliver complementary presentations on parasitic life during our symposium. Attendees and student competitors will be able to participate in-person. Abstracts will be published in the next volume of the Proceedings of the Entomological Society of Manitoba.

November 1: Smartpark Innovation Hub (SIH)- 100 Innovation Drive, University of Manitoba campus
- Meeting takes place in MPR 1 (northwest side of main floor).
- Free parking is available northwest of the building (49.80270, -97.15065).

Day - Scientific papers
a) *Keynote address:* Dr. Terry Galloway (Professor Emeritus, Dept. of Entomology, University of Manitoba)
Hidden biodiversity: The fascinating life of parasitic lice that infest birds (sometimes you have to ruffle a few feathers)
b) Student competition and general papers
Lunch on your own (restaurants available in SIH and nearby)

Evening - Mixer
You are invited to our mixer at Pat McKay and Bob Lamb's home, where we can socialize and announce the winners of the student competition! Directions to their home will be provided at SIH.

November 2: Department of Entomology (Room 219), 12 Dafoe Road, University of Manitoba campus
a) Morning - Symposium
b) Catered lunch
c) Afternoon - Annual Business Meeting

Please refer to the Call for Papers circulated amongst members or the form below for additional details regarding the conference and registration dues.

Register for the meeting using this form or in-person. If submitting a paper, please use this same online form.

Email any questions to the Co-Chairs (Vincent Hervet - vincent.hervet@agr.gc.ca – and Justis Henault - henaultjps@gmail.com) or the ESM Secretary (Jade Tanner - entsocmanitobasecretary@gmail.com) where appropriate.

We look forward to seeing you!

Vince and Justis, on behalf of the Scientific Program Committee

Submitted Articles

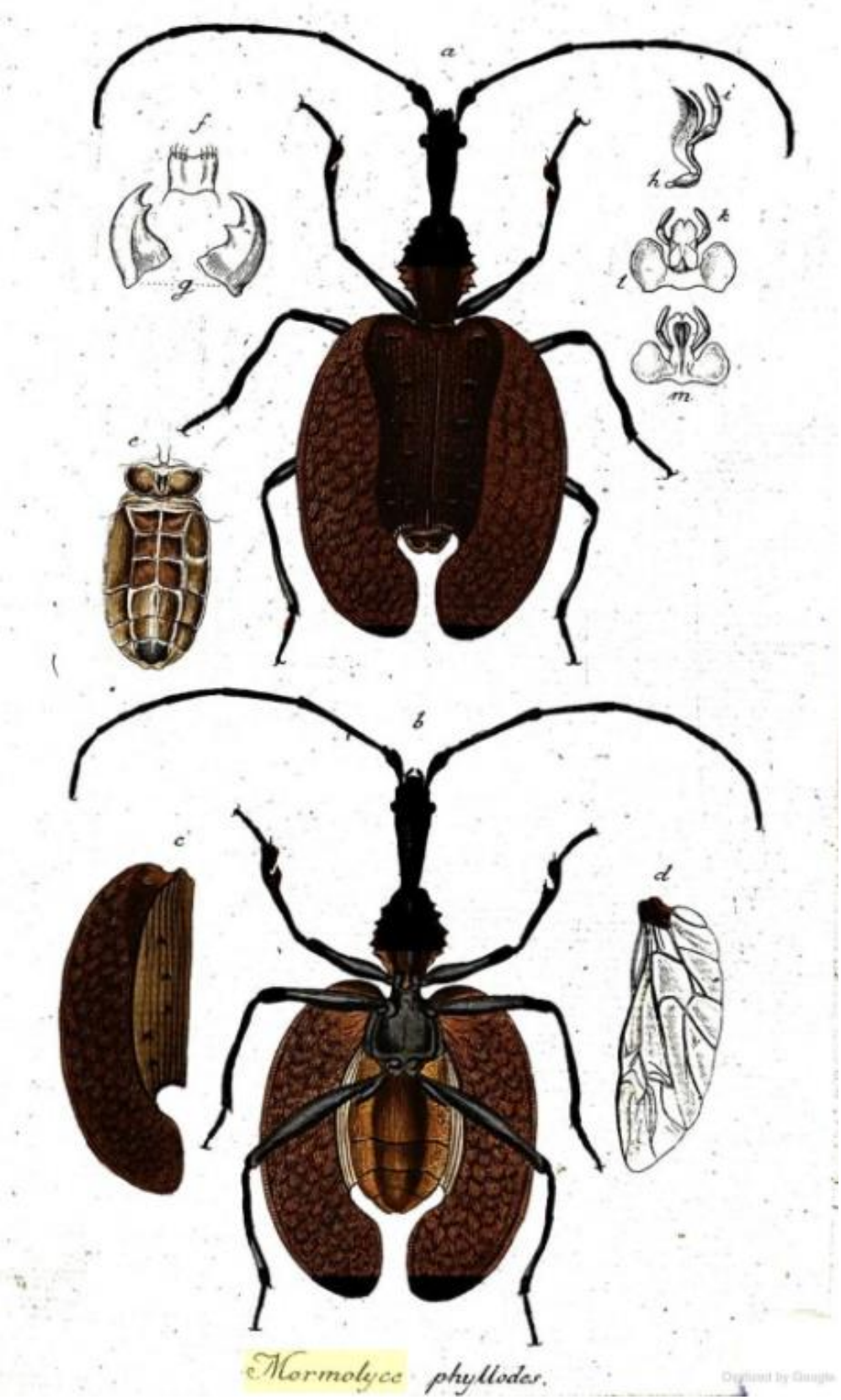
Violin beetle, *Mormolyce phyllodes* Hagenbach, 1825 (Carabidae: Lebiinae)
Robert E. Wrigley and Thilina Hettiarachchi (photographer)

"It has well been said that Nature never leaves a crevice but she makes something flat to creep into it, and certainly the *Mormolyce* carries out this theory." (Wood 1874)

Mormolyce carabids (subfamily Lebiinae) are some of the strangest-looking insects in the world, with a greatly elongated and flattened head, neck and body (60-100 mm), and greatly expanded, leaf-like, translucent and rugose elytral flanges resembling a violin (hence the common name). The legs are long and extremely thin, suggesting it has limited mobility, but the beetle maneuvers readily on the ground, bark of a tree, or upside-down under a log. It is even able to fly long distances in Asian rainforests. One observer concluded that a specimen of *Mormolyce phyllodes* had trouble becoming airborne from the ground due it is expanded shape. It ran quickly up a tree and when ready to open its wings, it leapt like a flying squirrel and flew away (Lieftinck and Wiebes 1968). Perhaps the wing-like flaps of the elytra provide some extra lift. The beetle becomes most active at dusk (August to November), is attracted to nighttime lights, and remains hidden in a dark site during the day.

