



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.

Kelsey Jones, Editor¹
Kateryn Rochon Co-Editor²

¹Stored Product Entomology
Agriculture and Agrifood Canada
Winnipeg, Manitoba
R3T 2N2

²Dept. of Entomology
University of Manitoba
Winnipeg, Manitoba
R3T 2N2

¹Ph. 204-599-3921
kelsey.jones@canada.ca

²Ph. 204-474-8640
kateryn.rochon@umanitoba.ca

Editors' Comment

Happy National Insect Appreciation Day!

Although we need to celebrate NAIAD in isolation this year, we encourage you all to take the time to celebrate these wonderful creatures in your own way, whether that be through collecting, pinning, reading, or photographing insects!

If anyone from the Entomological Society of Manitoba chooses to enter the Insect Photo Challenge hosted online by the Entomological Society of Canada, please let us know. We would love to feature your work in the next issue of the newsletter.

This issue is jam-packed with great content we have received from ESM members! We encourage anyone who is interested in sharing their work or stories to reach out to the newsletter editors.

President's Report	2-3
From the Regional Director.....	4
NAIAD Announcement from ESC.....	5
Exploring Gravel Pits of Manitoba	6-9
Extension Entomology Update	10-11
Entomological Adventure in Germany.....	13-22
Incredible Creatures	23-24
A Day Along the Pembina River.....	25-27
Committee Contact Information	28

Happy reading,
Kelsey Jones & Kateryn Rochon
ESM Newsletter Editors

President's Report By Jeff Marcus

Greetings Fellow Entomologists!

As I write this in an unusually warm and dry mid-May 2021, the sight, smells, and sounds of spring float into my home office through my open window. My first butterfly sighting of 2021 was on March 8, when I spotted 3 Compton's tortoiseshells (*Nymphalis l-album*) flying around my River Heights neighbourhood. In spite of my generally insect-focused observations of the natural world, the blooming of the many-decades-old nanking cherry bushes (*Prunus tomentosa*) in my yard has become my marker for the start of consistent warm weather in Winnipeg. This year, that began on May 11 for the cherries around my house. The Pembina plum tree (*Prunus salicina X nigra*) which I purchased to be cross-pollinated by the nanking cherries didn't start to bloom until May 18. In 2020, this plum tree produced exactly one fruit, which fell of the tree during a storm several weeks before it was ripe. Hopefully in 2021, the late cherry blossoms will be sufficient to pollinate the early plum blossoms this year and the tree will outperform last year's...let's call it...“underwhelming”...performance.



**Juvenal's skipper (*Erynnis juvenalis*) on cherry blossoms (Mammoth Cave National Park, Kentucky, USA. 28 April 2007.)
Photo credit: Jeff Marcus.**

The feeling of excitement and renewal that comes with spring phenology actually makes for an interesting metaphor for how the Entomological Society of Manitoba functions. ESM, like many other volunteer organizations, relies on a small number of committed individuals to run its operations and provide programming to both to its membership and to the Manitoban public. Some of those individuals are like the tortoiseshells, young entomologists who are stretching their wings for the first time, sharing their energy, enthusiasm, and delight for the discipline; making it new again for those of us who have been around for a while. Other volunteers are like my Pembina plum tree. They've been around the block a few times and have much to contribute if given the proper opportunities and resources. And finally, there are the nanking cherries, people who have been consistent contributors to our organization for many years or even decades, not only flourishing as individuals, but also giving a hand to foster the success of others. We owe much to all of these volunteers. In this report, I would like to shine a light on the good work of just a few of them so that we can begin to thank them appropriately

Nanking cherry: I would like to share my deep appreciation for two long-term contributors to the operations of ESM. First is Kathy Cano, our long-serving Treasurer, who shoulders some the least glamorous, but most essential work of the ESM. By keeping track of our books and our reporting responsibilities, Kathy's work permits the ESM to continue to be recognized by the Canada Revenue Agency as a registered non-profit organization, allowing us to use our funds to create programming and recognize the excellent work our students are doing through awards and scholarships. Her contributions may be largely invisible to most of our membership, but that's because she does it so well and with so little fuss. Thank you Kathy for everything that you do!

The second person I would like to recognize is perhaps the king of the nanking cherries as far as ESM is concerned. Terry Galloway, in addition to playing an active and important role in ESM activities and governance, served as the Editor of the Proceedings of the Entomological Society of Manitoba for 19 years. Under his leadership, the Proceedings became a fully peer-reviewed journal and maintained a consistent publication schedule. Terry recently announced his intention to step down from his role as Editor in his retirement. To thank him for decades of service and recognize his many important contributions, a student-led group of ESM members nominated Terry to become an Honorary Member of the ESM, a position that the board was very pleased to ratify unanimously. Please join me in congratulating Terry as our newest ESM Honorary Member!

Pembina plum: For the last 5 years, Sarah Semmler has served as the Secretary of ESM. Sarah has kept careful records of our discussions and has made sure that the board (and it's President!) keeps to a regular schedule of meetings. During her years of service, she has been an important part of the glue that provided continuity from year to year as the membership of the board has changed after each election. After doing so much in just a few years, Sarah recently announced that she will not be standing for re-election, but that she is already training her own replacement. Thank you Sarah, as always, you're a class act!

Compton's tortoiseshell: Among the more recent entomologists to join ESM is Kelsey Jones, who for the last year and more has been doing a fantastic job serving as Editor of the ESM Newsletter (what you're reading now). In the last couple of months, Kelsey has also agreed to take over Terry's role as Editor of the Proceedings, and is now in training on how to manage the peer review process. Thank you Kelsey for contributing your considerable talents to maintaining and enhancing these important publications! We are all richer for your efforts.

Finally, if you've been generous to ESM with your time and energy, but I haven't mentioned you in this report, rest assured that I (and the rest of the ESM board) still really (really!) appreciate you. We'll do our best to recognize your contributions in future installments of the Newsletter. Watch this space! And for those of you who are not yet active ESM volunteers, we want to help you pursue your entomological passions and develop initiatives that will benefit and interest you and our members. In fact, we don't just want you, we need you, because you are the reason why ESM has been here for the last 76 years. With your help, the next 76 years will be just as exciting!

So, to conclude this report, I will wish all of the entomologists out there a good summer and a productive field season. Be safe out there! And to all the insects reading this report (excepting pests, of course!), I will provide a couple of inspirational quotes from various sources: "Go forth and multiply!" and "Live long and prosper!"

From the Regional Director
By Jason Gibbs, Regional Director to the ESC

Due to the continued disturbance of the pandemic, the planning committee for the Joint Annual Meeting of the Entomological Societies of Canada and Ontario will be held virtually from 15–18 November 2021. There will be no in-person component at Niagara Falls as originally planned.

