

Alberta

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THE SOCIETY WAS INCORPORATED IN 1986

as a non-profit organization formed to:

1. Promote the science of palaeontology through study and education.
2. Make contributions to the science by: discovery; responsible collection; curation and display; education of the general public; preservation of palaeontological material for study and future generations.
3. Work with the professional and academic communities to aid in the preservation and understanding of Alberta's heritage.

MEMBERSHIP: Any person with a sincere interest in palaeontology is eligible to present their application for membership in the Society. Please enclose membership dues with your request for application.

Single membership \$20.00 annually

Family or Institution \$25.00 annually

SOCIETY MAILING ADDRESS:

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THE BULLETIN WILL BE PUBLISHED QUARTERLY: March, June, September and December. Deadline for submissions is the 15th of the month prior to publication. Material for the *Bulletin* should be sent to:

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Requests for missing *Bulletin* issues should be directed to the Editor. Send changes of contact information to the Membership Director.

NOTICE: Readers are advised that opinions expressed in the articles are those of the authors and do not necessarily reflect the viewpoint of the Society. Except for articles marked "Copyright ©," reprinting of articles by exchange newsletters is permitted, as long as credit is given.

Upcoming APS Meetings

Meetings take place at 7:30 P.M. in **Room B108,**
Mount Royal University, 4825 Mount Royal Gate SW, Calgary, Alberta.

June, July, August, 2019—No meetings. Field trips, see Page 6.

Friday, September 20, 2019—Rachel Nottrodt, University of Calgary:
Ornithomimids in Alberta (Title to be announced).

Also a brief presentation by **Clinton Turner.**

Friday, October 18, 2019—Dr. Alwynne Beaudoin, Royal Alberta Museum:
The New Royal Alberta Museum with particular emphasis on the New Natural History Hall.

Also a brief presentation by **Arnold Ingelson.**

Watch the APS website for updates!

ON THE COVER: Alberta fossils—fragment of a hadrosaur maxilla (duck-billed dinosaur upper jaw) with teeth in place. Upper Cretaceous (Campanian) Dinosaur Park Fm., near Steepleville, Alberta. APS collection, catalogue number APS.1992.019, donated by Don Sabo. Width of specimen is 8.6 cm. APS file photo.

Paleo 2019 Summary

By Mona Marsovsky

Spring-like, sunny weather allowed more than 100 people to attend Paleo 2019 (our 23rd annual symposium) on Saturday, March 23, 2019 at Mount Royal University.

APS President **Cory Gross** welcomed the symposium attendees.

Dr. Lindsey Leighton, of the University of Alberta, showed how the brachiopods of the Palaeozoic Era illustrated how natural selection is facilitated by predation; as the predators (shell-crushing fish) evolved and became more numerous, the brachiopod shell ornaments (spines) increased to better protect their owners.

