

The Entomological Society of Manitoba *Newsletter*



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About the ESM Newsletter

The Entomological Society of Manitoba Newsletter is published three times per year. It 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

Fall is always a hectic time of the year. Fieldwork is wrapping up, classes are starting again, AGMs are occurring on a weekly basis. But it is always a good time. It means we get to reconnect with friends and colleagues, share data (and explore new data) and get back into a routine. Being in and around academia for most of my life, September feels like a more appropriate time for New Year's than January does. So I encourage you to take this new academic year as a time to reset, make goals, change habits, volunteer for something new and work towards a better you.

This issue contains some extremely interesting reads from mourning cloak metaphors to leaf mimicking moths. It also contains an exciting read from an author new to the *ESM Newsletter*. And it contains more pictures than ever! Enjoy the read.

I hope to see you all at the upcoming virtual meeting. Happy fall and happy new (academic) year!

Kelsey Jones and Kateryn Rochon

President's Report

By Jeff Marcus

Greetings Fellow Entomologists!

I am writing this report in October, as the weather cools, the leaves change, and the fall rains finally begin to pick up after many consecutive months of drought. The autumn is usually a time of plenty, with bountiful crops, generous harvest suppers, and for many of us, travel to celebrations with family and friends. For me, it often includes the last bits of fieldwork before my organisms go into diapause for the winter. Between the drought and COVID, many of our autumn rituals have been disrupted. Because of distance, international borders, and the fear of bringing contagion to love ones, I'm skipping many of my habitual fall travels again this year. Yet autumn is also our traditional time of Thanksgiving, and in spite of all of these difficulties, I find that I have much to be thankful for.

In my personal life, I am thankful for the roof over my head, for the good company that I keep, and for my household remaining healthy in these difficult times. In my professional life, I am thankful that my research group has been able to adjust and adapt so well to working remotely. 2020 was my lab's most productive year, ever, and 2021 is not too far behind. In fact, I think that some members of my team have actually appreciated the break from their supervisor's endless in-person meddling. Maybe someone should send him a little memo... Finally, by the time you read this, my NSERC Discovery Grant renewal proposal will be submitted to the agency for review and I will be thankful that it is now someone else's problem.

As I near the end of my term as President of ESM, I am extremely thankful for the support and involvement of the other members of the ESM Board. We all bring different talents and experience to the table and as a result ESM is so much stronger than it could ever be if this were a one-man show. I am also very grateful to people who are not on the Board, but who are doing key work for ESM. In particular, I want to thank Jordan Bannerman, who diligently maintains the ESM website (and updates it on request at lightning speed!) and Vincent Hervet, who has boldly volunteered to serve as scientific chair for this year's Annual Meeting. We appreciate the important contributions that you are making on all of our behalf.

If I were asked to provide advice to the future leadership of ESM (I haven't been asked, but I'm going to share the advice anyway) it would consist of three parts. First, pitch a big tent and welcome EVERYONE in to the potluck that is ESM. Second, never take the potluck contributions for granted. People's contributions should all be shared and celebrated publicly, because without them, there is no potluck. Finally, talk is cheap. To maintain your credibility as a leader, it's important to do what you say you're going to do. In the last year, there have been debates throughout the entomology

research community about how to be more welcoming and inclusive to members of underrepresented minority groups. After months of our own extensive Board discussions, in the interest of being welcoming and inclusive, celebrating the contributions of all, and practicing what we preach, ESM has decided to make the first of what will likely be an annual financial contribution to EntoPOC (<https://www.entopoc.org/>), an organization dedicated to diversifying entomology by subsidizing entomology society memberships for People of Colour. This donation by itself won't solve the problems of underrepresentation and inclusion, but it is a start. And as the Chinese philosopher Laozi said, "A journey of a thousand miles begins with a single step." I look forward to walking with all of you as we make progress on this journey together.

Soon, Winter will be upon us, a time when many of us tend to hole up in warm cozy places. But like the mourning cloak butterfly, which famously has the antifreeze glycerol permeating its tissues, Manitobans tend pop out of their dens to enjoy the great outdoors whenever conditions permit, even during the coldest weather. See you out there!



Mourning cloak (*Nymphalis antiopa*) on lantana (Fort Gary Campus, University of Manitoba. 3 September 2012. Photo credit: Jeff Marcus).



**77th Annual Meeting
Entomological Society of Manitoba
December 3-4, 2021**

This year's theme is "*Insects in a Human World*". Location: Virtual on Zoom

Friday, 3 December 2021

Keynote speaker: Gail Anderson, PhD

Forensic entomologist, Endowed Professor, and Associate Director of the School of Criminology at Simon Fraser University, Burnaby, British Columbia.

"Miscarriages of Justice Resolved by Forensic Entomology"

The keynote presentation will be followed by a student symposium.

Saturday, 4 December 2021

Matthias Schöller, PhD

Co-funder and co-director of the stored-product biocontrol company Biologische Beratung GmbH, Berlin, Germany

Martine Balcaen, MSc

Program Director, Trees Winnipeg

Cam Goater, PhD

Professor, Department of Biological Sciences, University of Lethbridge, Alberta

Shelley Hoover, PhD

Research Associate, Department of Biological Sciences, University of Lethbridge, Alberta

Conferences Fees for Registration:

Regular member \$0.00
Student member \$0.00
Out-of-province students \$5.00
Non-members \$45.00*

Meeting Registration:

<https://forms.gle/BP5GpucgWM4vdrNC6>

* If you are interested in becoming a member, visit the ESM website for more information.