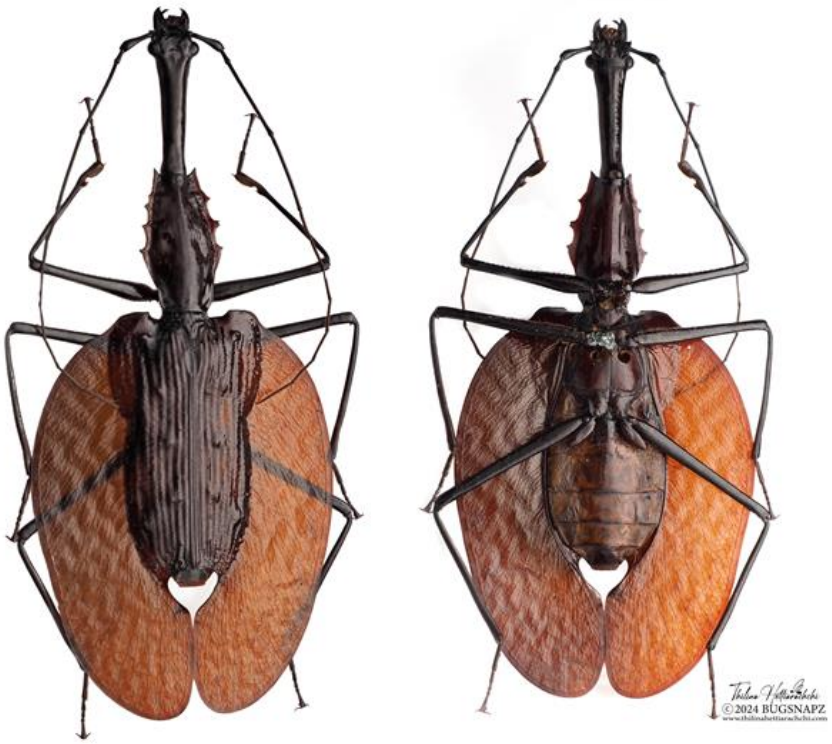
Westwood (1862), in describing *Mormolyce hagenbachii*, stated; "Instead of the compact, robust form which is typical of the Carabidae, we have an attenuated structure, with slender limbs, indicating great weakness of locomotive powers, united to a slightly developed oral structure, proving the insect to be destitute of those predaceous habits which are so eminently characteristic of the family as to have earned for them the sectional name of Adephaga. We must suppose a *Carabus* or *Harpalus* to have been both drawn out longitudinally and flattened out laterally, so that the elytra present great flattened dilatations extending beyond the body in the form of two rounded spatulae..."

Antennal lengths vary from 45 to 85 mm; almost as long as the body. The protibia is usual in being provisioned with a subapical notch, which enables sweeping clean the long antenna. The remarkable flatness of the body allows the beetle to slip inside thin cracks in the soil, inside a tree, or behind a bracket fungus, thereby escaping the notice of predators. The beetle's shape, light-brown to black colour, and rugosity provide remarkable camouflage while lying motionless among dead leaves on the ground or on tree bark. Added to this passive defense is an explosive spray of poisonous and odorous butyric acid, a toxic feature common to the carabid family.



Mormolyce phyllodes (from Hagenbach 1825).

Dorsal and ventral habitus of *Mormolyce phyllodes*.



Dorsal and ventral habitus of *Mormolyce hagenbachii*.

Lieftinck (Lieftinck and Wiebes 1968) describes what happened when he attempted to collect a *M. phyllodes* from under a log in Perak, Malaysia; "... I reached out to pick the first beetle by hand – a gesture which I at once regretted. For all of a sudden I felt as if severely stung in the right eye, by which I was taken aback for quite some moments. On being disturbed, one of the *Mormolyce* had emitted a fine spray of some liquid, like an atomizer, and this was volleyed right into my face. As luck would have it, spectacles serves as a shield, but had failed to protect my right eye sufficiently. The fluid had a strong scent, resembling a mixture of nitric acid and ammonia. The instantaneous result of this slightly dramatic incident was a choke, followed by a coughing-fit, but this was soon over and after a few hours the burning pain had also almost disappeared, although the eye remained sensitive for several weeks."

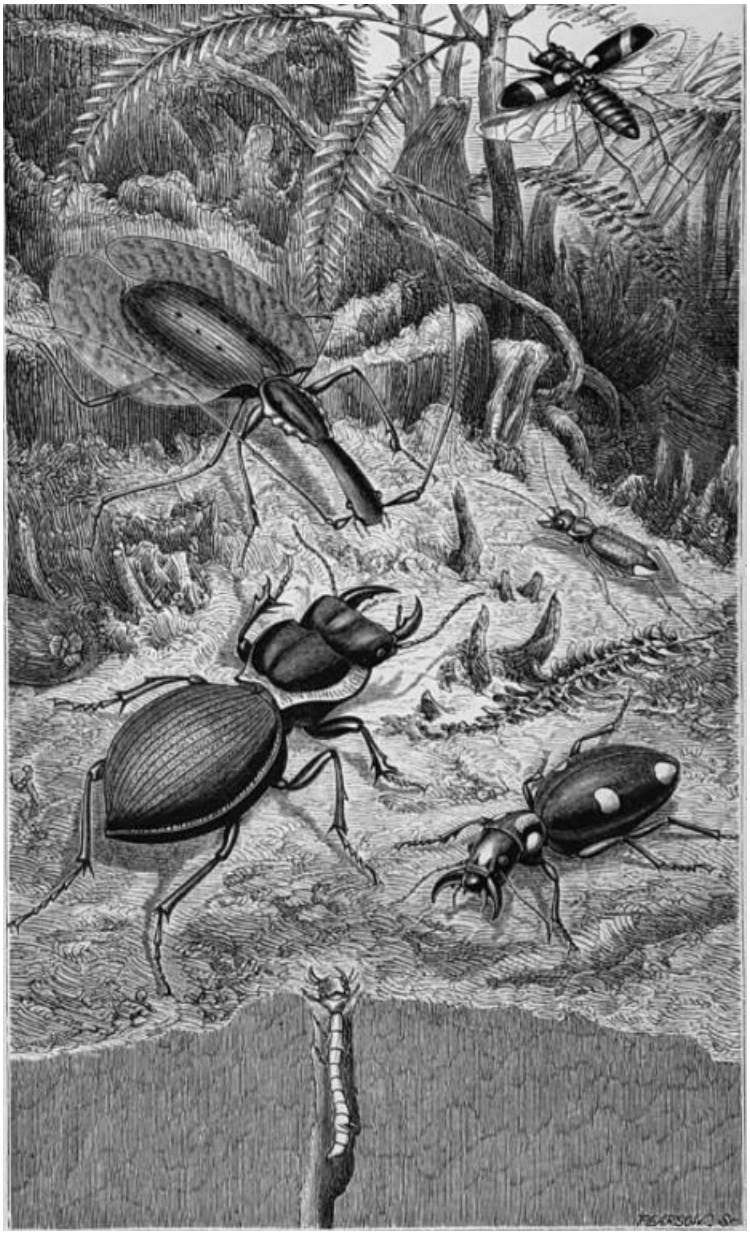
Antennal-cleaning structure on the protibia.

Mormolyce was the name of a mythical Greek ghouls, later recruited as a spectre or phantom to scare Roman children; *phyllodes* obviously refers to the leaf-like expansions of the beetle's elytra. Seven species have been described, all inhabiting rainforests of Indonesia, while several also occur in Malaysia, Thailand, Borneo, Papua New Guinea and the southern Philippines (successfully dispersing across Wallace's Line). Likely originating in Indonesia, *Mormolyce phyllodes* could have dispersed to all these islands via land connections during periods of low sea level (Heaney 1986), or through rafting inside floating trees. Considering that New Guinea and Australia were formerly connected, separating only 8,000 years ago from rising seas, one is left to surmise whether *Mormolyce phyllodes* ever reached the latter landmass. Two to four species may be found in close proximity on certain islands (Benkulan in Sumatra and Sarawak in Borneo, respectively), however their ecological relationships remain uninvestigated (Lieftinck and Wiebes 1968).