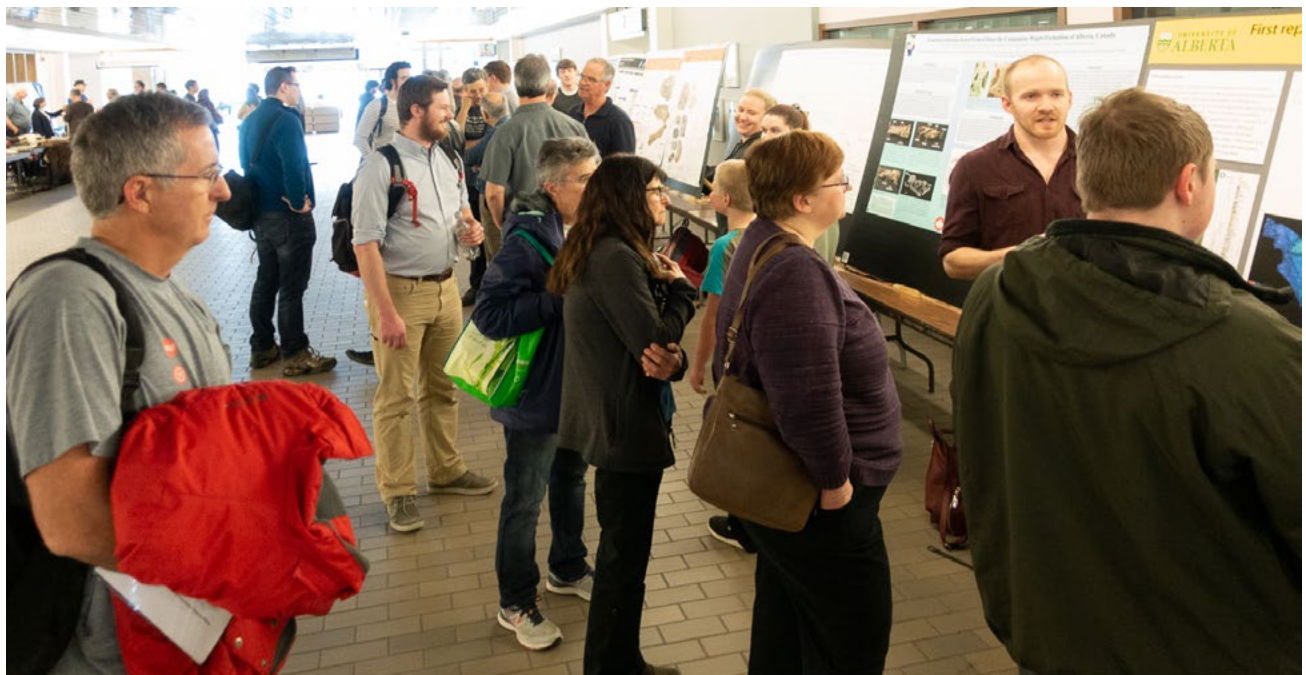
Dr. Jon Noad, of Gran Tierra Energy, Inc. and the University of Alberta, illustrated the habitat, anatomy, diet, lifestyle and colouration (black and white, similar to a magpie) of the world's most famous bird, *Archaeopteryx*. He revealed recent research that indicates that the feather found in 1860, for which *Archaeopteryx* was named, belonged to a dinosaur—not *Archaeopteryx*.

Conrad Wilson, Master's student at the University of Calgary, discussed how CT (computed tomography) scans of the skulls from recently discovered early ray-finned fishes from Blue Beach, Nova Scotia have shed light on the evolution of fishes, particularly across the Devonian-Carboniferous transition.

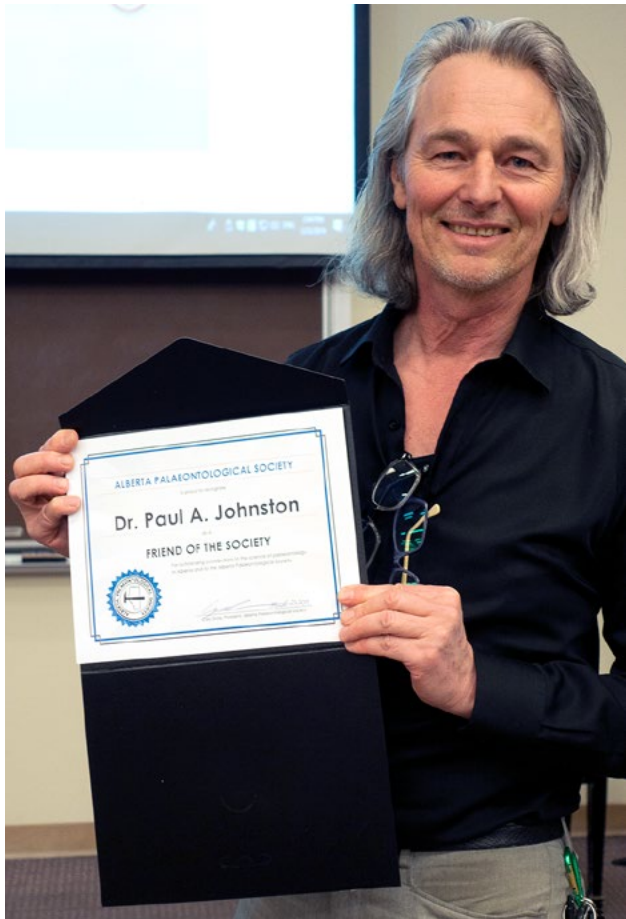
James Campbell, Ph.D. student at the University of Calgary, summarized the histological (bone) studies of two marine reptile (elamosaurid) specimens from the freshwater deposits of Dinosaur Provincial Park, which revealed that these small specimens were adults, rather than juveniles. He hypothesized that these represented a new taxon, which had adapted to the physically-constrained river system and thus was smaller than their marine relatives.