Annual dues for the society are \$10 for students and \$25 for regular members. Please be sure that your dues are up to date before the meeting begins.

Registration fees/renewal payments can be made by e-transfer to the Treasurer:
entsocmanitobatreasurer@gmail.com

Intriguing mixed-grass prairie

By Justis Henault (henaultips@gmail.com)

*I (he/him) am a MSc student at the University of Winnipeg researching Lepidopterans-at-risk in Manitoba including the endangered Poweshiek skipperling (*Oarisma poweshiek*), Mottled duskywing and Dakota skipper to support conservation efforts with government and non-for-profit organisations.*

I set out to survey butterflies and moths during the summer in 2021 in sand dune habitats in Manitoba. Initially, the Spirit Sands trail in Spruce Woods Provincial Park came to mind, and I hadn't hiked it since I was very young. However, I wanted to find an area with fewer humans so I reached out to Carol Graham at the Manitoba Habitat Heritage Corporation (MHHC) to ask about non-public properties they steward. After obtaining a map of locations, I searched for areas with bright, scalloped shapes typical of the Spirit Sands area. A location northwest of Ninette, MB contained these features so I drove out to explore!

I arrived to a windy road, bordered by a steep ravine. I could see the "sand dunes" I had identified earlier on the other side of the obstacle, so drove to what I thought was the shortest section. I walked out onto a field with sedges (*Cyperaceae* spp.) and some wet-growing grasses to where the ravine had turned into a much less intimidating creek. I didn't want to take my chances walking across, so found a solid clump of sedges and jumped. On the other side, I looked up to see a grassland in front of me leading to steep hills.



This area had similar graminoids but few blooming flowers so I moved to the base of the hills. A few steps in, I had to crawl to meet the steep angle of the hill. As I travelled I passed by little bluestem (*Schizachyrium scoparium*), prairie dropseed (*Sporobolus heterolepis*), dotted blazingstar (*Liatris punctata*) and purple coneflower (*Echinacea angustifolia*). I soon realised that these slopes were not sand dunes, but rather mixed-grass prairie! I have rarely seen this collection of species in the same place in Manitoba so I excitedly continued. Now near the peak, I saw a butterfly whiz past me. I looked around and saw almost a dozen orange-green skippers fluttering amongst several dozen *L. punctata* inflorescences, intermittently nectaring their purple-

pink flowerheads. The green, red, silver and blue of various maturities of little bluestem and prairie dropseed created a stark contrast with the blooms and butterflies in front of them.

My mind immediately started racing to identify the species of skippers. I knelt close to a *L. punctata* to watch the skippers nectar feed - they didn't even seem to notice me. Skippers with a yellow/green base colour and contrasting hindwing splotches edged by black appeared to be most consistent with *Hesperia comma manitoba* (the blotch



colour of *Hesperia assiniboia* appears to be similar to their base). *Hesperia c. manitoba* typically lives in the boreal forest, so my observations might be the first reports in mixed-grass prairie. A second skipper group I observed had a brown/orange base and white dots, consistent with *Hesperia leonardus pawnee*. Special to meet this species as well!



I'm continuing to refine my identifications, and hope to continue researching next summer. I hiked east across mini-ravines with aspens, to separate hills for another hundred meters. The satellite showed approximately 2.5 km

more of this habitat. I noticed the sun getting low, so decided to leave for home.

I saw typical mixed-grass prairie plants dominating slopes at various elevations, and abundant skippers of at least a couple species. This intriguing habitat is the highest quality mixed-grass prairie that I have seen, and look forward to returning!

Thanks to Dr. Katherine Dearborn for suggesting to reach out to the MHC, Carol Graham for supporting my interest to survey and Kelsey Jones for encouraging me to write this article. Thanks to people who identify as Indigenous who maintained biodiversity in this area, enabling me to explore!

Incredible Creatures: Fall-Flying Leaf Mimicking Moths

By John Gavloski

In late-summer or fall, some moths emerge that may look a bit confusing. With all the dead leaves around that time of year, what better disguise than to look like a dead leaf, which is what several species of moths do. In this month's Incredible Creatures we will explore the lives of two of these moths, with similar sounding names, the maple spanworm and the large maple spanworm.



Large maple spanworm

Fooling Foes in Many Ways

There are many insects extremely good at mimicking leaves. Katydid's often do this extremely well, but as we get into late-summer and fall, some moths are very good at mimicking dead leaves. Two that can be seen in Manitoba that are good at this are the maple spanworm (*Ennomos magnaria*) and the large maple spanworm (*Prochoerodes lineola*). Although the names sound similar, and both are dead-leaf mimics, their appearance is quite different.