All species closely resemble each other, differing mainly in the shapes of the pronotum, number of lateral 'teeth,' and bases of elytra. Duricek and Klicha (2017) provided a morphological key. The aedeagus has not been a useful feature in distinguishing the species, perhaps because of its small size and challenge to prepare. Lieftinck and Wiebes (1968) remarked that although *M. phyllodes* was highly variable in size in Java, Sumatra, Malaysia and Thailand, they were consistent in structural characters; they found no secondary sexual features. They also noted the presence on some specimens of epizoic fungi (*Laboulbenia* spp.), which is not surprising considering the beetles close association with moist rotting logs and bracket fungi. This ectoparasitic genus of fungus is known for its high level of host specificity on beetles, but appears to cause little of no harm.

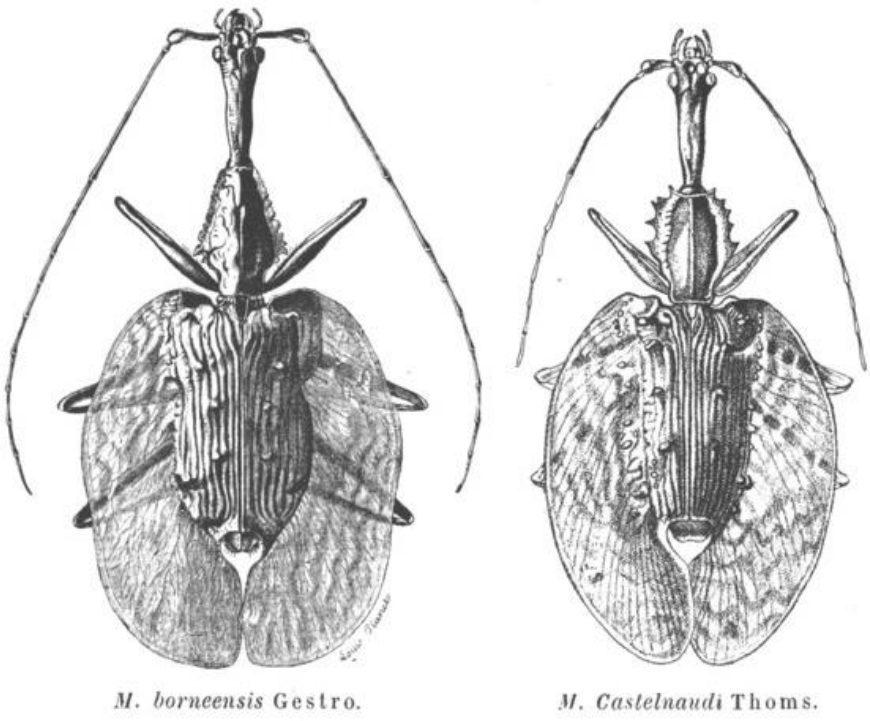
The species are:

-*Mormolyce borneensis* Gestro, 1875 (Indonesia)
-*Mormolyce castelnaudi* Deyrolle, 1862 (Indonesia, Malaysia)
-*Mormolyce hagenbachii* Westwood, 1862 (Indonesia, Malaysia)
-*Mormolyce matejmiciaki* Duricek & Klicha, 2017 (Indonesia)
-*Mormolyce phyllodes* Hagenbach, 1825 (Indonesia, Papua-New Guinea, Malaysia, Thailand)
-*Mormolyce quadraticollis* Donckier, 1899 (Indonesia)
-*Mormolyce tridens* Andrews, 1941(Indonesia)

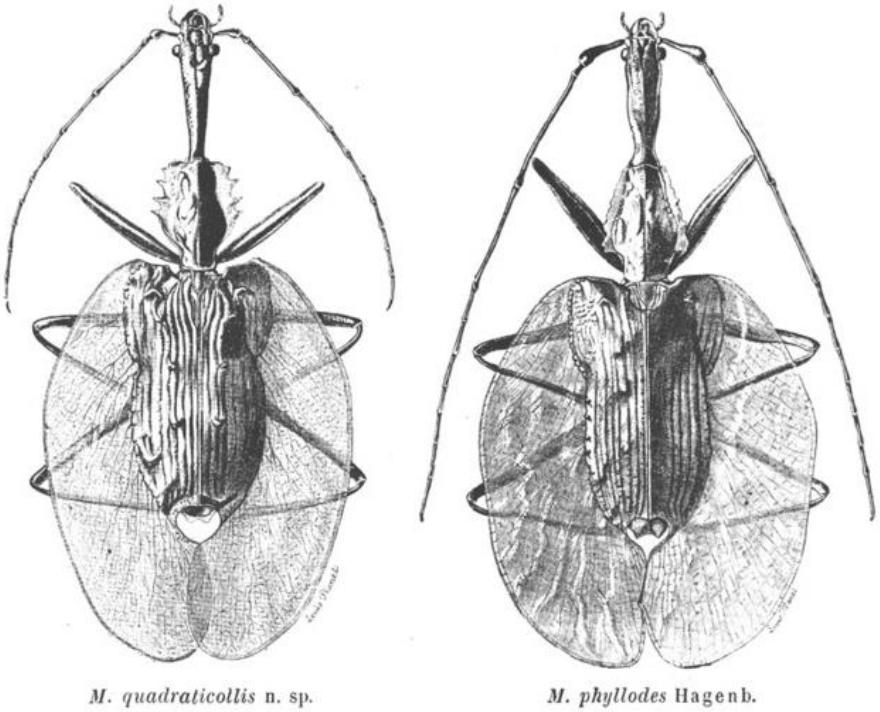


Variety of carabids (Wood 1874). Note the *Mormolyce* in the top-left area.

I have three taxa of *Mormolyce* in my collection: *M. p. phyllodes* (Malaysia), *M. p. engeli* (Indonesia), and *M. hagenbachii* (Malaysia).