Greg Funston, Ph.D. student from the University of Alberta, described the rare fauna and flora of an unusual microsite in the Late Cretaceous Horseshoe Member of the Horseshoe Canyon Formation. This site has yielded rare troodontid dinosaur fossils, including a manual ungual (hand bone) from *Albertavenator curriei*; anuran (frog) fossils; eggshell; baby hadrosaur bones; plus seeds from ginkgophytes, *Sassafras* and conifers.

Dr. Paul Johnston of Mount Royal University illustrated how the detailed physical examination of recently found specimens of Stenothecoida from the Middle Cambrian Burgess Shale, at Mount Stephen, BC, has revealed that these animals are more closely related to the Brachiopoda, rather than the Mollusca. After Dr. Johnston's talk, **Cory Gross** presented



A good crowd turned out for the poster session on Saturday. Photo courtesy of Don Murchison.



Dr. Johnston is awarded Friend of the Society membership. Photo courtesy of Don Murchison.

Dr. Johnston with the Friend of the Society award, which gratefully acknowledges his and Mount Royal University's support of the Alberta Palaeontological Society over the years.

After the one hour long poster session, **Dr. Michael Wilson**, Emeritus Faculty of Douglas College in New Westminster, BC, talked about his search for old Alberta mammoth fossil discoveries and their importance to scientific research, helping to determine the extent of the Ice Age glaciers and meltwater deposits.

Dr. Emily Bamforth of the T. rex Discovery Centre in Eastend Saskatchewan (Royal Saskatchewan Museum) wrapped up the symposium with an enlightening talk on Saskatchewan's long and continuing history of fossil discoveries, starting from the

first dinosaur fossil ever collected in Canada (fossils from a large hadrosaur—probably *Edmontosaurus*—collected in the Frenchman River Valley by George Mercer Dawson and his team in 1874). In addition to significant findings from the Cretaceous, including “Scotty” the *T. rex*, fossils from the earliest Paleocene to mid-Miocene, and the Neogene have been found in Saskatchewan.

Participants enjoyed fifteen posters, which featured a wide variety of topics. There were interesting displays provided by the Archaeological Society of Alberta, dinosaur artist **Cameron Ansoerger**, paleo jewellery creator **Linda McKendry** and artist **Adrianah Thompson**. Information on the Calgary City Nature Challenge, scheduled for April 26–29, 2019, was provided by **Matthew James Wallace**. Fossil displays were provided by Cory Gross and from the APS collection (thanks to **Howard Allen**). **Cory Gross** provided the materials for the children's colouring area and the dinosaur toy table. Cory also brought a selection of touchable fossils for a “hands-on” experience by the general public.

Next day (Sunday, March 24) **Chad Morgan**, Ph.D. candidate at the University of Calgary, taught two half-day sessions of his workshop, *Exploring the wonderful and wacky world of trilobite palaeontology*. The thirty-four participants learned about the different orders of trilobites and got a chance to examine a variety of trilobite fossils from each of the different orders.

We have several copies of this year's abstract volume (which includes the abstracts of all of the talks and posters) available for sale at the bargain price of \$7. If you would like to buy a copy, attend an upcoming APS meeting or contact **Mona Marsovsy** via



Chad Morgan has a rapt audience for his Sunday workshop on trilobites. Photo courtesy of Arnold Ingelson.

e-mail at giftshop@albertapaleo.org or phone (403) 547-0182.

