Alberta Palæontological Society Bulletin

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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:
Alberta Palaeontological Society
PO Box 68024, Crowfoot PO
Calgary, AB, Canada T3G 3N8
www.albertapaleo.org

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:

Howard Allen, Editor, APS
7828 Hunterslea Crescent, NW
Calgary, AB, Canada T2K 4M2
editor2@albertapaleo.org

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

Upcoming APS Meetings

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

Friday, January 18, 2019—Dr. Don Brinkman, Royal Tyrrell Museum.
New approaches to the study of teleost fish from the Late Cretaceous of Alberta
Georgia Hoffman (APS) will start with a 15-minute presentation,
Paleocene plant fossils found near Red Deer, Alberta (see Page 4).

Friday, February 8, 2019—Brian Cooley, Cooley and Company (Calgary).
Considerations and procedures for creating sculptural life restorations of prehistoric life (see Pages 5–6).
Daegan Kovacs (APS) will start with a 15-minute presentation, ***Crystal Palace Park Dinosaurs***.

Saturday and Sunday, March 23 and 24, 2019—*Paleo 2019* (see Pages 12–14).

Watch the APS website for updates!

ON THE COVER: Alberta fossils—an oyster shell, *Ostrea* sp., with very fine perforations created by boring clionaid sponges. Upper Cretaceous, Foremost Formation, Pinhorn Grazing Reserve. APS collection, catalogue number APS.1990.01, donated by **Don Sabo**. Length of specimen is 5.2 cm. APS file photo.

Program Summary

November

David Moore

University of Calgary

The Burgess Shale: A guide's perspective

Friday, November 16, 2018, 7:30 p.m.
Mount Royal University, Room B108

[*This 15-minute presentation preceded our main speaker,* ***Annie McIntosh.***]

Field, BC is the jumping-off point for a palaeontological pilgrimage for anyone fascinated by the history of early animal life on this planet. For over one hundred years the Burgess Shale has provided a rare and spectacular glimpse into the world as it was during Cambrian time. Accompanying people from all over the world on this adventure is a great honour and I have been very fortunate to have the privilege for almost twenty-five years. What makes this remote mountainside in Yoho National Park so special? Few places on Earth have had as significant and lasting an impact on our understanding of our place in the history of animal life. David shared his experiences guiding people to this iconic World Heritage Site.

Biography

David Moore studied Geology at the University of Calgary and received his M.Sc. in 2002. He started guiding to the Burgess Shale as an undergraduate in the early 1990s. David has worked in the energy industry for over twenty years. His passions lie in teaching, the history of early animal life, and the mountains. Currently David spends most of the off-season taking care of his young children.

Bulletin back issues are available online:
www.albertapaleo.org/bulletinarchive.html

Annie P. McIntosh

University of Alberta

Using modern bird claws to investigate the lifestyles of extinct birds

Friday, November 16, 2018, 7:45 p.m.
Mount Royal University, Room B108

Modern birds evolved from theropod dinosaurs in the Late Jurassic (around 150 million years ago). Today, birds are the most diverse four-legged vertebrates, comprising about 10,000 living species. Birds occupy many different niches and show great variety in behaviour and lifestyle. This diversity in lifestyle is directly related to diversity in form and function and the morphology of an animal can tell us a lot about its behaviour.

This study sought to determine if the morphology of the claw on the foot in modern birds was correlated to their behaviour and ecological niche. The shape of the claw was compared across 128 specimens of birds, comprising 104 living species and one extinct species. By observing clusters of specimens with similar claw shapes, it was found that birds with broadly similar ecological niches were distinguishable based on overall claw morphology. This result was then used to investigate the possible behaviour of an extinct bird species, *Confuciusornis sanctus*, by analyzing the morphology of its claw.

Confuciusornis sanctus is an Early Cretaceous bird from the Liaoning Province of northeastern China. Although much work has been published on this species, details of its habitat and behaviour remained unclear. The morphology of the claw of *C. sanctus* indicates that it likely had a mainly arboreal lifestyle, spending most of its time climbing and perching in trees. By integrating this information with other evidence, we can make better inferences about the lifestyle of *C. sanctus*. This study shows that morphology and behaviour in modern birds can be used to study that of extinct birds and can help us more accurately determine their likely ecological niches.