The maple spanworm has a few characteristics that help it mimic a dead leaf. The wings are a bright yellow-orange, speckled with dark brown. Aside from the colour, which resembles a yellow leaf, note the unevenly shaped edges to the wings. Also note the posture with which it is holding the wings. They rest with their wings raised about 30 to 45 degrees above horizontal. The combination of traits makes them an effective mimic of a dried, curled leaf.

There's a lot of variation in colour in the large maple spanworm. The forewings can be straw yellow to brown, depending on the individual moth, but the dark line that divides the wings is diagnostic. It also has a sharp angle near the tip of the wings.

Twig mimicking larvae

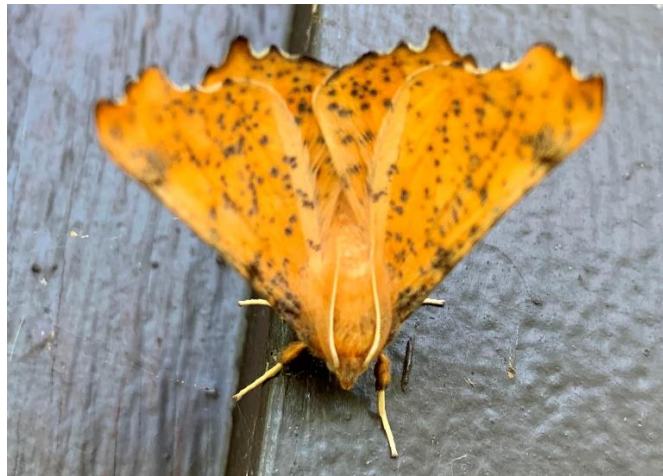
The caterpillars of these moths are masterful mimics as well. Caterpillars of the maple spanworm are a superb twig mimic. The body is green, brown, or gray, dappled

with minute white spotting. They also have markings on their body that look like buds on a branch. The head is flattened and directed forward. Caterpillars of the large maple spanworm are a slender twig mimic, abdomen brown above, yellowish below.

You may think that based on the names the caterpillars of these moths eat mainly maple leaves. But that is not the case. Large maple spanworm caterpillars feed on the leaves of a wide range of plants, including maple, oak, poplar, willow, apple, birch, blueberry, cherry and currant. Host plants of the maple spanworm include maple, oak, poplar, alder and basswood.

Both maple spanworm and large maple spanworm belong to a family of moths known as Geometrid moths (family Geometridae). They are named for the way their caterpillars walk. Geometrid means “earth measurer,” and the caterpillars are often nicknamed “inchworms,” “loopers,” and “spanworms” because of their gait. Butterfly and moth caterpillars have three pair of “true” legs in front, on their thorax (caterpillars are divided into three sections, just like the adults). The abdomen contains prolegs, which look like stubs tipped with hooks (called crochets) for gripping the surface. A full set of prolegs is five pairs, the hindermost being a pair at the tip of the abdomen called anal prolegs. Geometrid caterpillars are missing two or three pairs of prolegs between the true legs and the anal prolegs. This results in Geometrid caterpillars walking by arching to pull the rear end up to the front end, then reaching the front end forward.

If something catches your eye this fall that looks like a dead leaf that’s out of place, such as on the side of a building, have a closer look. It could be one of these maple spanworm moths.



Maple spanworm

Editor’s Note: John Gavloski is an entomologist living in Carman, Manitoba. He writes a monthly article called “Incredible Creatures” for several rural newspapers in Manitoba. They are written at a basic level to introduce people to some of the common yet often not well known creatures in Manitoba, and hopefully enhance appreciation for wildlife. The following article was published in October 2021.

Bitter Harvest By Todd Lawton

In February of this year, I began preparations for the insect collecting season by constructing 24 very large flight interception traps (FITs) from clear plastic and spare lumber. Rather than using trays of preservative to capture and preserve specimens I used lengths of eaves trough fitted into bases with outwardly directed vanes to channel insects into the traps. This saves on the amount of preservative required. My field-testing was very promising but drought conditions meant that flight times for many insects seemed to be shortened. These traps also provided amusement to roaming bears who regularly tipped them over.



My new design for a flight interception trap

Tiger beetles became active early in 2021 due to an unusually warm spring. Near Libau, Manitoba, I collected *Cicindela purpurea* on 20 March and *C. scutellaris*. *C. tranquebarica* and *C. limbalis* during the first week in April. I was able to establish new northern range extensions for *C. formosa* and *C. scutellaris* in the Stead area and for *C. denikei* along the Bloodvein Road north of Manigotagan in eastern Manitoba. A warm fall meant late season activity for many species; I caught *C. repanda* on 17 October, a late record but hardly surprising.

From May until mid October, I maintained 36 lines/groups of pitfall traps for Carabidae in boggy forests, gravel pits, and wetlands with *Typha* associations near St. Claude, Portage la Prairie, Beconia, Libau, Lac du Bonnet, Manigotagan, and south of Grand Rapids. The traps brought in many diverse species. It always fascinates me how superficially similar-appearing habitats can have very different insect communities. I prefer to set a small number of traps, (6-16), at several sites rather than a few larger groups, especially if there are bears in an area. In 2021 I used denatonium benzoate, the most bitter known substance, in my traps and noticed a significant reduction in scavenger disturbance but I also had to get used to a bitter taste on any food I ate with my hands all summer!