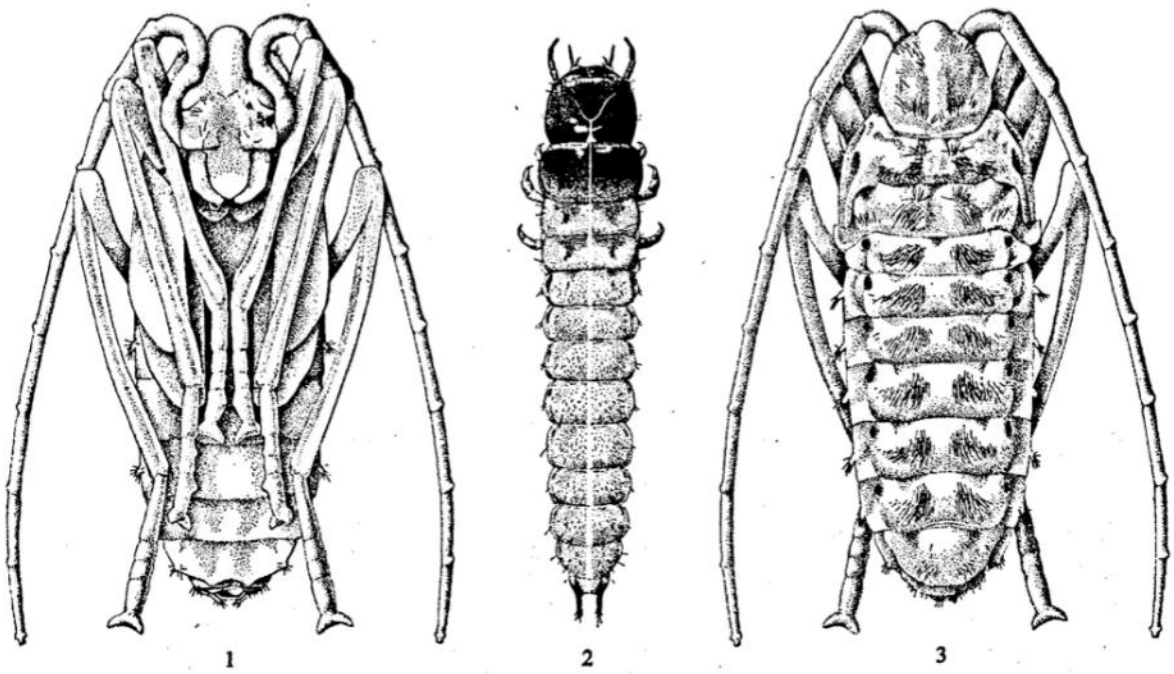


Mormolyce borneensis and *Mormolyce castelnaudi* (Donckier de Donceel 1899)



Mormolyce quadraticollis and *Mormolyce phyllodes* (Donckier de Donceel 1899)

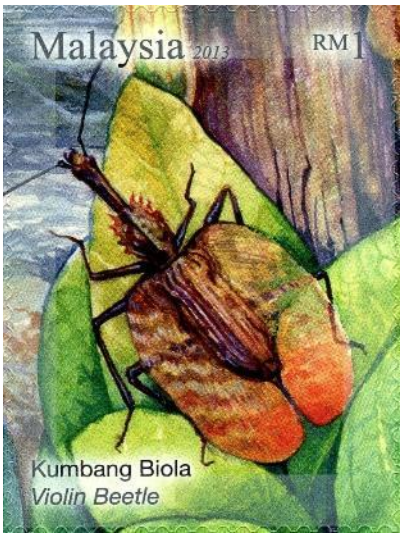
The larva lives inside channels in hard bracket fungi (e.g., *Polyporus fomentarius* and *Fomes melanoporus*), where it feeds on other insects. The fungal structure also hosts the pupal chamber. Larval development requires up to nine months (number of larval stages is unknown, but probably three) then pupate for 2.5 months. Shelford (1857), one of the first early naturalists to study *Mormolyce* in nature, wondered how the adult could emerge from its pupal cavity since only a small exit hole was present in the bracket fungus. The elytra are capable of folding along the body when emerging, and apparently remain flexible during life, hardening after death. Larval and pupal length are 2.3 cm and 3 cm, respectively (Lieftinck and Wiebes 1968). The adult is also predatory on small invertebrate prey, using its long, slender head and prothorax to probe under bark or other small crevices. Congregations of up to two dozen individuals, hiding under a log or bracket fungus, may be viewed on the internet, so this must be a frequent behavioural feature (https://www.youtube.com/watch?v=QuQhmOvQOfM). Little else appears to be known about the ecology of these beetles.



Figs. 1-3. *Mormolyce phyllodes* Hagenbach. 1, pupa, ventral aspect; 2, larva, dorsal aspect; 3, pupa, dorsal aspect.

Pupa (ventral), larva (dorsal), and pupa (dorsal). (Lieftinck and Wiebes 1968)

Conservation concern had been expressed for certain *Mormolyce phyllodes* populations due to major forest destruction leading to its inclusion in IUCN's 1990 Red List of Threatened Species; however, it was delisted in 1996. This species in Java was apparently eliminated 125 years not only from deforestation, but likely over-collecting, as it was formerly taken 'in the hundreds.' It has been in popular demand by collectors for centuries for its unusual appearance, and before larger numbers were discovered in the mid-1800s, the Paris Museum reportedly paid 1,000 franks for a specimen to display (presumably a substantial purchase back then). Large numbers of specimens of several species are available from on-line insect stores, some for as little as $3.40.



Violin beetle on a Malaysian stamp.

Violin beetle art by Eli Yoo (MCS Studio Official, Etsy)

The species' unusual appearance has been captured accurately on the postage stamps of at least four countries: Indonesia - 2001, Thailand - 2001, Republic of Palau - 2003 and Malaysia – 2013 (Asahi-net no date). It is frequently portrayed in various crafts.

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Take Me to the River

Todd Lawton

My plan for the 2020 field season was to collect tiger beetles, *Cicindela* (Carabidae*)* in northern Manitoba, Saskatchewan and Alberta in spring and focus on snail-eating beetles, *Scaphinotus* (Carabidae) in the mountains of Arizona and New Mexico in late summer. Then COVID-19 swept the globe, and being a front-line worker, I had to compromise on my vacation plans. I was granted only two weeks of leave during June. With the border between Canada and the US closed, I decided to limit my collecting to northern Manitoba and saw a good opportunity to add new locality records to an upcoming paper on the tiger beetles of the province. It would be the first time in 19 years that I didn't travel to the US to collect insects.

Tiger beetles are active in sunny and warm conditions, so during the spring, a collector may have to be patient and wait for suitable days, especially in the north. I watched unencouraging weather reports for most of the first week; fortunately, by the second week, the weather improved and I made my way north. I visited sites I had found on previous trips in the Lynn Lake area collecting *Cicindela limbata nympha* x *C. l. hyperborea,* and then I explored South Indian Lake road and found good numbers of *C. tranquebarica*. In the past few years I've put in considerable effort collecting in northern Manitoba and Saskatchewan investigating the integration area between *C. l. nympha* and *C. l. hyperborea*.

I also hoped to find *Cicindela* northeast of Gillam on Highway 290. As soon as I arrived in the area, I surveyed the numerous roads off the dusty main highway in search of access to the Nelson River. Some roads were posted "No Trespassing" by Manitoba Hydro while others were in very poor condition. Eventually I reached a point where further travel on the main road was prohibited. I flagged down a passing vehicle and asked where I could get access to the Nelson River; they advised that I check closer to the Limestone Dam to the south, an area I had already searched, so I retreated southwest to Gillam.

I bought gas and supplies, (Coke was on sale), and came up with a plan to set up pitfall traps for *Blethisa* (Carabidae) where there was suitable roadside habitat north of Thompson. In 2019, I caught a *Diacheila arctica,* a very rare Carabid, south of Wollaston Lake in northern Saskatchewan. It's a provincial record and, with current concerns over climate change, southern records for northern species are intriguing.

I passed an RCMP vehicle as I approached the main highway outside of Gillam; when the officer spotted my vehicle he slowed and swung around immediately, lights flashing in active pursuit. I pulled over immediately.

My little red Toyota Echo is as tough as nails, carrying me over thousands of kilometers, including mining and forestry roads, from northern Canada to the mountains of the American Southwest. Two of those roads, Highway 955 in Saskatchewan and the Bill Williams Mountain road in Arizona, are featured on the dangerous roads website. I've nearly perfected the careful dance of maneuvering a small car over hazardous backroads but in the process I've incurred about a dozen flat tires. Even my hubcaps had given up all hope and flung themselves like Frisbees into the ditches, never to be seen again. When not moving, my Echo looks like an abandoned vehicle. But that is not to say that I'm seeking reckless adventure; sometimes the best sites are remote.