Biography

Annie P. McIntosh is a Ph.D. student in palaeontology in the Biological Sciences Department at the University of Alberta. She completed her B.Sc. in biological sciences at Northern Arizona University in May 2012. Between May 2012 and August 2013, she taught a summer high school course

in palaeontology and geology at the University of Chicago and volunteered as a docent and fossil preparator at the Field Museum. In August 2013 she began the Master's program at DePaul University in Chicago. Early in her Master's program, she published two papers on Cretaceous marine vertebrate fauna of the Western Interior Seaway before beginning her thesis project. Her research focused on how the morphology of the claw of modern birds could be correlated to variations in their behaviour, and how this can be used to make inferences about the lifestyles of extinct birds. In August 2017, she completed her Master's thesis and moved from Chicago to Edmonton to begin a Ph.D. program at the University of Alberta. She has been a student and research assistant with Dr. Philip Currie since September 2017. Her current research focuses on the biomechanics of the hindlimb in extinct birds and theropod dinosaurs, specifically as related to the evolution of flight. ❑

Upcoming Events

January

Georgia Hoffman

Alberta Palaeontological Society

Paleocene plant fossils found near Red Deer, Alberta

Friday, January 18, 2019, 7:30 P.M.
Mount Royal University, Room B108

[*This 15-minute presentation will precede our main speaker,* ***Dr. Don Brinkman****.*]

In August of 2018, APS members participated in a field trip to the Blindman River area near Red Deer, Alberta, to look for Late Paleocene plant fossils in outcrops of the Paskapoo Formation. This talk will review the geological setting and present a closer look at some of the fossils that were found, such as the fern, *Osmunda macrophylla*, the ginger-like plant *Zingiberopsis attenuata* and *Paleocarpinus joffrensis*, a member of the birch family.

Biography

Georgia Hoffman received her Bachelor's degree in geology from the University of Pennsylvania in 1970, then came to western Canada where she has worked in exploration for coal and oil sand, as well as base and precious metals, and even industrial minerals. She became interested in plant fossils while working in the coal industry and earned an M.Sc. from the University of Alberta in 1995 for her work on a late Paleocene fossil flora from the Paskapoo Formation. She continues to work on palaeontology projects as time permits.

Dr. Don Brinkman

Royal Tyrrell Museum of Palaeontology and
Department of Biological Science, University of Alberta

New approaches to the study of teleost fish from the Late Cretaceous of Alberta

Friday, January 18, 2019, 7:45 P.M.
Mount Royal University, Room B108

Teleost fishes are important members of non-marine aquatic communities of the Late Cretaceous of North America, but their fossil record is poorly understood because few articulated specimens are preserved. However, isolated elements are abundant in vertebrate microfossil localities, and morphologically distinct jaws and vertebrae can be identified and their abundance and distribution quantified. These give data on the distribution and diversity patterns of teleosts but identifying what kinds of fish are present is challenging.

Comparison with complete skeletons of recent fish and of fossils, particularly from the Green River Formation of Wyoming, allow some to be identified but many of the taxonomically distinctive elements cannot be placed in any established taxonomic group below the level of Teleostei.

The discovery of a locality with complete articulated specimens of small teleosts in the late Maastrichtian Scollard Formation of Alberta presents an exceptional opportunity to identify some of the previously recognized morphotypes because vertebrate microfossil localities with isolated elements of teleosts from the same palaeocommunities are present in the same formation.

In an attempt to obtain data from the articulated fish that will allow isolated elements to be identified,

a skeleton of particular interest was scanned with a micro-CT machine (Xradia), based in the The Cell Imaging and Analysis Network facility of McGill University. This specimen had been identified as a member of the Ostariophysi, a group of fish that includes catfish, cyprinids and suckers. This group of fish is characterized by the presence of specialized elements at the anterior end of the vertebral column, called the Weberian apparatus, that allow the fish to hear. The presence of a Weberian apparatus in the fossil specimen confirms that it is a member of the Ostariophysi. Individual elements of the Weberian apparatus could be reconstructed from the CT scans and compared to isolated elements from vertebrate microfossil localities.

Based on the stratigraphic and geographic distribution of these isolated elements, this group of fishes first appeared in North America in the Turonian, likely as a result of dispersal from the southern hemisphere. The distribution of the isolated elements in North America show that they are primarily southern in their distribution during the Cretaceous but extend north into Alberta during times of higher global temperature. In the future, more fish from the Pisces Point locality will be scanned at a similar level of resolution in an attempt to identify other teleost elements from vertebrate microfossil sites.