The Canadian Entomologist will be moving entirely to an online-only (E-journal) format with Cambridge University Press for volume 154 in 2022. The Canadian Entomologist will also be implement some page limits to avoid submission of exceedingly long manuscripts.

The Canadian Journal of Arthropod Identification will be moving to a new web platform under the direction of a new technical editor, Spencer Monckton. Due to high demand the CJAI's current platform had proven insufficient. Furthermore, it was being supported in part by the ESC. The new platform will accept donations to help pay for costs.

An analysis of the ESC's contribution to EntoPOC (Entomologists of Colo[u]r) revealed that 16 student members joined the Society through EntoPOC and 12 returned as paying members the following year. This suggests that this contribution paid dividends in recruiting and retaining BIPOC members to the ESC. The ESC plans to continue to support EntoPOC.

NATIONAL
insect
APPRECIATION **day**
June 8th



On June 8th, we invite you to celebrate National Insect Appreciation Day (NAIAD) with thousands of insect enthusiasts, amateurs, and professionals all across Canada. For a second year, because of the COVID-19 pandemic, the celebrations will take place online. Hence, it will still be possible to participate in the "insect picture challenge" on social media. We hope that this challenge will prompt the public to develop their curiosity towards insects and raise awareness about the presence of insects all around us.

In order to participate in the challenge, a person will have to post a least one picture of an insect during the National Insect Appreciation Day on June 8th. When posting the photo, the participant should include associated hashtags and nominate five friends by inviting them to also post an insect picture.

Hashtags :

#InsectPictureChallenge
#NationalInsectDay



How a hashtag works :

A hashtag makes it possible for other users to easily find messages and post with a specific theme or content. Simply use the hashtag on social media (Facebook, Instagram or Twitter) and make sure that your photograph is public.

Sponsored by the Entomological Society of Canada (<https://esc-sec.ca/>)

Exploring the Abandoned Gravel Pits of Northern Manitoba By Todd Lawton



Camp in a gravel pit near Gillam, Manitoba.

From 2005 to 2008 I made several road trips into northern Manitoba to collect insects. Tiger Beetles, *Cicindela*, *Cicindelidia* and *Parvindela*, *Carabidae*, were commonly encountered in areas where there was human disturbance, on little-used dirt roads and in naturalized sand/gravel pits. I was surprised to discover how inaccurate the range maps in North American field Guides were for Manitoban tiger beetles; I was establishing range extensions on virtually every trip north!

A growing interest in *Scaphinotus*, *Carabidae*, prompted me to change my focus and collect in the mountains of the southeastern United States, and Arkansas, for several years but I longed to get back to northern Manitoba to finish my surveys. In 2014, I applied for the Bert and John Carr Award from the Canadian Entomological Society. This award recognizes amateur research and includes a \$500 cash prize. My plan, if successful, was to use the money for gas expenses for another northern trip. I hoped to spend three weeks, in June 2015, revisiting areas from past trips and expanding my study area, especially into the NW corner of the province. Months later, I was so engrossed in my summer collecting that I had forgotten that I had applied; I was surprised when I was notified I had won! It was wonderful to get some recognition for my work. I also had the privilege of knowing the Carrs during the 1980's so this gave the award a greater personal significance.

I was eager to get started on my first day of vacation but the weather was less than ideal in the north. Conditions were clear in western Manitoba so I decided to set pit fall traps for *Carabus maeander* near Oak Lake (at a site where in 2006 I discovered the most western location for the endangered Small White Lady Slipper, *Cypripedium candidum*). I also wanted to visit the Lauder Sand Hills.

Climate change and fire suppression has caused vegetative encroachment of sand habitats across western North America so I used aerial photographs to identify areas of potential tiger beetle habitat near Lauder. There's a large sand pit on the banks of the Souris River near Hwy 254; I began my search for tiger beetles there. A partially excavated sand hill had moderate numbers of *Cicindela formosa generosa*. Where the sand pit merged with the sandy banks of the Souris River there were many tracks and scratches on the sand. I wondered if this was otter activity; I had seen what looked like scat with crayfish remains on the beach. I decided to extend my search, and while hiking up the side of the sand pit, I almost walked into a large snapping turtle. She was laying eggs, balancing over a pit she had dug in the sand. I walked a short stretch of sandy beach and spotted five other turtles on the bank. I re-examined the "crayfish" remains on the beach; they were turtle eggshells!

I investigated a couple small sand blows on Hwy 541 before heading north. I spent the night in Riding Mountain National Park. The following morning I drove north on Hwy 10 and noticed a small amount of sand in the ditch near Ashville, MB. It didn't look promising but I turned the car around to investigate. I found a large number of *C. formosa* larval burrows and flushed several adults. The habitat was largely grown-in but still supported a robust population of *C. formosa*; this was exciting as it

represented a significant range extension! In 2019, I also collected a few *C. scutellaris* at this site, another new northern record.

Continuing north, I revisited sites I had surveyed in 2008. Again, much of the habitat was getting encroached by vegetation; I found only one *C. lengi* at a site near Barrows that had previously hosted a large population; this was a northern range extension. I checked a large pile of cut timber near Baden; on the logs still facing the dwindling sun I found several *Dicerca tenebrosa*, *Buprestidae*. I revisited this site several times during my trip, capturing more *D. tenebriosis* and a number of *Cerambycidae* species. In 2019, I revisited the Barrows site and found that *C. lengi* had taken advantage of recent roadside disturbances (exposed sand) and re-populated!

I awoke the following morning to dark, hazy skies; smoke from fires in northern Saskatchewan blanketed the area. I sifted leaf debris and collected small beetles hoping for an improvement in conditions. Finally some sun appeared and I looked for clay habitat near Powell; in 2007 I caught an unusually heavily marked *C. limbalis* and wondered if it represented a local variant population. I was unsuccessful in finding more but captured good numbers of *C. longilabris*.

Weather conditions looked dreary across Manitoba so I decided to collect in northern Saskatchewan. In 1987 I found good numbers of *C. limbata hyperborea* and *C. limbata nympha* x *C. l. hyperborea*; their distribution is poorly understood. Heavy rains made the dirt roads treacherous. I had to maintain a good speed to avoid sinking into the mud and my small car was wildly tossed between ruts. I stopped where a taxi had skidded into the ditch; the occupants had made a quick escape, leaving the headlights on.

Favourable weather allowed me to spend a few days searching for *C. limbata* north and south of La Ronge and on the Key Lake Mine Road. Many of the areas where I had collected them in 1987 were now vegetated but I was successful in finding small new populations. I also collected good samples of *C. longilabris* and *C. tranquebarica*. I left the area just before local fires forced an evacuation of La Ronge.

Weather conditions remained poor in Manitoba so I set pitfall traps for *Carabus chamissonis* south of Grand Rapids and then retreated to Winnipeg for more supplies.