In many wet areas I caught common Carabidae such as *Pterostichus melanarius*, *P. luctuosus*, *P. corvinus*, *Chlaenius alternatus*, *C. sericeus*, *C. pennsylvanicus*, *Brachinus* and *Carabus maeander*. Some areas also yielded *P. commutabilis*, *P. patruelis*, *P. novus*, *Lachnocrepis parallela*, (a species that superficially resembles an *Amara*, with gold setae on its tarsi), *Blethisa multipunctata*, *B. quadricollis*, *Chlaenius*

niger, *Oxypselaphus pusillus* and others. In late summer, *Patrobus* began to appear in my traps, medium-sized, large-eyed ground beetles. In my more northern sites I was able to catch four of the five species that occur in the province.

My FITs in the Libau area captured several fascinating Melandryidae, False Darkling Beetles, *Melandrya striata*, *Dircaea liturata* and *Serropalpus*, as well as *Penthe pimelia*, a Polypore Fungus beetle, Tetratomidae, which superficially resembles a Darkling Beetle, Tenebrionidae. Pitfalls in the same location captured a lovely series of *Ditylus caeruleus*, Oedemeridae, a large False Blister Beetle species. Pitfalls at Beaconsia brought in three *Anisodactylus* species, Carabidae, as well as many *Loricera pilicornis*, a ground beetle species that has always fascinated me. They have long setae on their antennae that are used to capture collembolan prey! I also captured a nice series of *Thanatophilus sagax*, a cold-adapted, carrion beetle, Silphidae.

Sugar fermentation traps set in Winnipeg and the Libau/Lac du Bonnet areas were quite successful, as they often are during dry summers. I caught good numbers of *Stictoleptura canadensis*, *Astyleiopus variegatus*, *Typocerus velutinus* and other common Cerambycidae species as well as many *Osmoderma subplanata*, an extremely large Cetoniinae. I'm told this species, and others in the genus, are in high demand in the insect trade; I find this confusing, they may be large, but they are not particularly interesting. I also acquired a few specimens of *Purpuricenus humeralis*, Cerambycidae, a very beautiful orange and black longhorned beetle and a small series of *Parelaphidion aspersum*, Cerambycidae, which seem to be a new record for Manitoba. I was surprised that I captured very few *Stenocorus schaumii*, Cerambycidae, this year and wonder if this is related to the loss of ash trees to the Emerald Ash Borer.



Four large piles of logs were discovered near Lac du Bonnet

I discovered four huge stacks of recently cut logs near clear cuts in the Lac du Bonnet area. I was able to hand-collect many species of Cerambycidae, Buprestidae and Cleridae and spent several afternoons walking between log piles to observe what was flying in. Buprestidae species were abundant on the pine, spruce and fir logs: *Dicerca tenebrosa*, *D. lugubris*, *Chalcophora virginiana*, *Buprestis maculiventris* and *B. consularis* and various *Phaenops* and *Chrysobothris*. Hundreds of Cerambycidae were

attracted as well: *Monochamus scutellatus*, *M. notatus* and *M. maculosus*, *Pygoleptura nigrella*, *Astylopsis sexguttata*, *Acmaeops proteus*, *Xylotrechus sagittatus*, *X. undulatus* and many others. It was unfortunate to see so many insects laying their eggs on logs that would soon go to lumber mills. Flowering dogwood near the log piles

attracted colourful species of Cerambycidae, such as *Judolia montivagans* and *Evodinus monticola* and the scarab *Trichiotinus assimilis*. A FIT set behind one of the log piles was especially productive and added *Arhopalus foveicollis*, a large brown Cerambycidae, as well as scarabs *Dichelonyx kirbyi*, *Phyllophaga drakii*, three species of *Serica* and *Geotrupes semiopacus*.



A *Chalcophora virginiensis* on a pine log

I was also able to collect several Cerambycidae species with a beating sheet by tapping the girdled branches of young pines dead or dying during the drought. Most of these were small species, (roughly 5-10 mm), but because many of them were new to me, I found them particularly interesting. Small, mottled gray *Pogonocherus penicillatus* and *P. mixtus* were collected from dying jack pine as well as small numbers of the lovely red *Eupogonius tementosus* and dozens of grey-patterned *Acanthocinus pusillus*. In the Libau area *Pogonocherus parvulus*, *P. pictus*, *Hyperplatys aspersa*, and *H. maculata* were found on a wind-killed aspen.

A blacklight set near the Lac du Bonnet log piles brought in more interesting material including *Tragosoma harrisii*, Manitoba's only prionid longhorn. It resembles a cockroach with its distinctive shape and rapid movements. Turpentine traps brought in, big surprise, *Dendroctonus valens*, Scolytinae, the Red Turpentine Beetle. I had hoped to catch *Sachalinobia rugipennis*, Cerambycidae, an uncommon longhorn beetle known to be attracted to turpentine, perhaps next year! I also captured a nice specimen of *Alaus myops*, a large click beetle, which deters predators with eye-like spots on its pronotum (didn't work on me).