The APS organizing committee included **Harold Whittaker** (organizer of the speakers and workshop), **Howard Allen** (editor of the abstracts volume and coordinator of the posters and displays), **Mona Marsovsky** (symposium organizing committee chair, advertising and sales table), and **Cory Gross**. I would like to thank those who volunteered at the APS sales table: **Lisa Bohach**, **Wayne Braunberger**, **Cory Gross**, **Georgia Hoffman**, **Arnold Ingelson**, **Gulnara Machitova**, **Michèle Mallinson**, **Vaclav Marsovsky**, **Anita Reilander** and **Doug Shaw**.

We would like to thank all of those who helped to publicize this event. **The Canadian Society of Petroleum Geologists** advertised the symposium in their publication, *The Reservoir*. Information on Paleo 2019 was listed on-line by **Swerve Events**. **CTV Morning Live** featured an interview with **Dr. Paul Johnston**. The **Global TV News Morning Calgary** program interviewed **Dr. Emily Bamforth**. **CHQR 770 Radio's Danielle Smith** interviewed **Greg Funston**. Also on Friday, March 22 at around 7:40 am, CHQR 770 radio interviewed **Dr. Emily Bamforth**. We would like to thank the **University of Calgary Gallagher Library**, **Calgary Public Libraries**, **Calgary Co-Op stores**, **Community Health Foods** and **Safeway** for displaying posters advertising this event. Thanks also go to those who Tweeted the message to their social networks.

We would like to thank all of the speakers, poster presenters and display staff for their contributions to the symposium.

APS is able to hold this event without cost to the general public as a result of the support of the **Department of Earth Sciences of Mount Royal University** (especially **Mike Clark** and **Dr. Paul Johnston**) and **Dr. Jon Noad** and the Canadian Society of Petroleum Geologists, Paleontological Division. Thank you all.

Mark your calendar for next year's symposium, scheduled for March 21–22, 2020. Contact **Harold Whittaker** (programs1@albertapaleo.org) if you would like to present a talk or workshop or have ideas on a talk or workshop that you would enjoy. We will finalize our speaker program by the end of October 2019, so be sure to submit your suggestions now! □

www.albertapaleo.org

Introduction to Paleontology course taught by Dr. Stuart Sutherland

Review by Daegan Kovacs

The *Introduction to Paleontology* course from The Great Courses (<https://www.thegreatcourses.com/courses/introduction-to-paleontology.html>), hosted by Dr. Stuart Sutherland of the University of British Columbia, is a fascinating introduction to the science of palaeontology, and broadened my knowledge of the history of science. The course is split up into twenty-four video lessons that are each about 30 minutes long.

Dr. Sutherland is very engaging as a narrator and sometimes incorporates jokes into each video; for example, at the start of the evolution of grass video he mentions some of the great words of the philosopher Homer: “Mmmm. . .beer,” to which he says, “I guess I should have just said Homer Simpson.” Though it's good to have the jokes, they are infrequent enough that it's always a nice surprise when they show up.

I really liked that this course went beyond a basic “intro to palaeontology” that would really only be worth watching for beginners. I would say that even intermediate to advanced palaeontology enthusiasts can get some value out of it because of the sheer variety of lesson topics, and the connection to other disciplines such as geology, biology, ecology, anthropology and archaeology.

Many of the earlier lessons are about basics like the geologic time scale, how fossils form, taxonomy, and index fossils; but later lessons get into more specialized concepts such as microfossils, how plants and animals first colonized the land, the spread of forests, the Permian mass extinction, the history of dinosaur reconstructions, the evolution of grass, the evolution of whales, and even a bit about cloning mammoths.

I'm not going to spoil all of the lesson topics for you as I have already listed almost half of them, but one of my favourites was Neanderthals, and how they were a lot more like us than the dim-witted, primitive and savage cavemen that most people imagine. One of the other things I learned was how,

in early taxonomy, only five different classes of animals were recognized: Mammalia, Aves (Birds), Amphibia (which also included Reptiles and Fish), Insecta (which back then included all arthropods), and Vermes (all other invertebrates). I quite enjoyed learning more about this aspect of the history of science.