As the officer tentatively approached my car I saw that he had his hand over his handgun; I found this alarming. I rolled down my window and asked if I had missed a stop sign. He said I hadn't and asked me for my license and registration. I pulled my license from my wallet and told him that I'd have to get my registration from my glove compartment. He said he didn't want me to do that and that I should just stay in the driver's seat. He asked why I was in the area and I told him that I was collecting insects. He went to his car to check my license; when he returned he again asked why I was in the area. He glanced anxiously around my overloaded car to determine my intentions; I had sacks of pitfall materials, portable batteries, a gas can, jugs of bait and preservative, a black light in a case; it looked like I had cleared an apartment in the middle of the night and escaped for parts unknown. And I, at least four days passed since my last shower, my shaved head sunburned bright red, and pocked with black fly bites, probably didn't match his mental image of a scientist. I told him I had some papers on the top of my cooler and he allowed me to pull out my collecting permit for Provincial Parks. I attempted to pass it to him but he insisted that I unfold it with both hands outside my car window so he could read it; he didn't take this hand away from his sidearm.

After reading the permit he became more at ease. He told me I had scared some people out near the Fox Lake Reserve and that the men I had stopped for directions had called 911 and reported me as a suspicious person. I guess this makes sense; men never ask for directions. He went on to say that recently people in the Gillam area had been wary of strangers. There had been a Canada-Wide manhunt the summer before when a pair of young men killed three people in BC and while evading the law by abandoning their vehicle near Gillam, finally ending their own lives in woods near Nelson River.

With my intentions clarified, I used the opportunity to ask where I could get access to the Nelson River. He directed me to a site* on highway 290 and I was able to acquire three *C. duodecimgutatta* specimens on a narrow strip of sand, a range extension for the province! Clay buffs and a beach on the far shore hinted that suitable habitat extended north as far as I could see; perhaps this species ranges as far as Port Nelson.

From there I resumed my efforts collecting a few dozen tiger beetles. I also ended the lives of innumerable mosquitoes, black flies and horse flies, for which I plead self-defense.

Todd Lawton is an amateur insect collector who lives in Winnipeg. He won the Bert and John Carr Award (2014) and the Normal Criddle Award (2017) from the Canadian Entomological Society. He has published on the Tiger Beetles of northern Manitoba, northwestern Ontario and eastern Wyoming.

A modified version of this story was previously printed in the Biological Survey Newsletter (volume 40(1), Summer 2021) and is reprinted with permission.

* When I first saw the Nelson River site on Highway 290 I could see it had potential. It was like no other habitat I had seen in northern Manitoba or Saskatchewan. It reminded me of the Mackenzie River in the Northwest Territories which I had the good fortune of visiting in 1976 while working for the National Museum of Canada. I made a pledge to return to Hwy 290, and I did in 2022. I set up red-wine vinegar pit falls and splashed shore gravel and captured three *Bembidion* (Carabidae), species that are new to the province! I'm hoping that additional work in that area will lead to more discoveries, preferably with less drama.

The Search for Cicada-pocalypse

Jacqueline Bowles, Mabel Currie, Madeleine Dupuis, Ellen Freeth, Kira Peters, and James Watson

In June, we embarked on what was, in our minds, a quest. The trip was months in the making, driven by Mabel's desire to see the *Magicicada* (Davis 1925) spp. 2024 mass cicada emergence. For the first time in over 200 years, Brood XIX, a 13-year brood, and Brood XIII, a 17-year brood, were emerging not only in the same year, but across a geographic area that overlapped almost perfectly in Springfield, Illinois.

There were six of us on the trip, all entomology students from the University of Manitoba. Our primary interest for the trip were the cicadas, however, we had additional targets. We were interested in the hard ticks (Ixodidae) of the region, specifically the lone star tick, *Amblyomma americanum* (Linnaeus 1758). We were also hoping to bag some native bees, both to expand our knowledge of American pollinators and to add to the Wallis-Roughley Museums' collection.

Upon arriving in southern Illinois after two long days of driving (at 12:00 AM no less), we were struck by the difference in the arthropod fauna compared to Manitoba. Even as we pitched tents in the dark, our lamps and flashlights were already illuminating cockroaches, jumping bristletails, and earwigs amongst the leaf litter, which served to stave off our exhaustion long enough to finish setting up camp and start building our excitement for the next couple of days. Upon finding lone star ticks around the campsite, we knew we were in for a long few days of DEET, permethrin, and thorough tick checks.

The campground was an hour's drive from Springfield, and our group determined that the weather would be better for cicada sightings on Sunday, so we instead spent our Saturday sampling other insects close by. We visited the Henry Allan Gleason Nature Preserve, a state forest. The tick enthusiasts of the group brought white flannel drags to sample for ticks. Lone star tick nymphs raced up our legs and black flies buzzed in our ears. Some bright green tiger beetles, giant pompilids, and mantid nymphs caught our eyes. As we left, we set up some blue vane traps along the road bordering a pasture before leaving. There were plenty of blooms, including vibrant yellow Eastern prickly pears, *Opuntia humifusa* (Raf.) Raf.*,* from which we were able to snag a few bees. Later that afternoon, we pitched a malaise trap at one of our campsites.

Photos from Sand Ridge State Forest. A) Sampling insects at the Henry Allan Gleason Nature Preserve; Left to right: Madeleine, Mabel, Kira, Jacqueline, B) A Lonestar tick *Amblyomma americanum* (Linnaeus 1758), C) A bee spotted on an Eastern Prickly Pear *Opuntia humifusa* (Raf.) Raf. flower., D) Kira and Madeleine setting up our Malaise trap.

By the second morning, we had yet to see a single cicada. There was the odd one calling around the campground, but they were all far too high up in the trees to see. It seemed we would have to make the drive to Springfield to find an emergence hotspot, so we used iNaturalist to pick our day trip destinations to parks with confirmed sightings.

Our first stop was the Lincoln Memorial Garden and Nature Centre. On the hour-long drive from our campsite to the park, tension was building. This was what we had determined to be our best bet at seeing the emergence: if we didn't see cicadas here, things were going to start looking dire.

Our fortunes changed as we approached the parking lot, and we started to see them. Suddenly they were everywhere. Live and dead cicadas, their casings, all over the ground, fences, signposts, trees, and bushes. Filled with relief and armed with a plethora of ethanol and collecting jars, we entered the gardens. As we walked, we could see their emergence holes scattered along the ground. We stopped at a pavilion and James spotted one in the middle of moulting. We eventually made our way to the waterfront of Lake Springfield, taking photos and collecting cicadas as we went, picking them off bushes and trees as easily as if they were berries.