Fortunately I didn't have to wait long for better weather. I traveled north on Hwy 6 and collected on hydro roads north of Grand Rapids. I set more traps for *Carabus chamissonis* before surveying sand habitat north of the Minago River; *C. repanda*, *C. duodecimguttata*, *C. tranquebarica* and *C. longilabris* are common in this area. In 2007 I also found five *C. hirticollis* in a sandy ditch establishing a new northern record. I couldn't find any additional specimens in 2015 but they probably still occur in the area or along the Minago or Hargrave Rivers; these areas are difficult to access. Late in the day I captured a *C. purpurea* near Pontin Junction, another new northern record. Range maps indicate *C. purpurea* is limited to a thin strip along the SW Manitoba border. I have collected the species at several places along Highway 6: Lundar, Eriksdale, Mulvihill, Fairford, Grand Rapids



Habitat of *Cicindela hirticollis* near Minago River, Manitoba.

and at the Minago River. The Pontin record establishes *C. purpurea* about 600 kms north of its known range!

Again, the weather became problematic; I revisited the Flin Flon area so I could collect in Saskatchewan near the Manitoba border. South of Tyrrell Lake I found a huge abandoned sandpit that harboured a large population of *C. tranquebarica* and *C. limbata nympha*. I decided to chance a trip to Lynn Lake in NW Manitoba; one of the principal goals for my trip was to find *C. limbata hyperborea* in this area. During my drive it was cool and few tiger beetles were active but I was encouraged to see sandy roadside habitat. By the time I reached Lynn Lake the sun appeared and I was able to investigate a large sand pit. The habitat was degraded but a few tiger beetles were active. While approaching a small patch of deep sand a tiger beetle flew; it resembled either *C. limbata* or *C. lengi*. This was encouraging as either would represent a range extension!

The following morning I drove NW from Lynn Lake to Kinoosao which is on the Saskatchewan border. I found a lovely sand blow and although conditions were overcast I could see blue sky on the horizon. I waited, collecting carrion beetles off some raw caribou hides I found in the woods. The sun finally arrived but there were no tiger beetles present other than a couple *C. longilabris*. I followed Hwy 394 back to Lynn Lake, which at one point is above the 57th parallel, collecting *C. longilabris*, and other insects. Late in the day I returned to the sand pit near Lynn Lake where I had seen the possible *C. limbata/C. lengi*. Again I flushed a small, whitish tiger beetle near the same location. After a long search I managed to catch three *C. limbata nympha* x *C. limbata hyperborea*! I rechecked this site in 2020 and found that as the sand pit is coming more naturalized the *C. limbata* numbers are increasing.

The following morning I drove SE of Lynn Lake on Hwy 396 hoping to find more *C. limbata* populations. I found a large active gravel pit near Motriuk Lake. There were a few small peripheral areas that were becoming naturalized and I was able to catch eight *C. limbata*! These were closer to *C. limbata hyperborea* than *C. l. nympha*. I drove to the end of Hwy 396, the Fox Mine, but collecting was not favourable. On the return drive I turned south on the McVeigh Road and found a very large area of sandy roadside habitat. This site had a robust *C. limbata* population and well over 100 specimens were seen! These were predominately *C. limbata hyperborea* but a few specimens approached *C. l. nympha*.



Wolf Track on sand flats near Gillam, Manitoba

On my return drive to Thompson I found three *C. limbata* north of Leaf Rapids; these were intermediate between *C. l. hyperborea* and *C. l. nympha*. There were also many *C. longilabris* and *C. tranquebarica*. Near Thompson I found a good site for *C. limbalis*; several were the “*spretta*” form, red yet infused with dull green, these become more common in the north.

I had sampled the Gilliam area in the past but decided to visit again; *C. limbalis*, *C. longilabris* and *C. tranquebarica* were frequent on the forestry roads and in abandoned gravel pits. There is a large sand flat near town that is a personal favourite for tiger beetles; it’s always crisscrossed with wolf tracks. It was the only area on my trip where mosquitoes were a nuisance.

I finished my trip with another survey of the area between Flin Flon and La Pas; I've yet to find *C. purpurea* there but I expect they will eventually be found.

Despite poor weather, and a few retreats to Saskatchewan, I collected over 1000 tiger beetles during my 2015 survey, refining my understanding of their northern distributions and colour variations. I published the results of my northern studies in *Cicindela*, (Volume 50, Numbers 1-2) a quarterly journal specializing in *Cicindelidae*. I had established nine northern range extensions for Manitoba species and subspecies of *Cicindela*. Certainly there is still much more to discover and hopefully other investigators will visit the northern parts of the province.

Extension Entomology Update: Insect Monitoring Programs in Field Crops

By John Gavloski, Entomologist, Manitoba Agriculture and Resource Development

One important component of integrated pest management is monitoring. If possible, it is good to have some advanced warning if populations of a potential pest insect are emerging in high numbers, or have blown or migrated into the province. For invasive insects that are newer arrivals in the province, tracking their distribution and relative levels can be useful information in many ways. Some insect monitoring programs have become annual events and have been done for decades. These include the grasshopper survey, and putting up traps for moths of diamondback moth and bertha armyworm. Other monitoring programs are more recent, due to the arrival of invasive insects, or recent crop damage. This article will cover nine insect monitoring programs in field crops that are being conducted in Manitoba in 2021.

Diamondback moth (*Plutella xylostella*): These are monitored with a pheromone-baited trap called a delta trap. A network of about 100 traps were set up in late-April or early May, usually next to canola fields, or where canola will be planted. The purpose is to see if any large populations move into Manitoba from the south. Where in the province higher levels occur, and how early they arrive help determine regional risks. Management decisions cannot be made based on trap catches. Trap data is used to encourage enhanced scouting for larvae in areas that had higher counts.



Delta Trap

Armyworms (*Mythimna unipuncta*): This is the first year we are monitoring for adults moths of armyworms in Manitoba. Last year there was considerable armyworm damage to some cereals and forage grasses. The trap that we are using is called a multipher 1 trap. A lure containing armyworm pheromone is placed in the trap. A network of about 30 traps were set up in late-April and early-May and will be out for 12 weeks.



Multipher 1 Trap

Pea leaf weevil (*Sitona lineatus*): Pea leaf weevil is a relatively new insect in Manitoba. It was first verified in 2019, after an agronomist in the Northwest agricultural region sent some in for identification. So far it has only been found in the Northwest region. We are setting out pheromone-baited pitfall traps to try to determine the range of pea leaf weevil in Manitoba, and relative levels. Traps are placed along the edge of fields of field pea or faba beans as seedlings are emerging, and checked weekly for 6 weeks.