In conclusion, I highly recommend the course for anyone with an interest in palaeontology, and in particular how it incorporates learning from other disciplines. I say this because, given the wide variety of lesson topics, there is enough content to show you that palaeontology isn't just about dinosaurs, but is a significantly more complicated science than you might at first suppose. □

2019 Field Trips Update

By Wayne Braunberger

Information on the July and August trips is below. A trip to the Fernie area is tentatively planned for September 14–15. For more information please contact **Wayne Braunberger** at (403) 278-5154 or by email at fieldtrips@albertapaleo.org.

If you would like to register for a trip, download a field trip registration form on the APS website (www.albertapaleo.org/fieldtrips.html).

A reminder that this year you can pay field trip fees by Interac E-transfer (Canada only). Follow directions on your bank's online banking site or mobile app. Bank fees may apply. Payee is giftshop@albertapaleo.org. Please state in the message field: "Field Trip Fees for 2019." Email a scan or photo of the completed registration form to fieldtrips@albertapaleo.org.

Trip 2019-2, July 20 & 21, 2019 Southeastern Alberta

This trip will focus on Cretaceous vertebrate localities in southeastern Alberta. Exact localities to be visited have not been confirmed. Locations will be in the vicinity of Medicine Hat.

Access to sites is along poorly maintained wellsite access roads and prairie trails. For safety reasons we will be restricted to high clearance vehicles. If there

has been significant rain in the area access will be limited.

Registration deadline: July 5, 2019.

Trip 2019-3, August 17 & 18, 2019 Cranbrook, British Columbia

Preliminary itinerary is to visit Ordovician trilobite localities along the Bull River on Saturday. On Sunday we'll visit the Cranbrook Museum in the morning and one or two localities in the afternoon.

Registration deadline: August 2, 2019.

Trip 2019-4, September 14 & 15, 2019 The Big Ammonite, Fernie area, BC

There has been interest expressed in making a pilgrimage to the site of "The Big Ammonite." A tentative date of September 14–15 has been proposed. If you are interested, contact **Wayne Braunberger**, fieldtrips@albertapaleo.org.

Fossils in the News

Ancient whales walked on four legs and moved like giant otters—seriously.

www.cnn.com (search "Peregocetus").

"Discovery of the century": Treasure trove of fossils sheds light on dinosaurs' last days.

www.cbc.ca (search "Discovery of the century").

Prehistoric jumbo shrimp grew to be 6 feet long.

discovermagazine.com (search "Aegirocassis").

520-million-year-old predator's fossilized brains discovered.

paleontologyworld.com (search "Kerygmachela").

"The Nation's T. rex": How a Montana family's hike led to an incredible discovery.

www.washingtonpost.com (search "Nation's T. rex").

3-million-year-old "mighty mouse" fossil still has red fur.

www.cnn.com (search "mighty mouse red fur").

One billion year old fungi found are Earth's oldest.

phys.org (search "billion year old fungi")