Biography

Dr. Don Brinkman is the Director of Preservation and Research at the Royal Tyrrell Museum of Palaeontology. His research focuses on turtles of the Cretaceous and Paleocene of North America, with special emphasis on biogeographic patterns and the effect of climate change on distribution patterns during this time.

As a child, Don lived in Craigmyle, Alberta. The rocks in the Drumheller Valley would serve as the inspirations for him to pursue palaeontology as a career. His interest in the prehistoric past took him to Edmonton to study palaeontology at the University of Alberta. After receiving his Bachelor of Science, he went on to complete his Ph.D. in 1979 at McGill University in Montreal. For two years Don worked at the Museum of Comparative Zoology at Harvard, then he joined the staff at the new Tyrrell Museum in Drumheller.

Dr. Brinkman's current research focuses on two main areas: the taxonomy, biostratigraphy, and distributions of Mesozoic turtles, as well as the use of Cretaceous vertebrate microfossil assemblages for studies of palaeoecology and vertebrate distribution.

February

Daegan Kovacs

Alberta Palaeontological Society

Crystal Palace Park Dinosaurs

Friday, February 8, 2019, 7:30 P.M.

Mount Royal University, Room B108

[*This 15-minute presentation will precede our main speaker,* ***Brian Cooley****.*]

Did you know that in London, England there are models of dinosaurs and other prehistoric creatures, that are older than Canada? You might think I am talking about those on display at the Natural History Museum, but I'm actually referring to the Crystal Palace Park dinosaurs.

Crystal Palace Park, in South London, had dinosaurs on display more than a quarter century before the world-famous museum even opened its doors! It boasts more than thirty statues from fifteen genera—replicas now judged to be scientifically inaccurate.

During this talk I will address the history of these replicas from their opening to the present day, their role in popular culture and some of the players involved in their creation (artists, scientists, and so on). I will also compare them to modern reconstructions of these animals, and talk about what they teach us about the history and nature of palaeontology and science in general. I hope you enjoy learning about a lesser-known palaeontology display (at least outside of the UK), and appreciate the efforts of those restoring the Crystal Palace Park dinosaurs and preserving our scientific legacy.

Biography

Daegan Kovacs is a home-schooled student partnered with Willow Home Education. He is currently in Grade 11 and working toward a diploma, doing courses such as Biology 20, Math 20-1, and Special Projects 20: Palaeontology, which this talk will be part of. His learning has taken him to natural history museums in Drumheller, Bozeman, San Diego, Nebraska and London, England as well as to sites in western North America and the Jurassic Coast in England. His interests include vertebrate palaeontology, entomology and zoology.

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Brian Cooley
President, Cooley & Co. Ltd, Calgary

Considerations and procedures for creating sculptural life restorations of prehistoric life

Friday, February 8, 2019, 7:45 P.M.
Mount Royal University, Room B108

Since the early days of palaeontology, artists have worked with scientists in an attempt to interpret fossil discoveries and present them as living creatures for the entertainment and edification of the viewing public. In order to do so as accurately as possible, many steps are required. Measuring fossilized skeletal elements is essential and where those elements are missing, educated guesswork is required. Referring to any related species—sometimes distantly as required by necessity—is often necessary to create the most feasible end product. Using modern, extant creatures as analogues for musculature and integument is also employed. Often, new discoveries alter the perception of how the extinct creatures may have looked and require new and different reconstructions. The result is that the art of reconstructing prehistoric life is, like life itself, an evolving process and always a work in progress.

Biography

Brian Cooley was trained in classical figurative sculpture at the Alberta College of Art and Design, graduating in 1979. Since 1981 he has been creating sculptural reconstructions of prehistoric life. His sculptures have appeared extensively at the Royal Tyrrell Museum of Palaeontology as well as other museums around the world. He and his work have been featured in numerous films and publications, including three front covers of *National Geographic* Magazine. ❑

Thanks to Donors

A big thank-you to APS Past-President **Dan Quinsey**, who donated a stereo microscope to the Society in September. It will make a great addition to our microfossil sorting sessions.