In previous years, I found that *Scaphinotus elevatus*, Carabidae, limited its activity during hot and dry conditions but they were unusually common during the summer of 2021. This species has suffered severe reductions in numbers in most of the eastern United States; it is a large dull green to brilliant purple beetle with a distinctive flared pronotum. New captures in Manitoba extended the range much farther north to South Twin Creek and near Bissett. They were surprisingly common in the north, often making up the majority of the pitfall captures during August! At present, *S. elevatus* is only known from Manitoba in Canada but I suspect it will also be discovered in eastern Saskatchewan and northwestern Ontario. I also captured five *S. bilobus*, a beautiful brilliant purple species, that I had not seen in the province since 2018. I don't believe they are rare but they are seldom captured in pitfall traps. I also caught two other species of Cychrini, Carabidae: *Sphaeroderus stenostomus* in southern locations and *S.*

nitidicollis farther north. I found both species co-occurring near Lac du Bonnet; in the past, I captured both at Victoria Beach.

I captured the adventive Carabidae species *Carabus granulatus* in a number of locations in southern Manitoba: Portage la Prairie, Pinawa, Beaconsia and Culross. In recent years my trapping efforts seem to indicate that it is becoming dominant in the Oak Hammock Marsh area, displacing the native species *C. maeander*. *C. maeander* is still found in many locations; this year I captured them at St. Claude, Libau, Lac du Bonnet and across the north (where they are generally less common but often more colourful, greenish or coppery rather than dull brown).

One afternoon, while sorting a pitfall catch from Lac du Bonnet, I had a surprise. I had captured a very large teneral specimen of *Nicrophorus orbicollis*, a carrion beetle; the pronotum was uncharacteristically orange, and for a moment I thought I had caught a *N. americanus*, an endangered American insect that has never been recorded in Manitoba! When I realized my error I was very disappointed but also relieved that I had not killed an extremely rare insect.

Of course this is just a small sampling of the species that I captured this year. I also have many specimens of *Amara*, *Harpalus* and *Agonum*, Carabidae, which will require more effort, and sometimes genitalia dissection, to determine species. This project will keep me occupied during cold February evenings!

Over 2000 of the beetles I captured this year were mounted for donation to three museums including the Wallis/Roughley Museum at the University of Manitoba. Many other specimens were retained for my personal collection or sent to trade partners in the United States and Europe.



A warm fall meant a few extra days in the field

Todd Lawton is an amateur insect collector who lives in Winnipeg.

For Stag Beetles, Size Matters By Robert E. Wrigley (photos by the author)

On a warm afternoon in June 2021, I strolled over to my gazebo to take a break from gardening when I spotted what looked like a black carabid sitting on a white tile. Since carabids are common in the garden, I did not think much about it until I took a closer look and saw it had elbowed antennae – a stag beetle. “Wow, where did that come from?” was my immediate thought. Under my stereoscope minutes later, I identified the specimen as an Aspen Stag Beetle (*Platycerus depressus*). Many of the 14 species of stag beetles represented in Canada are rarely collected, but they may turn up unexpectedly, as the following instances demonstrate for the Aspen Stag Beetle.

As a member of the Scientific Advisory Committee of the Nature Conservancy of Canada (Manitoba Region), I was on a property survey with colleagues when I caught sight of an insect flying past me in an aspen-oak forest south of Oak Lake. I turned and gave chase for over 10 metres and succeeded in capturing a specimen in mid-air with my net. I found another sitting on a grass stem at the edge of riparian forest at La Barriere Park, south Winnipeg. While I was conducting a course on insects at Fort Whyte Alive (south Winnipeg), a gentleman taking the course, and using a child’s sweep net, surprised me by bringing over a specimen; talk about ‘beginner’s luck.’ On a collecting trip in the Portage Sandhills, south of Portage la Prairie, my friend Tim Arendse and I spotted a dead beetle lying on the sandy trail in the shade of an aspen-oak forest. I scooped out another live beetle floating in my granddaughter’s swimming pool close to downtown Winnipeg. Lastly, I collected another Aspen Stag Beetle at an aspen-oak forest edge at Fort Ellice, near St. Lazare and the Saskatchewan border.



Figure 1. 14-mm Aspen Stag Beetle (*Platycerus depressus*).

Over the years I have also collected three other small species of lucanids – the Oak Stag Beetle (*Platycerus quercus*) from Georgia, and *Platyceroides latus* and the Rugose Stag Beetle (*Sinodendron rugosum*) from Oregon, plus four other, much-larger species (up to 60 mm), in the genus *Lucanus* – the Giant Stag Beetle (*L. elaphus*), the Reddish Brown Stag Beetle (*L. capreolus*), and the Placid Stag Beetle (*L. placidus*) of eastern North America, and the Cottonwood Stag Beetle (*L. mazama*) of the American Southwest. Observing one of these large stag beetles resting on a wall at night, or flying onto a night-lighting sheet, is always a thrill. I have in my collection two species of *Dorcus* stag beetles (*Dorcus parallelus* and *D. brevis*), which are native to the

eastern half of North America, the sole Nearctic representatives of this large genus (70 species) found worldwide.