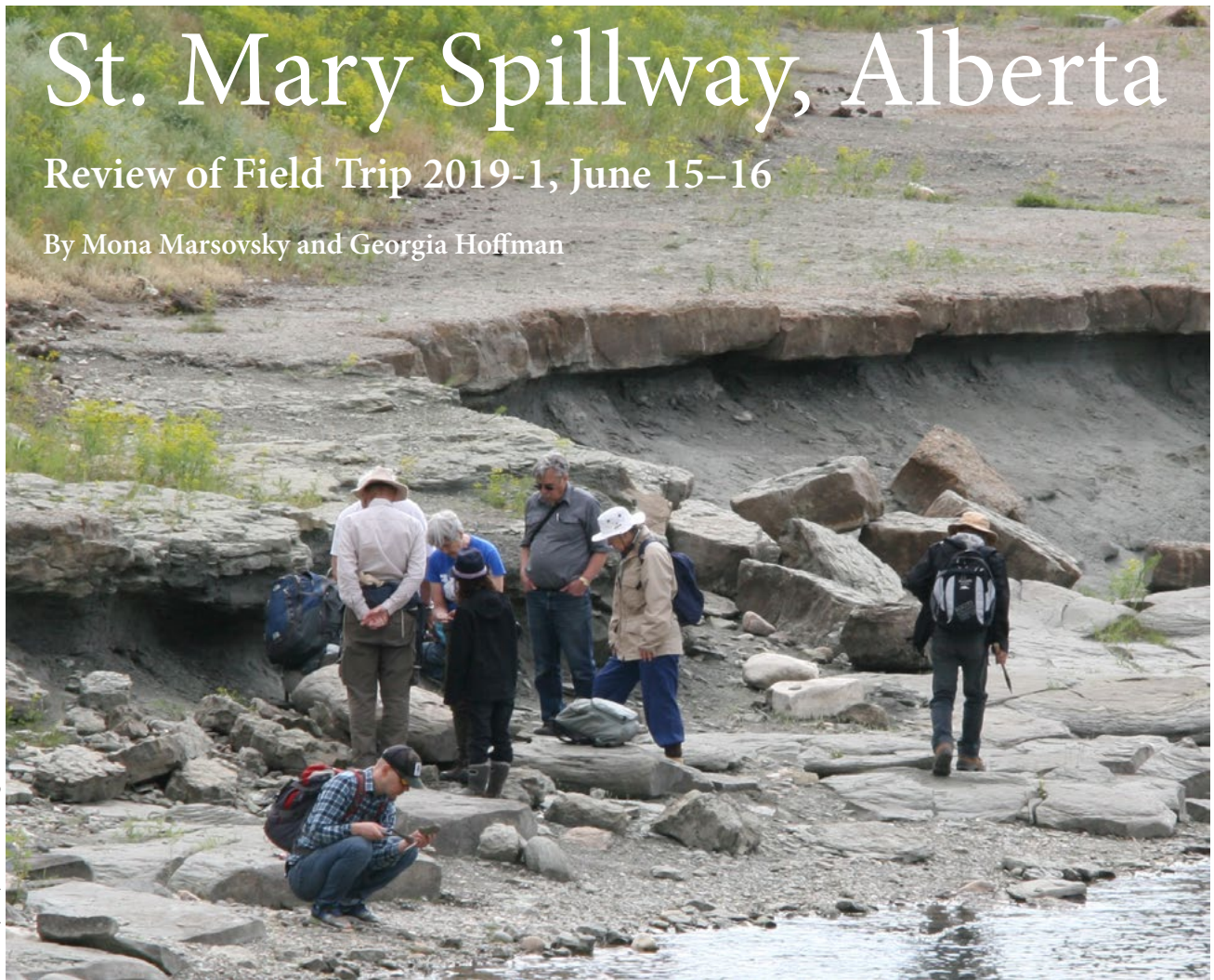
[Thanks to Phil Benham and Evelyn Wotherspoon] □

St. Mary Spillway, Alberta

Review of Field Trip 2019-1, June 15–16

By Mona Marsovsky and Georgia Hoffman

Photo by Wayne Braunberger



Luckily the rain on the previous night and in the forecast did not interfere with our explorations of the St. Mary Spillway area. Fifteen APS members met near the boat launch at the Lower St. Mary Reservoir Provincial Recreation Area campground, south of Lethbridge, at 9:30 A.M. on Saturday. We hiked a short distance to the bank of the St. Mary River opposite the spillway, where sandstone blocks littered the beach area. These came from the St. Mary River Formation, which was deposited by rivers that moved sediment eastward toward the Bearpaw Sea, from the rising mountains in the west. Palynological studies have determined this formation to be of early Maastrichtian age (69 – 72 million years old; Sweet, 1999; Riley, 2003, p. 11).

The St. Mary River Formation (Figure 1) lies on top of the Blood Reserve Formation (in some areas) and Bearpaw Formation (in others), and below the Willow Creek Formation (Tozer, 1952; Hamblin, 2004). It interfingers with the contemporaneous Horseshoe Canyon Formation to the north

(Hamblin, 1998, 2004), which is famed for its dinosaur fossils.