Thanks, too, to **Harvey Negrich**, for donating his cash proceeds from our book sale at the September General Meeting, along with two field trip guides which will be sold to members. ❑

Winter 2019 Microfossil Sorting

By Risa Kawchuk

Once again we will be searching for tiny fossils in matrix samples to aid scientific research. Come and join us at our **Saturday** microfossil sorting sessions this January, February and March. We will be using microscopes to find fossils from the matrix (sediment) provided by **Dr. Donald Brinkman** of the Royal Tyrrell Museum of Palaeontology (RTMP) on the following dates.

January 12, 2019
February 2
February 23
March 9

Join us on these dates in Room B213 at **Mount Royal University** from 1:00 until 3:30 P.M. All of the fossils we find will be kept by the RTMP and used in Dr. Brinkman's research.

Registration is not required, but if you contact **Risa Kawchuk** (phone/text 587-969-1440 or **rkawchuk@yahoo.com**) and let me know that you are planning to attend, then I can inform you in case we need to cancel a session. Bring tweezers to pick the tiny fossils from the matrix and a pen to label your finds. No experience needed—everyone is welcome!

These sessions are made possible by Mount Royal University (especially **Mike Clark**), who allow us to use their microscopes and lab. ❑

Microfossils from Swift Current Creek (Eocene) picked at the November 24, 2018 session. Photo by Dan Quinsey.

Blindman River/Burbank and Munce's Hill

Review of Field Trip 2018-3, August 18–19.

By Mona Marsovsky

We were lucky with the weather during our field trip last August. Although it was smoky from the wildfires in B.C., the forecast rain did not materialize. Sixteen APS members met at the Burbank Community Hall north of Red Deer, Alberta, at 9:30 A.M. on Saturday, August 18.

We walked to the day-use area and then down to

APS members search for fossils at the Blindman River/Burbank site. Photo by David Frishman.

Selection of fossils found at the Blindman River/Burbank site. Ruler is 17 cm long. Photo by Georgia Hoffman.

the confluence of the Blindman and Red Deer Rivers. We hiked a short distance up the Blindman to where boulders of grey, calcareous mudstone are lying along the bank. These came from the "Grey Lacustrine Beds" in the lower part of the Paskapoo Formation. They were deposited about 59 million years ago during Late Paleocene time (Hamblin, 2004) in the 26R magnetostratigraphic zone (Lerbekmo *et al.*, 1992). Splitting these rocks revealed foliage, stems and cones from:

- Horsetail: *Equisetum*
- Ferns: *Osmunda macrophylla* and *Coniopteris blomstrandii*
- Conifers: *Glyptostrobus europaeus* and *Metasequoia occidentalis*
- Angiosperm dicots (trees and shrubs): *Joffrea speirsiae* and *Beringiaphyllum cupanioides*
- Angiosperm aquatic dicots (water lilies): *Harmsvernia hydrocotyloidea*
- Angiosperm monocots: *Alismaphyllites grandifolius* (an aroid—like skunk cabbage—one specimen even showed damage from slugs); *Zingiberopsis attenuata* (ginger), *Musa*-like leaves ("banana"), and *Typha*-like leaves ("cattail").

On Sunday, after meeting at 9:00 A.M. at the Burbank Community Hall, we drove to the nearby Munce's Hill site. The Paskapoo strata there are younger (57.5 million years old, in the 25R magnetostratigraphic zone; Lerbekmo *et al.*, 1992) than those at the Burbank site and a different flora is present, including:

- Horsetail: *Equisetum*
- Ferns: *Onoclea sensibilis* and *Speirseopteris orbiculata*
- Conifer: *Metasequoia foxii*
- Angiosperm dicots (trees and shrubs): *Palaeocarpinus joffrensis*, *Joffrea speirsiae*, and *Wardiaphyllum daturaefolium*.

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

References

Hamblin, A.P. 2004. Paskapoo-Porcupine Hills formations in western Alberta: synthesis of regional geology and resource potential. Geological Survey of Canada, Open File 4679, pp. 1–31.

Lerbekmo, J.F., Demchuk, T.D., Evans, M.E. and Hoye, G.S. 1992. Magnetostratigraphy and biostratigraphy of the continental Paleocene of the Red Deer Valley, Alberta, Canada. Bulletin of Canadian Petroleum Geology, **40**(1): 24–35.

Further reading

Hoffman, G.L. 2002 Paleobotany and paleoecology of the Joffre Bridge Roadcut locality (Paleocene, Red Deer, Alberta. M.Sc. thesis, University of Alberta, 114 pp. **http://exhibitions.museums.ualberta.ca/joffrebridge/ghthesis.pdf**

Sporangia of *Onoclea sensibilis* found at Munce's Hill. Photo by Georgia Hoffman.