Stag beetles are an amazing family of beetles (Lucanidae) showing pronounced sexual dimorphism in numerous species, and named after the large set of mandibles present in the males of many species. Carolus Linnaeus (1758) named the large European *Lucanus cervus* based on Pliny the Elder's note that Nigidius named the stag beetle *lucani*, after the region in Italy called Lucania (where the dried beetle was used as an amulet). Found on all continents (except Antarctica), the center of species richness is Southeast Asia. The oldest-known fossil is *Juraesalus atavus*, discovered in Inner Mongolia deposits of Late-Middle Jurassic age (165-156 mya) (Nikolajev et al. 2011). Specimens in my collection range from an 8-mm *Andiolucanus inesae* from Peru to a 95-mm Giraffe Beetle (*Prosopocoilus girafa*) from Indonesia; the subspecies *P. g. keisukei* may reach an astonishing 120 mm, the largest stag beetle in the world. There are about 1700 species of lucanids, only three of which are native to Manitoba – *Platycerus depressus*, *Platycerus marginalis*, and *Ceruchus piceus*. In North America north of Mexico there are 8 genera and 24 species (Ratcliffe and Paulsen 2008).



Figure 2. Eurasian *Lucanus cervus* (maximum size of male 90 mm) and its eastern North American counterpart *Lucanus elaphus* (maximum 60 mm).



Figure 3. 95-mm *Prosopocoilus girafa* from Indonesia

Lucanid larvae are saproxylic, feeding for one or more years (depending on the species) on rotting deciduous tree wood riddled with fungi. Enzymatic action of the fungal mycelia break down the cellulose and lignin of the wood, helping to make the nutritious mixture digestible for the larvae (Boislard 2019). Female stag beetles also have a mycangium (an invaginated pouch on the dorsal side of the abdomen), which conveys yeast symbionts to their eggs, essential for the developing larvae to digest decaying-wood nutrients such as cellulose, hemicellulose and lignin (Tanahashi et al. 2010). A rich food source leads a larval male to develop a large body size and greatly enlarged mandibles in the adult stage (known as a major male), while a larva on a less-nutritious diet develops into a small male with shortened mandibles (a minor male). In discussing the composition and distribution of lucanids in the Maritime Provinces, Majka (2008) stated; "Their particular association with hardwoods is noted as a potentially useful indicator in relation to the health and biodiversity of deciduous forests that have historically been affected by forest management practices and disease."



Figure 4. The 70-mm Rainbow Stag Beetle (*Phalacrognathus muelleri*), of Queensland and New Guinea, is one of the most-spectacular beetles in the world, with a dazzling array of colours. Choice specimens are raised by breeders in Southeast Asia for the commercial trade (both live and dead specimens).

Due to the size, interesting shape, and impressive mandibular weaponry of many species, the family is popular with beetle enthusiasts and collectors. Numerous species of lucanids are now being raised and bred in bottles in captivity, held in temperature-controlled rooms (some with refrigerators), and fed on a high-protein, oak and beech wood-fungus mixture (termed *Kinshi*) or jelly with the aim of rapidly generating large-sized specimens to meet the demands of collectors for extra-fine specimens. However, this probably does little to dampen the commercial collecting pressure on wild populations. The large and lucrative market in Japan alone involves more than 15 million specimens annually of 700 species of lucanids from around the world, with prized specimens fetching prices as high as \$5,000 USD (Tournant et al. 2012). Certain species are also keenly sought-after as pets in Asia, where they may be purchased live at insect shops and even from supermarkets and vending machines. Adults generally live from six to twelve months. *Lucanus cervus* populations have been declining for over half a century in Europe, due mainly to loss of deciduous old-growth forests (Eggs are laid in rotting stumps and logs in the soil); consequently, it is now rated as Threatened and listed under protective regulations in a number of countries.

Male stag beetles have been observed fighting with their large, toothed mandibles for dominance over food sites and in the presence of a female (not unlike members of the deer family). However, a larger, stronger male may not always be the successful candidate in mating, as larger males are sometimes unable to breed with the much-smaller females (Harvey and Gange 2006).

I had three of my favourite species of stag beetles cast in bronze (lost-wax method) by my friend and sculptor George Foster of Quebec – a 20-cm *Mesotopus tarandus*, 24-cm *Cyclommatus metallifer*, and 18-cm *Dorcus titanus*. *M. tarandus* is a 90-mm native of west-central Africa, which is so shiny black that it looks like it has been dipped in lacquer. *C. metallifer* is a 90-mm native of Borneo, with enormously long mandibles, which the males use in contests over females and feeding sites. *D. titanus* may be up to 110 mm (usually around 70 mm) and is widely distributed in Southeast Asia. The heads of these beetles are greatly enlarged (up to 28% of total body weight) to accommodate the hypertrophied musculature necessary to operate the males' robust mandibles. Air sacs in the head reduce the specific gravity of the beetle, and enhance ventilation and cooling of the tracheal system (Crowson 1981). Remarkably, the males of these large beetles are still able to fly in search of females (walking is awkward), in

spite of the extra weight of their massive weaponry, requiring 26% additional mechanical work (Goyans et al. 2015).