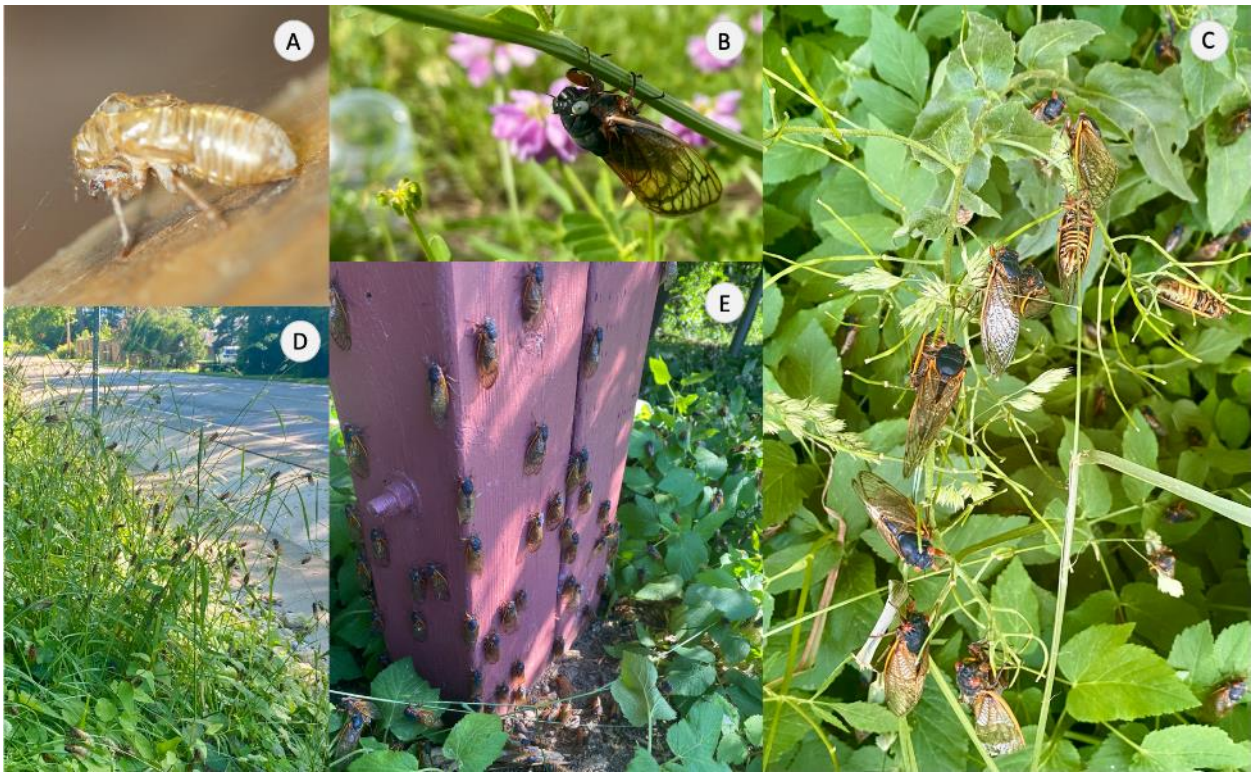
Photos from the Lincoln Memorial Garden and Nature Centre. A) Visitors' map at the park's information centre, B) Cicadas by the shore of Lake Springfield, C) Cicada emerging from its casing, D) Left to right: Mabel Currie, Kira Peters, Jacqueline Bowles, Ellen Freeth, James Watson. Madeleine Dupuis pictured holding a collection jar.

At the parks' gift shop and information center, we were pleased to discover that the gardens were fully embracing the emergence, hosting information sessions and cicada-themed events. We, along with other visitors, were encouraged to mark on a map where we had travelled from to see the cicadas. A park employee gave us a helpful tip: most of the cicadas in the park were from Brood XIX, but if we wanted to see Brood XIII, we should head North and check out Carpenter Park.

Immediately upon arriving at Carpenter Park, we noticed the cicadas were much louder than they had been at the Lincoln Memorial Gardens but also more elusive, with most of them remaining out of reach high in the trees. We were able to collect a few 17-year cicadas from Brood XIII from lower branches. Satisfied, we returned to our campsite. We had an early dinner around the campfire and said our goodbyes. Jacqueline, James, Kira, and Ellen were leaving early the next morning and driving back to Winnipeg in one shot.

On our way back to Winnipeg, now reduced to a group of 2 (Madeleine and Mabel), we had the opportunity to visit the beautiful Illinois Starved Rock State Park. After a weekend of arthropod hunting, it was nice to appreciate the larger birds, plants, and waterfalls present in the park. We saw American white pelicans, double crested cormorants, and most excitingly for a Manitoban birder, the elusive cardinal.

Our second stop was a quaint resort town called Lake Geneva. This is where we found the cicada-pocalypse. It was the densest aggregation of the critters we had witnessed. We could distinctly hear the calls of the different species within the brood. Initially we were excited by the sheer numbers and enthralled by the presence of the entomopathogenic fungus *Massospora* (Peck 1879). It was surprising to see the high proportion of infected cicadas and how unconcerned they appeared that their abdomens had been turned into a plug of fungal tissue. Mabel even spotted a blue-eyed cicada. Typical periodical cicadas have distinctive red eyes, however, there is a one-in-a-million mutation that causes them to have light eyes (Berenbaum 2021).



Cicadas observed around Lake Geneva, Wisconsin. A) cicada casing, B) Blue-eyed Cicada, C) Group of cicadas in the trees, D) Group of cicadas along a roadside, E) Aggregation of adult cicadas on a wooden post.

Eventually, we grew slightly disgusted by the experience. The cicadas were mistaking us as trees and beginning to climb our legs in a manner that was reminiscent of ticks. There was a distinct odour of decaying insects. We decided we were satisfied and left for our hotel.

When all was said and done, we were all thankful for the experience. We accomplished our quests, had undertaken a journey that forged closer friendships, and many of our collected cicadas now stock the teaching collection used in the Department of Entomology's courses.

Acknowledgments

This trip would have not been possible without the support from our supervisors Kateryn Rochon, Kyle Bobiwash, Jason Gibbs, Heather Coatsworth, instructor Jordan Bannerman, and the rest of the entomology department. Thank you for making this whirlwind adventure possible.

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Recommended reading: online field guide to Illinois insect fauna

Dailey, P.J. 2015. Photographic Guide to the Common Insects Observed in Madison County, IL, and Adjacent Environs including Prairies, Ponds, Streams, and Oak Hickory Climax Forest. *The Nature Institute*, pp. 1-95, https://www.thenatureinstitute.org/wp-content/uploads/2015/09/PHOTOGRAPHIC-FIELD-GUIDE-April-20151.pdf