Rock 'n' Fossil Road Show 2018

Photo by Larry Lane, NRCan

By Dan Quinsey,
APS Public Outreach Committee Member

The Annual Rock 'n' Fossil Road Show was held Saturday, October 13 from 11:00 A.M. to 3:00 P.M. at the Nose Hill Public Library, 1530 Northmount Drive, NW Calgary. The event was well received, with an estimated 400 visitors of all ages attending. In 2009 the event drew upwards of 300 visitors at the same location. This was the twentieth appearance of the Rock 'n' Fossil Road Show. Shows began in 2004 and were held twice a year until 2009, when they became an annual event.

The Rock 'n' Fossil Road Show is a collaborative event hosted by the Alberta Science Network, Natural Resources Canada (NRCan), Geological Survey of Canada (GSC), Nature Calgary, APS and the Calgary Public Library.

Volunteers from NRCan, GSC, Nature Calgary and APS were on hand to identify specimens and answer questions.

On display were numerous specimens of rocks, minerals, fossils and a microscope to look at micro-fossils provided by the GSC; several interactive displays provided by Nature Calgary; fluorescent minerals under a fluoroscope and an Echinodermata display provided by the APS. The APS also donated give-away fossils for the children. To help with advertising, the GSC provided the library with a showcase of specimens for a few weeks prior to the event.

Volunteers began arriving at approximately 10:00 A.M. to set up the tables and displays. Visitors gathered quickly during the setup. The show ran a little overtime as there were so many interested participants still at the tables by the time 3:00 P.M. rolled around. Disassembly was quick and efficient as the seasoned volunteers packed the specimens and displays, pausing briefly for a group picture. The show vanished almost as quickly as it appeared.

Thanks to everyone who make this event an annual success. See you again next year! ❑

Dan Quinsey mans his display table. Photo by Larry Lane, NRCan.

Planning cancelled for Grande Prairie 2019 field trip

By Mona Marsovsky

Unfortunately, there was not enough interest in an APS Field Trip to Grande Prairie in 2019 for me to proceed with organizing. In the September 2018 *Bulletin* (p. 10) I asked for responses from those interested in participating in a field trip to Grande Prairie on August 16–18, 2019. Only three people indicated that they wanted to use the rental van option. Another party of two indicated that they would like to drive themselves to Grande Prairie. A minimum of eight people would be required for the rental van option, so there was not enough interest to proceed.

However, the Dinosaur Research Institute (DRI) is planning *Dinotour 2020,* which will tour Grande Prairie for four days, from **August 7–10, 2020**. I am still working out the details. The tour is planned to start and end in Grande Prairie. We will tour the galleries and back room of the Philip J. Currie Dinosaur Museum. Through that museum I am also trying to arrange a day of excavating in the Pipestone Creek Bone bed and prospecting for fossils on the Wapiti River (via jet boat). Contact **dinotour@dinosaurresearch.com** or phone me at (403) 547-0182 (land line) to be put on the notification list. ❑

2019 Field Trips

By Wayne Braunberger

A preliminary schedule and potential field trips for the 2019 season are being developed. At this time dates and locations have not been finalized. The final schedule (including registration forms) will be published in the March 2019 *Bulletin* and on the APS website.

Tentative dates

June 15 and 16
July (to be announced)
August (to be announced)

Potential Trips

- St. Mary Reservoir, southwestern Alberta (June).

If you have ideas for field trip localities or if you'd be willing to assist in planning or guiding a trip please contact me, as your help would be greatly appreciated!
fieldtrips@albertapaleo.org
(403) 278-5154. ❑

Province designates another 3,800 km^2 where you can't collect fossils

Editorial comment by Howard Allen

The Government of Alberta announced in November its intent to create four new provincial parks, totalling "more than 384,325 ha of legislatively protected lands," (**https://talkaep.alberta.ca/6512/documents/12745**) which works out to over 3,843 km^2. The new parks will mop up some of the few remaining areas of the Alberta foothills and mountains formerly accessible to the public for legal rock and fossil collecting, including venues of past APS field trips. If this movement to protect the entire mountain and eastern slopes area continues into the future it will effectively become illegal to collect fossils older than the Cretaceous Period, since this is the only practically accessible region of the province where older rocks are exposed.