Figure 7. *Mesotopus tarandus*



Figure 6. *Dorcus titanus*



Figure 5. *Cyclommatus tarandus*



Figure 8. Bronze models of *Mesotopus tarandus*, *Dorcus titanus*, and *Cyclommatus tarandus*

When friends ask me to show them some of my beetle collection (of over 10,000 species) they are always astonished when I bring out a couple of trays of stag beetles. These insects are true marvels of nature, which have captured the admiration and research interests of countless insect enthusiasts and biologists, including such famed individuals as Charles Darwin and Alfred Russel Wallace. I have accumulated 372

species and subspecies of stag beetles in my personal collection, which will someday be donated to a Canadian entomological museum. While I no longer acquire exotic species for my collection, discovering any of the North American species during my annual field trips always provides a great thrill.

Two special instances come to mind. Collecting late at night in the town of St. Joseph, Kansas, I spotted my first stag beetle – a male *Lucanus capreolus* – perched high on the wall above the entrance to the City Hall building. Fortunately, with no one around to observe my bizarre behaviour, I was able to climb up the side of the concrete stairwell, and by leaning precariously and stretching out one arm, I was just barely able to reach the beetle. I was so relieved that it gave me time to approach and grab it before it flew off into the night. My excitement was indescribable. In the second instance, I was collecting a few specimens of the beautiful Pacific Coast Tiger Beetle (*Cicindela bellissima*) on the wet edges of ponds among the dunes at Pistol River Beach, Oregon, trying to keep my balance against powerful wind gusts, when I decided to check under a beached log. There sat five live Rugose Stag Beetles (*Sinodendron rugosum*), taking refuge from the wind. They must have been carried (while flying) and tumbled here by the wind from their usual habitat of wet forest over a kilometre away. One remembers such thrilling incidents, though they happened decades ago.



Figure 9. Male and female Darwin's Beetle, *Chiasognathus granti*, native to Argentina and Chile. A male may attain a length of 90 mm, while a typical female is only 30 mm. The long mandibles are used to lever an opponent off a branch, and then drop it to the ground.



Figure 10. While most stag beetles are black, certain species have interesting colours and patterns. 75-mm male *Allotopus rosenbergi* from West Java, Indonesia, and *Homoderus mellyi* from the Central African Republic.

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Extension Entomology Update: Some new Insects Found in Manitoba in 2021 By John Gavloski, Entomologist, Manitoba Agriculture and Resource Development

A couple of new crop feeding insects were found in Manitoba in 2021. In both instances they had been established in other areas of Canada, but were new to Manitoba.

Western corn rootworm (*Diabrotica virgifera virgifera*)

In much of the U.S. corn belt, and some Canadian provinces, both northern and western corn rootworm have been among the most serious insect concerns in corn for a long time. But until recently corn rootworm were not insects corn growers in Manitoba had to contend with. In 2015, the first established populations of corn rootworm in Manitoba were found. The species collected at the time were all



northern corn rootworm (*Diabrotica barberi*). Prior to this there had been specimens of northern corn rootworm collected, but they were thought to be late-season migrants. Since 2015, northern corn rootworm could commonly be found in corn fields where corn had been grown for multiple consecutive years. In surveys that were done it was just northern corn rootworm we were finding though; western corn rootworm had still never been found in Manitoba. This past September, an agronomist requested assistance in verifying the cause of corn that was lodging and difficult to harvest in some fields near Souris. The first field observed had extensive damage from corn rootworm. Lodged plants had reduced root systems, consistent with what corn rootworm would do. Adult corn rootworm were easy to collect, but they were once again all northern corn rootworm. The second corn field we went to, also near Souris, also had lodged corn, and corn rootworm were once again easy to collect. But this time it was a mixed population of western and northern corn rootworm. Western corn rootworm actually seemed to be more abundant than northern corn rootworm in this field. Many western corn rootworm adults were collected, and some sent to Agriculture and Agri-Food Canada in Ottawa for the Canadian National Collection. An individual western corn rootworm was also found this summer on a sticky trap we had placed in a corn field near Miami. With established populations of both species of corn rootworms now occurring in Manitoba, extension needs to focus on how corn being grown for multiple years consecutively in the same field is the root cause of this problem.

Cannabis aphid (*Phorodon cannabis*)

This past September, assistance was requested identifying insects that had established on cannabis, being grown (legally) in a greenhouse in Eastern Manitoba. Very strict protocols were in place for entering the facility, including wearing a suite that covered the whole body, with the exception of the hands, right from feet to neck. After signing in we went into the greenhouse and it was not hard to find clusters of aphids on the plants, particularly high up on the plants. The staff was aware that they had aphids, but were a bit confused and wondering if there were other insect issues as well, as the colour varied. They were also unsure of the white debris mixed in, which is the shed skins of the aphids. Samples were once again collected, and sent to AAFC in Ottawa. The aphids were all cannabis aphid. They have been found previously in Quebec, Ontario and British Columbia, but this was the first time they had been found in Manitoba. Eggs of cannabis aphid and aphid mummies were also among the material collected. They had already started a biological control program for the aphids, and there was some signs that it was starting to work. Now that we know what we are dealing with, the next step is to build an enhanced biological control program as the main method of managing the aphids.