From Taxonomy to Genomics: A New Chapter in Bee Biodiversity Research

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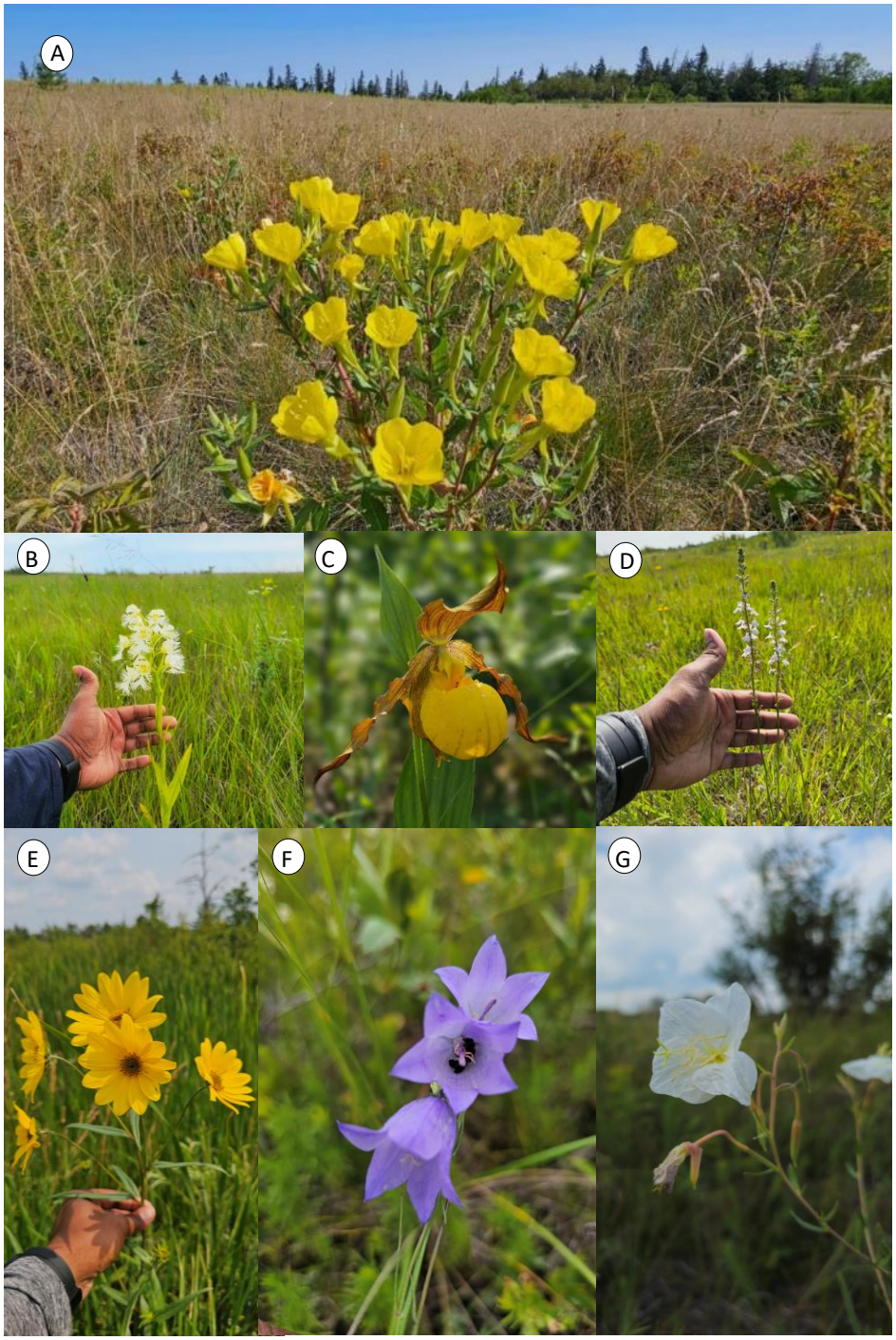
After completing my Master's degree, I was thrilled to begin a new chapter by starting my PhD at the same lab, department, and institution, where I studied previously. During my Master's, I worked on a taxonomic study of *Lasioglossum* bees in western North America. Now, my PhD research has shifted toward a phylogenomic study of bees in the Canadian prairies—a broader field, though still rooted in the same fascination with bee diversity. Although I was initially hesitant to shift away from my focus on bee taxonomy, I was eager to explore new areas of research and broaden my scientific horizons in this new chapter of my life.

After the active sampling at Teulon site, a grassland within a bison farm. We completed our fieldwork just as thunderstorm signs appeared on the horizon. Dark clouds quickly covered the area as we packed up and headed back to the university.



Nectaring plants. A) Common Evening-Primrose (*Oenothera biennis*) at Birdhill Provincial Park site, B) The elusive Western Prairie White Fringed Orchid (*Platanthera praeclara*) found at the Tallgrass Prairie North Block Nature Conservancy Canada (NCC) site, C) Yellow Lady's Slipper (*Cypripedium parviflorum*) at Birdhill Provincial Park site, D) Pale-spiked Lobelia (*Lobelia spicata*) at Stepaniuk site, E) Wild Sunflower species (*Helianthus* sp.) at Stepaniuk NCC site, F) Western Harebell (*Campanula petiolata*) with Black Shortface Bees (*Dufourea maura*) sleeping inside due to low morning temperatures at Shilo MB site, G) White-stemmed Evening-Primrose (*Oenothera nuttallii*) at the Royal Bank NCC site.

My current research is part of the Genome Canada-funded project *Grassland Genomics for Greenhouse Gas Mitigation (GG4GHG)*. This project spans various areas of ecology, from vegetation and soil carbon and nitrogen sampling in native grasslands to plant genotyping and soil microbiota metabarcoding. My role in this initiative is to investigate the phylogenomic diversity of prairie bees, using targeted enrichment of Ultra-conserved Elements (UCE).

There is increasing recognition that phylogenetic diversity offers a more meaningful metric for biodiversity than species richness. By considering evolutionary relationships between species, phylogenomic diversity provides a deeper understanding of ecological resilience and function, making it invaluable for conservation strategies (Faith 1992; Isaac et al. 2004; Srivastava et al. 2012; Grab et al. 2019; Kling et al. 2019). This approach allows us to map not just the presence of species, but their evolutionary relationships. Therefore, it is an indispensable tool for effective conservation planning (González-Orozco and Parra-Quijano 2022).

Reid Miller, *my field assistant and close friend,* at the Shilo Military Base Camp site preparing nets along the sampling stations.

As part of this larger project, I have been involved in arthropod/ insect sampling at various locations across southern Manitoba, covering a total of 16 sites. Most of the sites I work on are managed by Nature Conservancy Canada. Two sites are located at the Canadian Forces Base in Shilo and Camp Hughes, two sites at Birds Hill Provincial Park, managed by Manitoba Parks, and one at the Royal Bank Property in Napinka, managed by the Manitoba Heritage Corporation. The remaining sites are privately owned. Each of these sites need to be sampled twice per summer. This season, I've been working with Reid Miller, a former Master's student of Jason Gibbs, who has extensive field experience conducting pitfall trap and bee bowl sampling during his Master's project and working with the Gibbs Bee Lab. His expertise made the fieldwork much smoother and more efficient.

Landscapes and property signs from some of my sampling sites.

I have been using two passive trapping methods to sample insects: raised bee bowls and pitfall traps. Each site has 10 sampling stations. These stations are distributed to maximize coverage of variable habitats, vegetation types, and the likelihood of overlapping with focal plant species. Stations are placed at least 35m from site boundaries and spaced roughly 50m apart. Each station contains one pitfall trap, around which we arrange three poles 5 meters apart to form a triangular setup. One of these poles holds three bee bowls; available in blue, yellow, and white, bee bowls are placed on raised holders positioned just above the surrounding vegetation. Both bee bowls and pitfall traps are filled with soapy water to capture insects. The traps are placed out in the field for 24 hours, after which we return to collect the samples next day.

The following day, the trap contents, including soapy water, are collected into plastic cups. The contents from the pitfall traps and bee bowls are kept separate by station. We don't filter the insects immediately, as the liquid is sent to the University of Saskatchewan (UoS) for DNA analysis. In the lab, the insects collected in soapy water are later filtered; specimens are preserved in 70% ethanol. The filtrate are collected in Falcon tubes and stored at 4°C before being sent to UoS. I retain only the bees, some wasps, and hoverflies from the bee bowls, while all other insect specimens are sent to UoS for further analysis. All of these preserved specimens in my study have been dried and pinned.