The Government is inviting public input until January 31, 2019. See **https://talkaep.alberta.ca/bighorn-country** and the public input survey at **https://albertaparks.ca/BighornCountry**.

In responding to the survey, I pointed out that avocational Earth science collecting (as I called it) is entirely compatible with the Government's stated management intent to:

- Protect headwaters and watershed integrity;
- Conserve and maintain biodiversity;
- Recognize Indigenous Peoples' rights and traditional uses;
- Provide high quality outdoor recreation opportunites; and,
- Support economic diversification and increase tourism opportunities.

❑

Fossils in the News

Folio (University of Alberta), October 19, 2018

Palaeontologists discover 85-million-year-old "baby sea monster"

Authors from the University of Alberta and University of Cincinnati have described the smallest known specimen of a mosasaur, referred to *Tylosaurus* sp. The bones, recovered from a Late Cretaceous Kansas chalk formation, were difficult to interpret due to their relatively early stage of growth: the animal apparently died shortly after it was born. Lead author **Takuya Konishi** says, "it took me nearly ten years to think outside the box and realize what it was—a baby *Tylosaurus* yet to develop [an adult-shaped] snout." **https://www.folio.ca** (search "tylosaurus"). The open-access paper is available at **https://doi.org/10.1080/02724634.2018.1510835**.

Science online, November 20, 2018

Some of Earth's first animals—including a mysterious, alien-looking creature—are spilling out of Canadian rocks

This feature-length article describes the ongoing exploration and research by **Jean-Bernard Caron** (APS member) in the Marble Canyon area of Kootenay National Park, BC. **https://www.sciencemag.org/** (search "sokol marble canyon").

The Guardian online, September 20, 2018

558m-year-old fossils identified as oldest known animal

Beautifully preserved new specimens of the Ediacaran fossil, *Dickinsonia*, have been found in rocks on the shore of the White Sea, in a remote area of Russia. Besides showing fine structural detail, the new fossils contain organic molecules that have been analyzed and identified as a form of cholesterol, proving that the organisms were indeed animals and not lichens, bacterial colonies, or other speculative identities proposed for them over the years. The article includes a short video. **https://www.theguardian.com/** (search "oldest known animal"). The research paper is published in *Science* (paywalled): **http://science.sciencemag.org/content/361/6408/1246**

[*Thanks to Phil Benham and Evelyn Wotherspoon for sending links. –ed.*]

CNN.com, August 22, 2018

This 228 million-year-old turtle didn't have a shell

Readers able to navigate through the appalling blizzard of click-bait on CNN's site will eventually learn that a magnificently preserved, complete, articulated skeleton of an early (Triassic) turtle ancestor has been described from China's Guizhou Province. The animal, *Eorhynchochelys sinensis*, had a wide, flattened body, but without the shell of much later descendents. It did, however, possess the toothless beak that is characteristic of modern turtles. It was quite a large animal, at about 2 m long (including a long tail). Though the new fossil sheds light on the evolution of turtles, their line of descent is complex and many questions remain: some early specimens show creatures with shells but without beaks; others show a bottom shell but no top shell. **https://www.cnn.com/2018/08/22/world/turtle-shell-evolution/index.html**. The paper in *Nature* is "shared" open-access, meaning it's open access only if you click through from the link in CNN's article; otherwise it's paywalled.

The Globe and Mail online, October 25, 2018

A new paleontology star is born as China's building boom uncovers buried dinosaurs

One of China's top dinosaur palaeontologists, Xu Xing, is profiled in this article. China's recent construction boom has had the positive effect of exposing exciting new dinosaur discoveries. One such discovery was made in Yanji city, where a developer turned up a treasure-trove of Cretaceous dinosaur bones. Construction was halted and the site was protected by police, to prevent poaching. A museum is planned to house the recovered specimens. **https://www.theglobeandmail.com/** (search "new paleontology star is born").