Jackson Trap

Swede Midge (*Contarinia nasturtii*): Swede midge has never been found in Manitoba, but is a major pest of canola and other cruciferous crops in eastern Canada. Pheromone-baited traps are set up so an early-detection can hopefully be made should swede midge be present in Manitoba. The type of traps used is called a Jackson trap. It looks somewhat like a miniature version of the delta traps used for diamondback moth. Traps are set up near the edge of canola fields in the seedling stage, and retrieved just prior to harvest. Another midge, the canola flower midge, that is less damaging to canola than the swede midge is present in the Canadian prairies.

Bertha armyworm (*Mamestra configurata*): These are monitored with a pheromone-baited trap called a unitrap (universal moth trap). Traps are normally set out next to canola fields in early-June and left out for six weeks, until about late-July. Normally about 80 to 100 traps are set up in Manitoba. The pheromone attracts male moths to the traps. This provides some advanced warning on what populations may be like before the crop feeding larval stage is present. The data can be used to encourage enhanced scouting for larvae in regions with high trap catches, but data from the traps can not be used to make management decisions.



Unitrap

Cereal leaf beetles (*Oulema melanopus*): Cereal leaf beetle was first detected in Manitoba in 2009 in the Northwest agricultural region. It has now spread through much of agricultural Manitoba. It is being managed quite successfully with an introduced parasitoid, *Tetrastichus julis* (Eulophidae). Fields with reports of cereal leaf beetle are swept with a sweep net to collect samples of larvae. Larvae are sent to Agriculture and Agri-Food Canada in Lethbridge, where they are dissected to determine levels of parasitism with *Tetrastichus julis*. In recent years, cereal leaf beetle began to be detected for the first time in Eastern Manitoba. Levels of parasitism from some of the fields in this region have been quite high, in spite of releases not having been done in this region. For example, last year a sample of cereal leaf beetle larvae from a field near Dugald had 53.6% of larvae parasitized.

Cabbage seedpod weevil (*Ceutorhynchus obstrictus*) and **pollen beetles** (*Brassicogethes viridescens*): Cabbage seedpod weevil, whose larvae feed on developing seeds in canola pods, was first found in Manitoba in 2017. Its distribution is currently restricted to western Manitoba, although levels are low, and it takes a lot of sampling with a sweep net to collect any. In 2020, three sets of 25 sweeps were done while canola fields were in flower in each of 26 fields, and a total of seven cabbage seedpod weevils were found. In 2021 we hope to take samples from at least 30 canola fields in the Southwest, Northwest and Central agricultural regions, and determine if there has been any range expansion or increase in levels. While processing the samples, we also look to see if any pollen beetles are present. Pollen beetles are potential pests of canola, are found in some eastern provinces, but have never been found in the Canadian prairies. Hopefully we keep getting zeros for this in our survey.

Corn rootworm (*Diabrotica* spp.): Larvae of corn rootworm damage corn by feeding on corn roots. An established population of northern corn rootworm (*Diabrotica barberi*) was first found in Manitoba in 2015. Prior to that it had just been individual collections. Western corn rootworm (*Diabrotica virgifera*) has not been found in Manitoba. In 2021 we will be placing 4 sticky traps on corn plants in the silking stage in several corn fields. Traps will be changed weekly for at least 6 weeks. Data will be entered as part of a large rootworm survey being conducted by some Eastern Canadian provinces and several states in the U.S. corn belt. In addition to what is on the traps, we will also be collecting adult beetles of corn rootworm from the plants. Aside from beetle levels in the traps, one of my goals is to see if the population in Manitoba is still just northern corn rootworm, or if any western corn rootworm can be found.



Northern Corn Rootworm

Grasshoppers (Orthoptera: Acrididae): An annual grasshopper survey of some sort has been conducted in Manitoba since 1931. Our current survey involves estimating levels of grasshoppers per m² in the vegetation along roadsides or field edges in August. The dominant species of grasshoppers are also recorded. This provides some indication of what the egg laying population of grasshoppers is like. This, combined with other factors such as the weather at the time of egg laying, are used to prepare a grasshopper forecast for the following year.

Data from some of these insect monitoring programs is available on the insect page of the Manitoba Agriculture and Resource Development website:

<https://www.gov.mb.ca/agriculture/crops/insects/index.html>. The insect fauna in our crops varies greatly from year to year. Monitoring and forecasting programs can provide some advanced warnings, and hopefully minimize sudden surprises of high levels of crop feeding insects.

An Entomological Adventure in Germany **By Robert E. Wrigley**

Several years ago, I accompanied my wife Arlene to northeastern Italy where she attended her second course in mosaics at the mosaic-capital of the world – the historic city of Ravenna, close to the Adriatic Sea. While Arlene was busy with workshops, I spent the days wandering through ancient cobblestone streets, shops, museums, and churches, photographing Roman and Byzantine architectural marvels (some surviving from as early as 400 AD), artworks, and exquisite mosaic panels and marble floors. In fact, I perhaps spent more time in churches on this trip than during my entire previous experience! Stepping from the brilliant Italian sunlight into the darkened environment of each building, it was like stepping back in time to an early stage of our civilization. I could feel the presence of many of the major characters of the past – artists, musicians, poets, emperors, popes, legendary powerful families and their conflicts, conquests (wars and beautiful women), and their creations (plazas, museums, mausoleums, churches, and other buildings).



Photo: The stone work and mosaics inside churches was astonishing, utilizing both local and imported materials. The workmanship was impressive considering the tools craftspeople had to work with at the time. The beautiful stone floors encouraged me to create a patio back home, consisting of slabs of granite and limestone discarded by a local countertop company.



Photo: Each evening, we enjoyed the scrumptious meals and wines typical of the countryside and sea.

The following week we enjoyed touring the magnificent cities of Venice and Florence -- viewing so many famous sights that they overwhelmed the senses. Being in urban renaissance and tourist environments all of the time, there was little opportunity for entomological pursuits. However, I must say, the Florentine mosquitoes put those infamous Winnipeg species to shame; even a tourist brochure warned that the mosquitoes “could be troublesome.” Wow; what an understatement. Without window screens or air conditioning in one hotel, the resident mosquitoes located every exposed body part and had their way with us all night, leaving dozens of red, painful and itchy bumps as reminders. While scratching vigorously, it occurred to me that these pests were probably the swamp descendants of those that dined on the blood of Emperor Julius Caesar (*cene bene*), Leonardo da Vinci, Michelangelo Buonarroti, and Lorenzo de’ Medici (*buon appetito*), and Napoleon Bonaparte (*bon appétit!*), when they travelled to the region.



Photo: View of the famous Ponte Vecchio, the medieval stone bridge over the Arno River in Florence.



Photo: View from the castle atop the mountain in San Marino, with the Adriatic Sea in the background.