The field trip was successful, but in ways that we

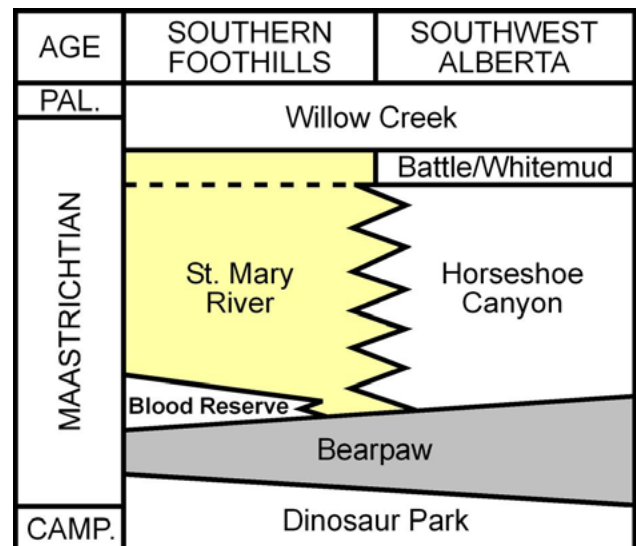


Figure 1. Stratigraphic position of the St. Mary River Formation. Based on Tozer (1952) and Hamblin (1998, 2004).



Figure 2. *Quereuxia angulata* fossils. Photo by Georgia Hoffman.



Figure 3. Bed of fossil freshwater mussels. Photo by David Frishman.

did not anticipate. The plant fossil outcrops were eroded and/or overgrown. Only a few fragments of *Quereuxia angulata* were found on the first morning. However, someone spotted what probably was a dinosaur footprint on a loose block (Figure 4), and then “footprint fever” struck and the hunt was on! Some of the finds required a bit of imagination but

some were quite convincing. We saw a lot of good *Ophiomorpha*-like burrows, too. So plant fossils were “out” and ichnofossils were “in.” Amongst the sandstone and mudstone on the bank, we found:

- *Quereuxia angulata* leaves (aquatic plant with rosettes of floating leaves) (Figure 2).
- Unionid bivalves (freshwater mussels) and various other shells (Figure 3).
- Plant stems and petrified wood.
- *Ophiomorpha*-like traces, interpreted as dwelling and feeding burrows (possibly made by freshwater crayfish).
- 3-toed dinosaur tracks (Figure 4). On a small rock island in the river, we found many individual tracks on isolated blocks, including one with drag marks and perhaps even skin impressions.



Figure 4. Natural cast of a dinosaur footprint. Photo by David Frishman.

On Sunday, eight APS members met at the same time and place and continued to search the river bank for fossils; a partial leaf of *Fortuna marsilioides* and more dinosaur footprints were found.

In addition to fossils, we saw yellow-bellied marmots (*Marmota flaviventris*), beavers (*Castor canadensis*), ground squirrels (*Spermophilus*), a fox (*Vulpes*), and white pelicans (*Pelecanus erythrorhynchos*; Figure 7). On the second morning we saw flowers of Fragrant Evening Primrose (*Oenothera caespitosa* var. *marginata*; Figure 6). Some participants also enjoyed discussing the wide range of high-grade metamorphic boulders that were present on the big gravel bar in the river.

We all want to thank Georgia Hoffman for preparing the field trip guide, leading the technical discussions, and identifying the fossils found.



Figure 5. APS members search for fossils on the bank of the St. Mary River, opposite the spillway of the St. Mary Dam. Photo by David Frishman.

References

- Hamblin, A.P. 1998. Edmonton Group/St. Mary River Formation: Summary of literature and concepts. Geological Survey of Canada (GSC) Open File 3578, 29 pp.
- Hamblin, A.P. 2004. The Horseshoe Canyon Formation in southern Alberta: Surface and subsurface stratigraphic architecture, sedimentology, and resource potential. GSC, Bulletin 578, 180 pp.
- Riley, M.G. 2003. Paleobotany and paleoecology of the St. Mary River Spillway locality (Late Campanian/Early Maastrichtian), Cardston, Alberta. Unpublished M.Sc. thesis,



Figure 6. Fragrant Evening Primrose (*Oenothera caespitosa*). Photo by Georgia Hoffman.