Setup. A & B) A raised bee bowl setup, featuring three colored bee bowls (blue, yellow, and white) on an ash-colored holder. C) Me checking the bee bowls.

In addition to passive trapping, we actively net caught insects—such as bees, wasps, and hover flies—from flowers to document bee-flower interactions and enhance species representation in our samples. This dual approach allows us to sample a greater number of sites using low-intensity passive sampling while also investigating bee-flower interactions in more detail, improving our understanding of their habitat requirements. One of the best things of working on this task has been the opportunity to learn about the plethora of floral species in Manitoba, many of which are truly stunning. I have been using the iNaturalist website as a valuable tool for identifying and learning about these species, as well as for documenting the different types I have observed at our stations.

With all of this work, I have been busier than any other summer since arriving in Canada from Sri Lanka. Unlike during my Master's, which didn't involve fieldwork, this has been a completely new experience for me. I have come to realize that conducting ecological research is far from easy as I have faced numerous challenges in the field. These include extensive travel, frequent changes in plans due to unpredictable weather, wildfire smoke, heat warnings, and cattle grazing on NCC sites. Additionally, large wildlife has destroyed some of my stations.

The first entomological lab at Aweme and the NCC Yellow Quill Prairie site, where we arrived the next day to collect our traps, only to find the site full of cows. Reid is shown conducting active sampling while surrounded by the cattle.

NCC sites are often rented for cattle grazing, which has been a recurring challenge for my work. While grazing maybe important for maintaining grasslands and preventing them from becoming overrun by woody plants, it poses significant challenge to me. During the first round of sampling at the Yellow Quill Prairie site, we set up our stations, but when we returned the next day, the site was overrun with cows. We had to conduct active sampling among them, and unfortunately, some of the poles were completely bent, with a few bee bowls missing—likely eaten by the cows.

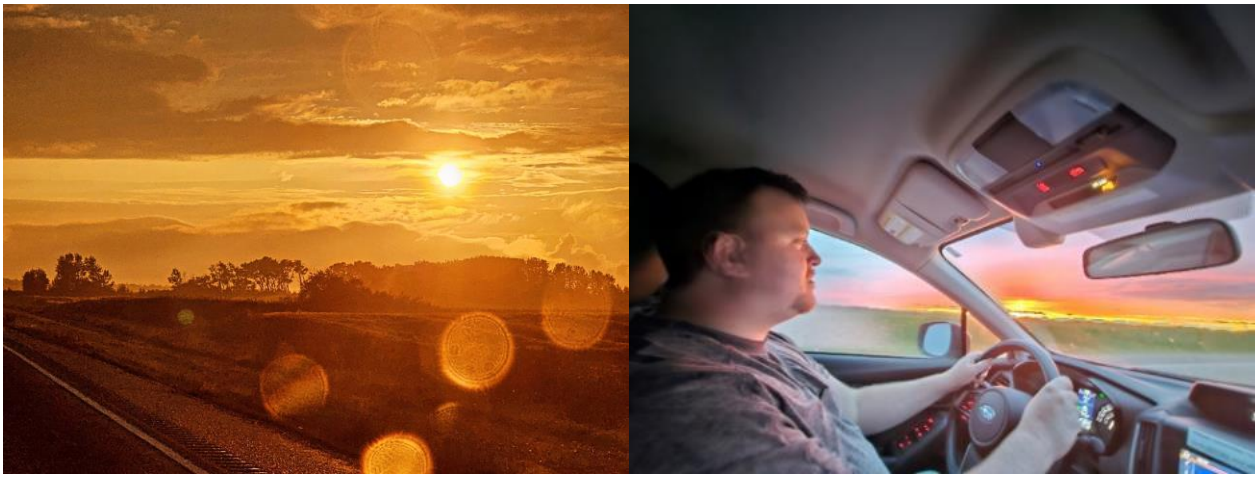
On another occasion, we spotted a flock of elk near our site at the Shilo Military Base Camp. We didn't anticipate any issues when we spotted the elk near our sampling site at the Shilo Military Base Camp. They

were quite a sight, moving elegantly across the landscape, and I didn't think much of it at the time; after all, it's not unusual to encounter wildlife in these remote areas. However, when we returned the next day, some of our stations had been completely destroyed; it was only then that I realized the impact these large animals could have on our setup. The elk were a reminder of the unpredictability of fieldwork and how the wildlife we admire can also become an unexpected obstacle in our research.

Despite the mentioned and unmentioned challenges over the past few months, my travels have exposed me to diverse landscapes and new experiences. Some of these moments have become unforgettable memories in my life. I didn't realize until I arrived at the Yellow Quill Prairie site that I was stepping into a historical place. This site is where Norman Criddle, a pioneer entomologist of the Prairies, conducted much of his work. It was the location of the first entomological lab in the region, and as we passed by on our way to the sampling site, I naturally felt connected to the important research that started there.

Catch in pitfall traps. A) Burying beetles (*Nicrophorus* sp.), B) Robust camel crickets (*Udeopsylla cf. robusta*), C) Blue-bordered pedunculate ground beetle (*Pasimachus elongatus*).

Since we are using the same locations for pitfall traps in the second sampling round, we leave one plastic cup in the original hole, secured by a wooden plate with four nails. Upon returning for the second round at the Shilo Military Base Camp site, we were surprised to find some of our cups filled with both live and dead burying beetles and dung beetles. On the same day, at the Camp Hughes site, I opened a trap to discover a previously unseen species of large live crickets, along with a striking Blue-bordered pedunculate ground beetle. The crickets were later identified as Robust camel crickets, marking the first time I had encountered either species.



On the way to Russell for an overnight stay before our planned sampling at the Fort Ellice – St. Lazare and Horod Moraine – Onanole NCC sites over the next two days. It was 10 PM, and Reid Miller was driving as we witnessed a golden sunset on the horizon.

Spotted these majestic giants —the moose—in the misty morning light while driving to Fort Ellice NCC site at St. Lazare.

On our way to a field site, we witnessed a film crew in St-Lazare. Turns out they were shooting ‘The Long Walk’ by Stephen King! Ironically, thanks to a road closure, we had to take the 'long drive' around town to get to our destination.

We wouldn’t be surprised if we bumped into Justis Henault during our fieldwork—he was literally everywhere! This summer, we have run into him a few times, always with his net in hand—once at Yellow Quill Prairie and twice at Bird Hills Provincial Park.

With nearly 400 known bee species in Manitoba, I hope to contribute to this list by discovering new species. In the future, I will analyze their DNA and conduct a phylogenomic study of bee species in the Canadian prairies. This approach, which considers evolutionary relationships among species, will provide a robust metric for conservation planning. I am looking forward to this new chapter in my research and I hope you will all wish me the best!

Acknowledgment

I would like to express my gratitude to my supervisor, Dr. Jason Gibbs, for his invaluable guidance and support throughout this period. A special thanks to my field assistant, Reid Millar, not only for his insights and assistance with my project, but also for being a great friend along the way. Lastly, I want to thank everyone who has helped me throughout this summer.

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Updates From ESM Members

Norman Criddle Watercolours

Robert Wrigley and Jackie Krindle are working on a book about watercolours by Normal Criddle. For further reading, visit this link: https://www.winnipegfreepress.com/arts-and-life/2024/10/07/prairie-pictures.

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