We also had an opportunity to visit the diminutive country of San Marino – a beautiful mini-state (61 sq km) in the Apennine Mountains, surrounded by Italy, and one of the world’s oldest republics. From the massive mountain-top fortifications, we had an excellent view of the Adriatic Sea and Rimini – a port city founded by the Romans in 268 BC, but occupied previously for many centuries by a succession of peoples. Here we and an American couple enjoyed refreshments at a cafe, and later a wonderful seafood dinner in a well-appointed restaurant with an attractive view of the Rimini harbour.

Looking out over the calm waters, one could only imagine the sometimes-tragic events that happened right here over the last two millennia during the reigns of Roman emperors Julius Caesar and Octavius Augustus, King Theodoric the Great, and the WW-II bombing of such strategically located cities as Rimini and Ravenna.

Next we travelled to Hamburg, Germany, to visit our ‘adopted daughter,’ Tina Singh-Kang, and her parents, Ute and Kuki. Tina had stayed with us in Winnipeg while she attended classes at the University of Winnipeg, and subsequently pursued her PhD in microbiology at the University of Edinburgh. Kuki showed me several great places to collect insects, but regrettably, I had left my folding net at home. Ever resourceful, Kuki remedied this oversight by buying me a child’s two-metre-long, bamboo fishing net from a local pet store, which made me laugh at first, but it served remarkably well in practice, especially when reaching for canopy insects. I did attract odd glances and chuckles from locals while cycling down streets with my long net trailing behind.

While collecting insects along some train tracks, I was astonished how fast the frequent commuter trains appeared and passed by, literally in seconds. Kuki warned me repeatedly not to approach the tracks too closely, because once one hears a train coming, it is too late to back away. They attained a speed of 300 km/hr (186 mph), and from personal experience, the ride was remarkably smooth.



Cartoon: Robert attempting to keep up with Kuki on the bumpy pathway (cartoonist Rob Gillespie).

Pausing on one of our bike rides, Kuki pointed out a dead crow beside a pond, and turning it over, I grabbed four scurrying carrion beetles (*Oiceoptoma thoracica*) with an orangish pronotum. Travelling down a narrow, bumpy mud path on an old bike, with one hand on the handle bar and the other grasping the net, left little ability for control, and more than once I almost took a wild tumble over the handle bars after hitting a bump. A flash of red in the vegetation on my left caused me to break suddenly to investigate, and the beetle turned out to be a beautiful fire-coloured or cardinal beetle (*Pyrochroa coccinea*). I had admired pictures of this species previously, so I was excited to capture it. Returning to the local fields and woods over the next couple of days (on foot these times), I was able to sweep up a nice diversity of insects, especially the garden chafer (*Phyllopertha horticola*) – an 8-mm fuzzy scarab that hung in large numbers from tree branches, and repeatedly came buzzing past me while on a trail through a meadow. I could have picked up over a hundred with little effort. Apparently this beetle causes major damage while feeding on garden plants and fruit trees and shrubs.

Sweeping the meadow grasses and wildflowers, shrubs, and trees generated an astonishing number and variety of insects, such as bees, wasps, flies, true bugs, and dozens of beetle species, including carabids (e.g., *Nebria rufescens*), staphylinids (e.g., *Philonthus splendens*), elaterids (e.g., *Agrypnus murina*), cantharids (e.g., *Rhagonycha fulva*), chrysomelids (e.g., *Agelastica alni*), melyrids (e.g., *Clanoptilus strangulatus*), oedemerids (e.g., *Oedemera virescens*), scarabaeids (e.g., *Melolontha melolontha*), trogids (*Trox scaber*), silphids (e.g., *Silpha tristis*), coccinellids (*Propylaea quatuordecimpunctata*), byturids (*Byturus ochraceus*), and curculionids (e.g., *Rhynchaenus rufus*). Elaterids were particularly abundant, with at least 14 species collected.



Photo: Arlene, Ute, Tina, Vivian and Kuki enjoying an evening meal.

Each day Arlene and I looked forward to feasting in Ute and Kuki’s sunroom, especially after building an appetite from collecting in the sun for hours. Early each morning, Kuki and I biked through picturesque wooded trails, ending at his favorite local bakeshop, where we chose several types of buns for breakfast, accompanied by a selection of meats, cheeses, and cafe lattes. The quality and variety of German baking were truly remarkable; in fact, I just had to take photographs of the museum-quality displays of baked goods. Notably, the buns and cakes lacked the unhealthy doses of sugar and fat that figure so prominently in North American bakeries and cook books.



Photo: A display in the bakery that Kuki took me to each morning. There was always a line-up of business people who had stopped on their commute for breakfast and lunch snacks.

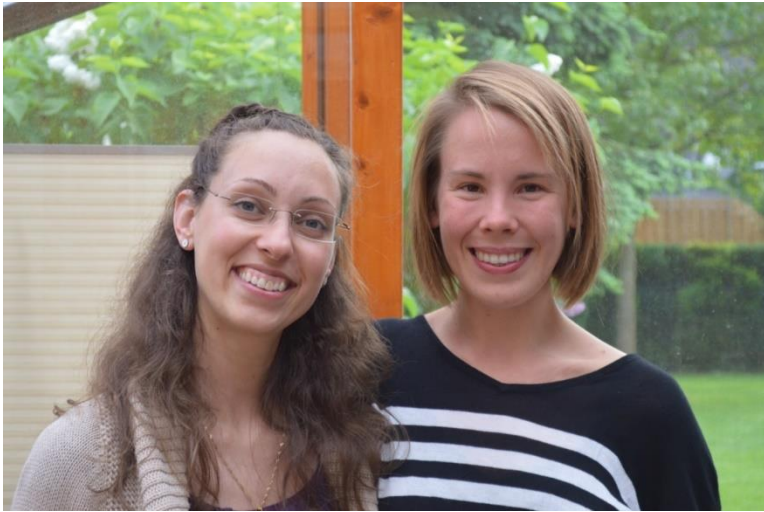


Photo: Tina and Vivian in Hamburg.

A few days later, Tina's friend, Vivian Clausen (artist, former zookeeper, and a world traveler) arrived for a visit, and she kindly agreed to drive me to another collecting site – a meadow and forest edge near the village of Hamfelde, where Vivian was caring for a family's teenagers. Amused at my tiny insect net, Vivian came up with the innovative suggestion of using a larger swimming-pool strainer as a means of gathering insects from the grass and shrubs, and it too worked out remarkably well. Walking through the meadow I was astonished at the extensive digging activities of wild boar, leaving dozens of craters of sod completely torn up by the animals in search of insect larvae, worms and rhizomes. Having dug up tough pieces of sod in my yard a few times, I was truly impressed with the phenomenal strength of the boars and sows in excavating such extensive patches.



Photo: Wild Boar excavations in the meadow at Hamfelde.