Fieldwork Photos

I personally believe that fieldwork is the best time of year for entomologists. The insects are moving, the sun is shining and we are fueling our bodies with questionable food from roadside truck stops. It also (sometimes) means we get to explore new places, see new things and be out in nature. With the pandemic, some of our fieldwork has slowed down and even if it hasn't, we don't get to connect as much to share funny fieldwork fails (Like trying to cover up the smell of rotting milk, from old tea, in the van with a coconut air freshener, so now the van smells like a bad night in Mexico!). This section is a collection of photos that members of the Entomological Society of Manitoba have shared from their fieldwork adventures. Enjoy! – Kelsey Jones



Ticks work their way up my pant leg, May 2020, Libau, Manitoba, (note their social distancing) – Todd Lawton



Laura Burns (Assiniboine Park Zoo) releasing a Poweshiek skipperling at Nature Conservancy of Canada's Tall Grass Prairie Preserve



Perils of hunting for cactus bees – Jason Gibbs



A Manitoba storm approaching from the distance – Kelsey Jones



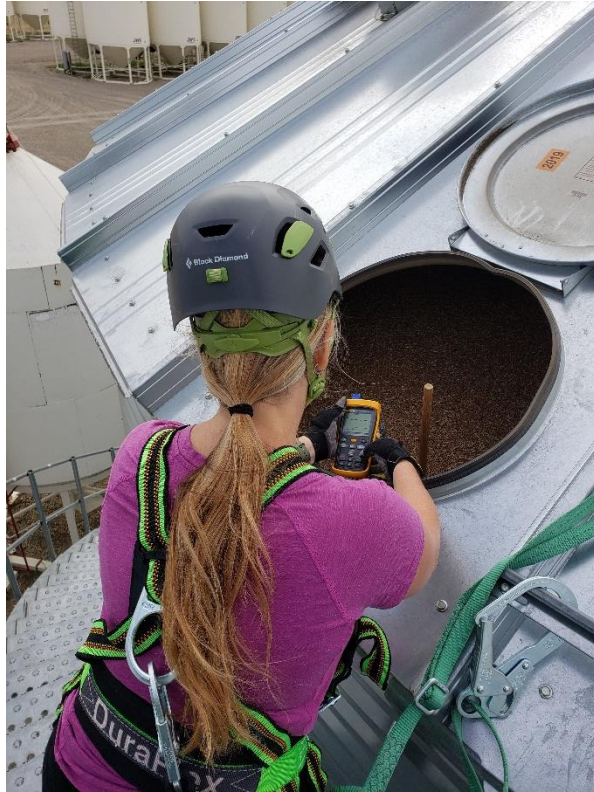
What made these tracks? (trail is 20mm wide) Meloe, Libau, Manitoba, September, 2021 – Todd Lawton (Answer is at the end of this section)



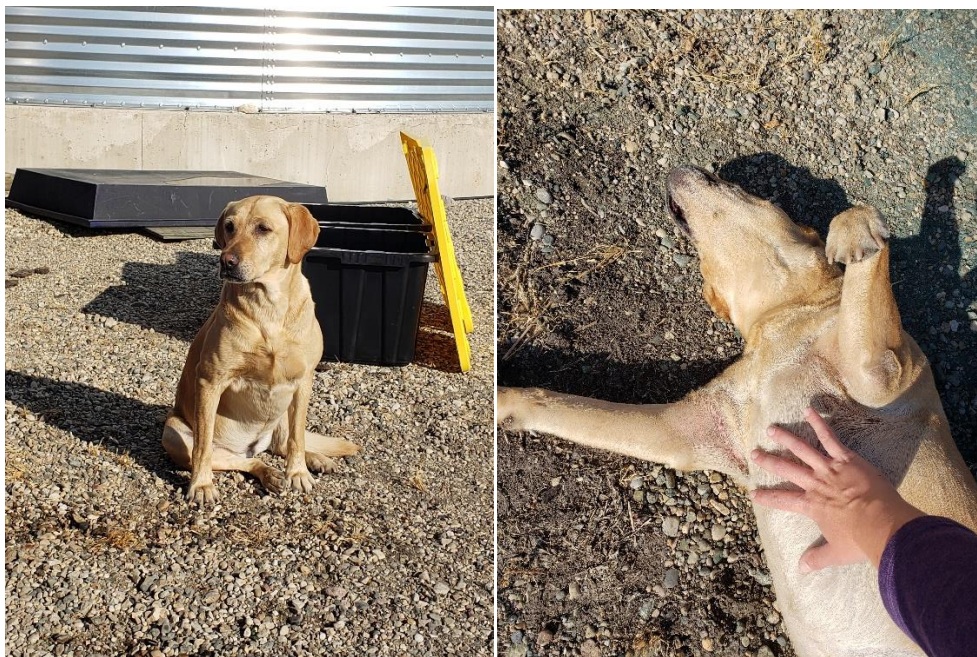
Eating lunch on the bank of the Cypress River – Jason Gibbs



Fieldwork is never complete without a minor vehicle issue! – Courtney Freeth



Safety first! – Kelsey Jones



Still trying to convince Paul to get us a lab dog – Kim Hamilton



A released Poweshiek skipperling at the Tall Grass Prairie Preserve. You can see the mark on the hindwing indicating it was released by the Zoo team – Laura Burns

Answer: The tracks were made by a large blister beetle!

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