Sci-news.com, August 29, 2018

Researchers find ancient parasitic wasps in fossil fly pupae

The article's title pretty much says it all. The highlight is an astonishing video of the micro-CT unwrapping of a wasp inside a fossil (Eocene) pupa. **http://www.sci-news.com/paleontology/ancient-parasitic-wasps-fossil-fly-pupae-06351.html**. ❑

Paleo 2019

Alberta Palæontological Society's 23rd Annual Symposium

The Symposium

Paleo 2019 is a two day event with talks, posters and displays on Saturday, March 23 and a workshop on Sunday, March 24. Saturday programs are free and open to the public. Sunday workshop participants must register and pay a fee for manuals and materials. Main events will be centred in the lower level corridor at Mount Royal University. Lectures will be held in the Jenkins Theatre.

Call for posters and abstracts

You are invited to present a poster at Paleo 2019. The symposium will feature presentations from avocational, student and professional palaeontologists from all over western Canada. We welcome posters or displays associated with palaeontology. Our aim is to showcase palaeontology to the general public. There is no fee to submit a poster and abstract.

A table and stand with a 4 x 8-foot poster board will be supplied to each presenter. You should bring push pins or tape for attaching posters, but we will try to have some on hand for those who forget. Special requirements such as electricity to operate a display or a larger display area should be identified when you request a space. Presenters are requested to provide an abstract (see below). We request that poster presenters be set up by 8:30 A.M. Saturday, March 23. During the day a poster session period will be specified; please be available at least during this time for discussion of your exhibit. **Deadline for submitting requests for poster space is February 15, 2019**.

Paleo 2019 abstracts volume

A symposium abstracts volume will be published and sold at a price to cover costs. We request all speakers and poster presenters to submit abstracts or short papers for publication. **Submissions may be any length**: less than a full page is fine, multi-page abstracts or short papers will be accepted. **Contributors are encouraged to include photos and other illustrations**, but note that colour images will be converted to black and white. Documents are not edited for content but will be formatted for publication. The author's mailing and email addresses should be included. **Submission deadline is February 15, 2019**. Download guidelines for authors (PDF) from our website, **www.albertapaleo.org** or contact the Editor (see contact information, next page).

Sunday Workshop—March 24, 2019

A workshop will be offered at Mount Royal University, Room B213. Attendance is limited, so register early! To register, contact **Harold Whittaker** (see next page). Please indicate your preference for the morning or afternoon session, or indicate if you have no preference. **Registration fee is $10.00 and the deadline is March 15, 2019**. Make cheques payable to Alberta Palaeontological Society. Payment may be handed to Harold or mailed to the Society's mailing address at P.O. Box 68024 Crowfoot PO, Calgary, AB T3G 3N8.

***Exploring the Wonderful and Wacky World of Trilobite Palaeontology*, with Chad Morgan, Ph.D. candidate at the University of Calgary. A morning session from 9:00 A.M. to 12:00 P.M. and an afternoon session from 1:00 P.M. to 4:00 P.M. will be offered.**

Chad Morgan is currently working on Middle Cambrian trilobite biostratigraphy of the Stephen Formation under the supervision of Dr. Charles Henderson and Dr. Brian Pratt (University of Saskatchewan).

Participants will be immersed into the basics of trilobite palaeontology (trilobitology), with an introduction to the main trilobite orders and features used to identify trilobites from these orders. We will learn about the morphology, taxonomy, life habits, and evolution of trilobites. Specimens from the major trilobite orders and from different time periods will be on hand for participants to examine and we encourage anyone to bring in trilobites that they wish to identify or show to the group. Participants are asked to bring a hand lens if you have one.

Contact Information

Paleo 2019 Committee Chairperson: Mona Marsovsky, (403) 547-0182, **giftshop@albertapaleo.org**
Posters & displays: Howard Allen (403) 862-3330, **posters@albertapaleo.org**
Presentations and Workshops: Harold Whittaker (403) 286-0349, **programs1@albertapaleo.org**
Abstract submissions: Howard Allen (403) 862-3330, **editor2@albertapaleo.org**
Advertising: Mona Marsovsky, (403) 547-0182, **giftshop@albertapaleo.org**

Visit the APS website for confirmation of lecture and workshop times and speakers: **www.albertapaleo.org**

Helpful Hints for Poster Presenters

What is a poster?

A poster is a visual medium to express results or an overview of one's research work on a topic they have chosen to study. It is something that you pin up on a board. The dimensions of a poster can vary. It can be anywhere from 2′ × 3′ to 4′ × 8′. It contains text and images relevant to your work.

Who should do a poster?

Anyone who has an interest in sharing their work and who likes feedback from the audience (symposium attendees) should consider doing a poster.

What should be considered for a poster?