As we waded through the tall grass, great numbers of nymphal ticks (*Ixides ricinus* or *Dermacentor reticulatus*) lay in ambush, and we had to brush dozens of them from our bare legs and clothes. Their bites may transmit Lyme borreliosis and tick-borne encephalitis. Entering the darkened deciduous forest was no treat either, for we were met with a dense growth of painful stinging nettle and hordes of mosquitoes. We quickly decided it was more productive to collect in the meadow, so we headed back out into the bright sunlight again. Lifting a tarp, which was covering some farm equipment, exposed a nice ground beetle (*Carabus coriaceus*) – one of the largest and stoutest of European carabids, once common and now in decline and lost from many areas. I also picked up here two dung beetles (*Anoplotrupes stercorosus*). The adult pair of this species is known for provisioning dung for its larvae;

from egg to emerging adult takes one summer. We also came across two species of silphids – *Silpha tristis* and *Oiceoptoma thoracica*. We then spotted some large plants (possibly broad-leaved dock, *Rumex obtusifolius*) whose leaves were completely riddled into lacework by hundreds of shiny-green chrysomelid beetles – *Chrysolina herbacea* and *Oreina alpestris*. A dark metallic specimen of *Chrysolina oricalcea* and the green tortoise beetle *Cassida viridis* were found nearby.



Photo: Meadow and deciduous forest at Hamfelde -- home to Wild Boar, numerous insects species, and unimaginable numbers of nymphal ticks.

A species I found intriguing (and not knowing what it was at first) was the Alderfly (*Sialis lutaria*, order Megaloptera) – a blackish, thick-bodied insect with a wingspan of 34 mm, which darted out of the bushes when disturbed. While the aquatic larva requires one to two years to mature, the adult lives only two to three days without feeding. With a book on insects (Bellmann 2014) that Ute kindly purchased for me, I was finally able to determine its scientific and cool-sounding German name (Schlammfliege, or Bat Fly). I was also thrilled to find a red and black froghopper (*Cercopis vulnerata*), whose brilliantly coloured pattern advertises its bitter-tasting chemical defense.

With darkening skies, and ominous thunder and lightning approaching, we headed for the house, where we were treated to a wonderful family BBQ dinner highlighted by a dish piled high with tender, thick, white asparagus (not the green ones served typically in North America) covered in a sumptuous white sauce. It was a great day with new friends and a nice variety of insects, mostly species new to me. I was most grateful to Vivian for taking the time to introduce me to this productive site.



Photo: German hospitality. Notice the giant white asparagus, which are kept covered when growing to avoid the production of chlorophyll.

A few days later, Tina drove us to Lubeck, and strolling along historic streets, beetles kept popping up in arts and crafts, and even in chocolate shops. In the famous chocolate shop, Niederegger, I discovered a surprising number of colourfully wrapped chocolates in the shapes of various common insects, such as lady beetles. A stag beetle (*Lucanus cervus*) motif appeared on the fronts of many buildings and on coats-of-arms. It was also entertaining to attempt identifications of insect designs in numerous mosaics and paintings in churches and art galleries. We topped off the morning with a wonderful lunch in a square surrounded by historic buildings and modern shops.



Photo: Chafer beetles at Niederegger's shop.



Photo: Lady beetles at Niederegger's shop.



Photo: Stag beetles on the side of a building in Lubeck.

In the afternoon, we drove 20 km northwest of Lubeck to Timmendorfer Strand, a municipality on the shore of the Baltic Sea. This beautiful beach offered photographic opportunities in every direction, and I took numerous close-up shots of beach debris -- silver fish, transparent medusae, puffy seaweed floats and rainbow-coloured bubbles.



Photos: Beach flotsam provided the author with an endless treasure trove of delightful artworks to photograph.



Photo: Robert searching for insects along the strand line of the Baltic Sea.

Two species of beetles were spotted on the beach by the sharp eyes of Ute and Arlene – a multicoloured Asian lady beetle (*Harmonia axyridis*) and a Colorado potato beetle (*Leptinotarsa decemlineata*)! Of all the thousands of beetle species in Germany, how was it that these Asian and North American species were the only ones we found here, and how did they manage to find their way

onto the shore of the Baltic? I had to investigate. It turns out that the Colorado potato beetle has a fascinating history in Europe. In 1942, a German agent in England reported to the German Army High Command about the arrival of a plane from the United States carrying 15,000 Colorado Potato Beetles and an unknown number of Texas ticks, which the Command interpreted would be used for biological warfare. The ticks were soon deemed to pose “no great threat,” but the beetle was feared as an Allied scheme to reduce Germany’s food supply, thereby weakening its ability to fight. Orders were given to develop a Potato Defense Service (*Kartoffelkaferabwehrdienst*) in the city of Krufft. (It was words like this that convinced me to abandon lessons in German, and to substitute Spanish and French for my graduate language requirements!)

This Service quickly morphed from defense to offense with a plan to drop 20-40 million beetles on the potato fields of eastern England. Surprisingly, in anticipation of this entomological attack, 40,000 beetles were raised, painted, and released from aircraft as trials over fields near Speyer, Germany, thereby exposing itself to the very same biological attack. The results were inconclusive, with few recoveries due partly to the beetle’s great dispersal ability. There is scant evidence that the Colorado potato beetle was ever used in offensive operations by either side, but as an interesting aside, the Minister of Agriculture and Forestry of the socialist German Democratic Republic accused the United States in 1950 of discharging the beetles from planes. Thereafter, East German farmers reported several plagues of the beetles in their fields, and children all over Germany were recruited to collect beetles after school. A government report raged against the “six-legged ambassadors of the American invasion” and called it “a criminal attack of American imperialist warmongers on our people’s food supply,” which United States officials dismissed as pure propaganda. In reality, this beetle had already reached Germany well before the war, and outbreaks were likely due to lack of pesticides and motivation for control by farmers.

A recent study (Hallmann et al. 2017) demonstrated the alarming fact that there has been more than a 76% decrease in flying-insect biomass in the past 27 years in 63 German nature preserves, and in Europe generally, with global warming, habitat loss, and pesticides the major culprits. Collecting insects in Germany is still permitted outside reserves without a permit (although a permit is required for light trapping), and I returned home with over 400 specimens of about 140 taxa of insects and other arthropods. I thought it quite fortunate to have found so many species in just the couple days available for collecting. These have all been prepared and the beetles identified as best I can, with the assistance of the great website; Beetle Fauna of Germany (kerbtier.de), which illustrates 2700 out of the 7000 beetle species recorded in the country, and helpful books on insects by Sauer (1993), Harde (1998), and Bellmann (2014). I will be donating the insect collection to several museums.