Figure 7. White pelicans. Photo by Georgia Hoffman.

- Department of Biological Sciences, University of Alberta, Edmonton, 120 pp.
- Stockey, R.A. and Rothwell, G.W. 1997. The aquatic angiosperm *Trapago angulata* from the Upper Cretaceous (Maastrichtian) St. Mary River Formation of southern Alberta. *International Journal of Plant Sciences*, 158: 83–94.
- Sweet, A.R. 1999. Geological Survey of Canada, Paleontological Report 6-ARS-1999, 9 pp. (Appendices A and B in Riley, 2003, pp. 127–135).
- Tozer, E.T. 1952. The St. Mary River-Willow Creek contact on Oldman River, Alberta. GSC, Paper 52-3, 9 pp. □

APS Balance Sheet for 2018 For January 1, 2018 to December 31, 2018

| Revenues | | Expenses | |
|---|-------------------|--|-------------------------|
| Memberships | 2245.00 | Bulletin Printing | 117.48 |
| US\$ Exchange | 4.95 | Bulletin Postage | 90.72 |
| T-shirts | 190.00 | Speaker Expenses | 139.23 |
| Field Trip Guides | 60.00 | PO Box Rental | 190.05 |
| Old Abstract Volumes | 22.00 | Membership Printing | 65.88 |
| APS Book | 2655.00 | Membership Postage | 92.29 |
| Shipping and Handling | 225.91 | Field Trip Expenses | 318.99 |
| Misc. Sales | 12.00 | Workshop Expenses | 0.00 |
| Refreshments | 38.15 | Symposium Speaker | 1780.17 |
| Field Trip Fees | 400.00 | Symposium Abstract Printing | 318.02 |
| Workshop Fees | 285.00 | Postage for Sales | 214.40 |
| Donations | 10.00 | Website domain and hosting fee | 0.00 |
| Symposium Abstract Sales | 343.00 | Refreshments | 56.91 |
| Symposium Donations (prev +current) | 605.15 | Bank Charges+GIC purchase | 16430.66 |
| Bank account interest + GICs cashed | 16423.71 | Miscellaneous | 0.00 |
| Public Outreach income | 0.00 | APS Book printing | 2620.28 |
| Library income | 34.00 | Public Outreach | 75.84 |
| Subtotal Revenues | 23553.87 | Subtotal Expenses | 22510.92 |
| Plus Revenue Received in 2017 for 2018 | | Plus Expenses paid in 2017 for 2018 | |
| 2018 Membership Fees | 525.00 | Website domain and hosting fee | 224.25 |
| 2018 Workshop Fees | 10.00 | | |
| Savings for 2018 Symposium | 3862.00 | | |
| Savings for Library | 671.25 | | |
| Savings for Public Outreach | 794.66 | | |
| Savings for T-shirt purchase | 573.05 | | |
| Fund Raising Account | 1855.23 | | |
| Subtract Revenue Received in 2018 for 2019 | | Minus Expenses paid 2018 for future | |
| 2019 Memberships Fees | 545.00 | | |
| 2019 Workshop Fees | 130.00 | | |
| Savings for 2019 Symposium | 2892.00 | | |
| Savings for 2019 Library | 705.25 | | |
| Savings for 2019 Public Outreach | 718.82 | | |
| Savings for future T-shirts | 573.05 | | |
| Fund Raising Account | 1855.23 | | |
| Total Revenues | 24425.71 | Total Expenses | 22735.17 |
| Excess of Revenues over Expenses = \$1690.54 | | GICs | 16,421.86 |
| Inventory Cost to Dec. 31, 2018 | \$1,691.74 | December 31, 2018 Account | 13,491.99 |
| Values Current to Date: | 1/1/2019 | Audited by APS Members (Bylaws): | |
| Printed Name: <u>RISA KAWCHUK</u> | | Signature: <u><i>Risa Kawchuk</i></u> | Date: <u>Feb 23/19</u> |
| Printed Name: <u>Jeff Davis</u> | | Signature: <u><i>Jeff Davis</i></u> | Date: <u>7 Mar 2019</u> |