Any topic that ties in with palaeontology can be considered for a poster.

Why posters?

Written and illustrated presentations convey developments in a field of study that interests the investigator. Posters are an effective form of presentation.

A typical poster format:

- Title, Author(s), Affiliation
- Summary—sum up the study in one paragraph
- Introduction—reasons behind the work
- General information, location (study area)
- Description and interpretation
- Conclusions
- References

Dedicate a box to each one of the sections listed above. Within the box, include the text and figures relevant to that section. Number the boxes in such a way that the reader can follow from one box to the next in your intended sequence. The structure of the framework will vary from topic to topic.

How does one make a poster?

Today, with powerful graphics and word processing software, a poster can be made entirely using a computer. The final poster image can be printed on a large-format colour printer. But you don't need a computer to do a poster! Carefully hand-lettered or typewritten text can be combined with drawings, photos or enlarged photocopies to make an effective presentation. These days it should be easy to find someone with a computer who could print out some titles or captions to add to your text.

What about the visual presentation?

Whatever the size of the poster, when one views it from one or two metres away, the type (or font) size must be large enough that the text can be easily read. Also, figures should be reasonably large. Think about when the eye doctor wants you to read off her chart of alphabets and numbers from a distance. Don't be tempted to crowd too much information onto a poster—you can overwhelm your audience. Adding colours makes a difference to the poster, and can lure viewers to your poster or even drive them away!

A great blog article with tips for poster presenters is available here: **http://blogs.lse.ac.uk/impactofsocialsciences/2018/05/11/how-to-design-an-award-winning-conference-poster/**

What's an abstract?

An abstract is just a summary of your work, from introduction to conclusion, boiled down to one or a few paragraphs. We'd like to have an abstract from each of our poster presenters and speakers, to include in the Symposium Abstracts Volume. Illustrations are encouraged (they will be converted to black-and-white).

Most of all, have fun!

APS Paleo 2019

Mount Royal University

4825 Mount Royal Gate SW, Calgary, Alberta

Presented in conjunction with the CSPG Palaeontological Division
and Mount Royal University Department of Earth and Environmental Sciences

Lectures and poster displays—Saturday, March 23, 2019, 9:00 AM to 4:30 PM
Workshops—Sunday, March 24, 2019, 9:00 AM to 4:00 PM

Saturday events are free to the public

There will be fossil displays and activities of interest to a wide audience including families.
The Sunday workshop requires pre-registration and a fee.

Saturday, March 23 speaker schedule

All talks will be held in Jenkins Theatre, lower level of Mount Royal University

9:00 AM	*Opening statement by* **APS President Cory Gross** *and symposium instructions by* **APS Programs Coordinator Harold Whittaker**
9:15 AM	*Palaeozoic predation: Still matters after all these years* **Lindsey Leighton, University of Alberta**
10:15 AM	Coffee Break.
10:30 AM	*The world's most famous bird: The story of* Archaeopteryx **Jon Noad, Gran Tierra Energy and University of Alberta**
11:00 AM	*Earliest Carboniferous ray-finned fishes from Blue Beach, Nova Scotia* **Conrad Wilson, University of Calgary**
11:30 AM	*Histological analysis of elasmosaurid (Sauropterygia: Plesiosauria) specimens reveals the presence of a small-bodied taxon from the non-marine Dinosaur Park Formation* **James Campbell, University of Calgary**
12:00 PM	Lunch Break and Poster Displays.
1:00 PM	*An unusual microsite reveals the hidden fauna of the Horseshoe Canyon Formation* **Greg Funston, University of Alberta**
1:30 PM	*You're a strange animal—Morphology of Cambrian Stenothecoida* **Paul Johnston, Mount Royal University**
2:00 PM	Poster session, coffee break. Poster presenters are requested to be with their posters.
3:00 PM	*Cleaning up after Barnum Brown: Relocation of lost American Museum of Natural History quarries in Dinosaur Provincial Park and salvaging forgotten dinosaur bones therein* **Darren Tanke, Royal Tyrrell Museum of Palaeontology**
3:30 PM	*Valleys of hidden secrets: Why Saskatchewan is Canada's new fossil frontier.* **Emily Bamforth, Royal Saskatchewan Museum, T. Rex Discovery Centre**
4:30 PM	*Closing remarks for Paleo 2019.* **Harold Whittaker, APS Programs Coordinator**