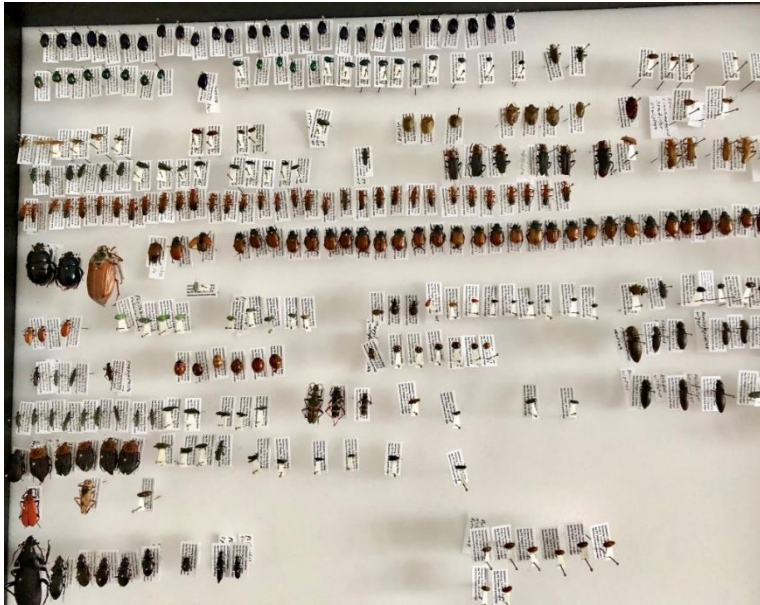


Photo: The author's collection of arthropods from Germany.

After 12 hours of travel and waiting in four airports, Arlene and I finally made it home to Winnipeg, and so ended my entomological adventure in the palaeartic, or “Old Country.” The trip was so memorable for a number of reasons. Being a former museum curator and director, the museum antiquities and ancient architectural sites were stunning highlights. The delightful meals and wines were of high quality and remarkably affordable. The system of water taxis in Venice and the high-speed trains between cities were impressively efficient, as long as one could find the right platform in time. And we were able to spend treasured time with our dear German friends. What I thought would be a purely cultural experience in Europe turned out to be an entomological adventure, which I’d love to repeat someday.

References

- Beetle fauna of Germany. Kerbtier.de (accessed 24 May 2018).
- Bellmann, H. 2014. *Welches Insekt ist das?* Franckh-Kosmos Verlags-GmbH and Co., Stuttgart. 256 pp.
- Burns, L. 2013. The great cold war potato beetle battle. BBC World Service. 3 September. bbc.co.uk (accessed 4 February, 2017).
- Garrett, B.C. 1966. The Colorado Potato Beetle goes to war. *Historical Note* 2: 1-2. CWCB 33. sussex.ac.uk (accessed February 4, 2017).
- Hallmann, C.A., and M. Sorg, E. Jongejans, H. Siepel, N. Hofland, H. Schwan, W. Stenmans, A. Muller, H. Sumser, T. Horren, D. Goulson, H. de Kroon. 2017. More than 75% decline in 27 years in total flying insects biomass in protected areas. <https://doi.org/10.1371/journal.pone.0185809> (accessed October 16, 2018).
- Harde, K.W. 1998. *A Field Guide in Colour to Beetles*. Blitz Editions. Leicester, England. 334 pp.
- Sauers, F. 1993. *600 Käfer, nach Farbfotos erkannt*. Fauna-Verlag, Karlfeld, Germany. 354 pp.

Incredible Creatures: Brood X Periodical Cicadas: What a trill **By John Gavloski**

It's happening. The massive emergence of Brood X, a type of periodical cicada in the eastern United States. The August 2016 Incredible Creatures article on cicadas concluded with "take note, the great eastern brood, the largest of all 17-year periodical broods, next emerges in 2021 in the eastern United States. Mark this into your bucket list". This month's Incredible Creatures will explore what are periodical cicadas, broods, and what makes brood X so special.



Photo: Periodical cicadas, courtesy of Tracy Lee

Living life Underground

There are 170 species of cicadas in Canada and the United States, although just 4 species in Manitoba. None of the species in Manitoba are periodical cicadas. The common one in Manitoba that can be found, and more often heard than seen, is the dog-day cicada.

In eastern North America there are seven species of cicadas, in the genus *Magicicada*, known as periodical cicadas. Three of these can live for 17 years, and four species can live for 13 years. The 17-year cicadas are generally more northern, and the 13-year cicadas more southern. Periodical cicadas occur only in North America. They are called periodical cicadas because even though they live underground as juveniles for almost all of their 13 or 17 years, the development is synchronized so all individuals of a species within a region emerge as adults all at once in the same year. Sometimes tremendous numbers will emerge. Cicadas of all other species are not synchronized, and some emerge each summer. Many refer to these nonperiodical species as annual cicadas since some are seen every summer.

After almost 13 or 17 years as juveniles underground, adults of periodical cicadas are active for about 4 to 6 weeks. Male periodical cicadas typically form large aggregations that sing in chorus to attract females. Within two months of them starting to emerge, the lifecycle is complete, eggs have been laid, and the adult cicadas are gone for another 13 or 17 years.

Adult periodical cicadas are mostly black with reddish-orange eyes and wing veins. In contrast, annual cicadas have greenish wing veins, and emerge from July through September instead of late May through early June. Emergence of annual cicadas is scattered over this time, and they rarely emerge in noticeable numbers.

Broods a Plenty

Different groups of periodical cicadas called "broods" emerge somewhere in the eastern United States almost every spring. Emergence is often tightly synchronized to within a few nights. Massive brood emergence is believed to overwhelm predators, ensuring that enough survivors will be left behind to reproduce.

Each yearly emergence is referred to as a "brood" and is designated by a Roman numeral. The numerals I through XVII (1–17) are assigned to the 17-year broods, and XVIII through XXX (18–30) to the 13-year broods. The numbering of the 17-year broods began with the 1893 brood, which was designated as Brood I. In 1909, Brood XVII appeared, and in 1910, Brood I appeared again. Because the broods are designated by Roman numerals, they are properly spoken as numbers. For example, Brood X is "Brood Ten" and not "Brood Ex".

The Spectacular Brood X

Brood X, known as the "great eastern brood," is a large brood that emerges across 15 states. That is what is getting all the attention and media coverage this year.

The sounds of our dog-day cicadas are something to look forward to later in the summer. For now, enjoy the coverage you are likely to see of one of nature's amazing events as Brood X periodical cicadas emerge this spring.

Ed'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 May 2021.

A Day Along the Pembina River

Robert E. Wrigley and Andrew J. Fallak

On May 16, 2021, we travelled to two sites along the Pembina River in south-central Manitoba (8 km S Kaleida, and 8 km S, 4.8 km W Kaleida) for the purpose of collecting arthropods, fossils and artifacts. It was a warm, sunny day, and under the current drought conditions, the water level was so low that we easily crossed it in rubber boots in some places. Extensive gravel and silt deposits alternating along the two shorelines were left high and dry, boosting our anticipation of discovering some interesting items. The valley slopes above the river presented some impressive vistas, with four-story-high cliffs and eroding, slumping banks which over the years released their prehistoric treasures. We have, in years past, collected along the river shore the remains of ancient creatures from the Cretaceous Western Interior Seaway (teeth and vertebrae of reptilian mosasaurs and plesiosaurs, *Inoceramus* Giant Clams, and petrified wood) and from an interglacial period and the Holocene epoch (numerous bones, skulls and teeth of *Bison bison*, *Bison antiquus*, American Elk, Grey Wolf). We had trucked out so many Bison bones over the years that our friend Jim Reimer was able to prepare an entire composite skeleton for his natural-history museum at Ste. Anne.



View of a bank along the Pembina River.

The trees and ground vegetation on the upper slopes had leafed out, but the sandbar willows, grass, and other plants down along the cooler river banks were still largely dormant. We soon separated, Andrew walking downstream for several kilometers in search of fossils and cultural artifacts, while Robert poked along, swinging his net through the dry grass and bare shrubs, and pausing to turn over countless stones and the occasional log and cow pat. He was surprised at the variety of insects and spiders hiding in the non-green vegetation.

While Robert returned to the car and was enjoying his lunch, he spotted a figure on the distant shoreline, appearing to struggle with something heavy. It was Andrew, hauling a remarkably intact Bison skull weighing over 12 kg, which he had pulled from the water. An early modern specimen, likely many thousands of years old, it was no doubt the find of the day, although Andrew had collected an even larger skull a few years ago. Robert had been satisfied to collect some Bison teeth and beautiful old shells of freshwater or unionid mussels up to 14x9-cm. The shells of several species littered the exposed flats along the river, and he threw back several apparently live specimens (sealed tightly) that were stranded above the water line. Mussels are among the most endangered species worldwide and also in Manitoba, due to habitat destruction, pollution, commercial exploitation



Andrew with his bison skull.

(formerly for food and buttons, and more-recently as nuclei for the Japanese cultured-pearl industry), and competition from the introduced Zebra Mussel. In fact, the unionid mussels present in the Assiniboine River drainage are among the last unexploited populations in North America, and fully three-quarters of the 300 North American species are now listed as either extinct, endangered, threatened, or special concern (Metcalf-Smith et al. 1998; Watson 2000). The life span of these mussels is remarkably similar to that of humans, with some individuals surpassing a century.



Eight Bison molars, a plesiosaur vertebra (upper center), and petrified wood (lower center) surrounding a unionid clam.

Robert's arthropod tally for the day was as follows:

10 species of Carabidae (including *Agonum*, *Anisodactylus discoideus*, *Bembidion*, *Chlaenius sericeus*, *Cicindela repanda*, *Elaphrus*, *Pterostichus melanarius*)

7 species Chrysomelidae (*Calligrapha californica coreopsivora*, *Phyllotreta striolata*, *Crepidodera nana*)

1 species Tenebrionidae (*Blapstinus substriatus*)

2 species Staphylinidae

1 species Elateridae

2 species Scarabaeidae (*Euphoria inda*, *Aphodius*)

1 species Nitidulidae (*Carpophilus brachypterus*)

1 species Coccinellidae (in flight)

4 species Curculionidae

1 species Formicidae

1 species Ixodidae (*Dermacentor variabilis*)

2 species Tetrigidae (*Tetrix*)

6 species spiders

1 blue wasp

After the relative confinement of six months of winter, and prolonged isolation due to the pandemic (both of us had our first vaccination), it felt wonderful to be immersed in the outdoors again, and to experience the spring's bright sunshine and cool breezes. On the way home, we stopped at famous Syl's Drive Inn in Carman for ice-cream shakes. The next day Andrew visited a car wash to clean his prize Bison skull, while Robert was kept busy over the following week pinning, identifying and labelling close to 100 specimens. Every visit to the Pembina River presents some unexpected surprises, so we will certainly head back in the autumn to enjoy the fantastic fall colours and nature's treasures along the shore, just waiting to be picked up.

References

Metcalf-Smith, JL, SK Staton, GL Mackie, and NM Lane. 1998. Selection of candidate species of freshwater mussels (Bivalvia: Mollusca) to be considered for national status designation by COSEWIC. *The Canadian Field-Naturalist* 112: 425-440.

Watson, ET. 2000. Distribution and life history of the Unionidae (Bivalvia: Mollusca) in the Assiniboine River Drainage in Manitoba, with special reference to *Anodontoidea ferussacianus*.
<https://mspace.lib.umanitoba.ca/xmlui/bitstream/handle/1993/2448/MQ53241.pdf?sequence=1&isAllowed=y>
(Accessed 18 May 2021)

2020-2021 Executive

Position	Name	Email	Phone
President	Jeffrey Marcus	entsocmanitobapres@gmail.com	(204) 474-9741
Past President	Alejandro Costamagna	ale.costamagna@umanitoba.ca	(204) 474-9007
President-elect	Kateryn Rochon	kateryn.rochon@umanitoba.ca	(204) 474-8640
Regional Director (ESC)	Jason Gibbs	jason.gibbs@umanitoba.ca	(204) 474-7485
Member-at-Large	Joel Gardner	gardnerl@myumanitoba.ca	
Secretary	Sarah Semmler	entsocmanitobasecretary@gmail.com	(204) 832-0167
Treasurer	Kathy Cano	entsocmanitobatreasurer@gmail.com	(204) 925-7928
Proceedings editor	Terry Galloway	terry.galloway@umanitoba.ca	(204) 474-7628

2020-2021 Committee Chairs

Committee	Name	Email	Phone
Endowment Fund	Richard Westwood	r.westwood@uwinnipeg.ca	(204) 786-9053
Finance	Kathy Cano	kcano@pcocanada.com	(204) 925-7928
Newsletter	Kelsey Jones + Kateryn Rochon	kelsey.jones@canada.ca	
Youth Encouragement & Public Education	Bridget White	whiteb2@myumanitoba.ca	(204) 474-9439
Social	Lavanya Ganesan	lavanyazoe@gmail.com	
Scholarships & Awards	Desiree Vanderwel	d.vanderwel@uwinnipeg.ca	(204) 783-9083
Fundraising	Ian Wise	IWise@shaw.ca	(204) 890-3560
Scrutineer	John Gavloski	John.Gavloski@gov.mb.ca	(204) 745-5668
Web Page & Archives	Jordan Bannerman	jordan.bannerman@umanitoba.ca	(204) 480-1021
Common Names of Insects	Jason Gibbs	jason.gibbs@umanitoba.ca	(204) 474-7485