

# Alberta

*Palaeontological  
Society  
Bulletin*

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# ALBERTA PALAEOONTOLOGICAL SOCIETY

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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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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.

**Friday, October 20, 2017**— Jason D. Pardo, University of Calgary.

*A Palaeozoic origin of modern amphibians.* See Page 3.

**Friday, November 17, 2017**— James Campbell, University of Calgary.

*Plesiosaur (Reptilia: Sauropterygia) body size comparisons between marine and non-marine depositional environments.* See Page 4.

**Friday, December 15, 2017**— *APS Christmas Social.*

Watch the APS website for updates.

**ON THE COVER:** Alberta fossils! Dinosaur skin impression in sandy ironstone, Belly River Group, Upper Cretaceous (Campanian). APS collection, donated by **Don Sabo**. Catalogue number APS.1992.12. Length of specimen (this view, top to bottom) is 45.2 mm. APS file photo.

# Upcoming Events

October

## Daegan Kovacs

Alberta Palaeontological Society

### *Memories of Montana—Photos from Bozeman*

Friday, October 20, 2017, 7:30 P.M.

Mount Royal University, Room B108

[This 15-minute presentation will precede the main speaker, **Jason Pardo**.]

The year was 2015, the month was July, and with my mom and brother we went to Bozeman in Montana. Why? Because I've wanted to go to Montana State University's Museum of the Rockies ever since I was a little kid. Montana's geology is similar to Alberta's, except Montana has more Early Cretaceous and Eocene rock; and in the far south, some rocks that date back to the Late Jurassic. I went there for a palaeontology camp where I slept under the *Tyrannosaurus* display, went to a Jurassic dig site where they were excavating a *Diplodocus* and a *Stegosaurus*, and met none other than Jack Horner! Inside the museum they had many interesting displays such as one showing a *Deinonychus* attacking a *Tenontosaurus*; *T. rex* and *Triceratops* growth series; and a diorama showing the burrowing dinosaur *Oryctodromeus*. We also visited the Spokane Bar Sapphire Mine near Helena, the capital of Montana, where we found both sapphires and fossils.

### Biography

Daegan is a homeschool student going into grade 10 and aims to become a palaeontologist. He has been a member of the APS for four years and wants to be a member far into the future. This presentation is part of his curriculum for high school credit in Special Projects 20: Palaeontology. He is an avid microfossil sorter, is also very interested in entomology, and has several pets including a bearded dragon.

Bulletin back issues available online  
[www.albertapaleo.org/bulletinarchive.html](http://www.albertapaleo.org/bulletinarchive.html)

## Jason D. Pardo

University of Calgary

### *A Palaeozoic origin of modern amphibians*

Friday, October 20, 2017, 7:45 P.M.

Mount Royal University, Room B108

Modern amphibian diversity belongs to three major lineages: frogs (Anura), salamanders (Caudata), and caecilians (Gymnophiona). Each lineage is extremely distinct, with very few features that unite the three groups. The earliest definitive members of each lineage are Mesozoic in age, but generally already exhibit an overall body plan consistent with that seen in modern members of each group. Because the earliest members of each lineage are already highly derived, placing modern amphibians into the diversity of Palaeozoic tetrapods has traditionally proven a difficult task. Three possibilities have been suggested: that all amphibians evolved from large semiaquatic ancestors (temnospondyl hypothesis), that all amphibians evolved from small elongate-bodied ancestors (lepospondyl hypothesis), or that some amphibians evolved from temnospondyls whereas others evolved from lepospondyls (amphibian polyphyly).

In recent years, a flurry of papers has examined the new approaches, especially use of microscopic computed tomography (micro-CT), have provided new ways of looking at this problem, with some surprising results. New data strongly reject the lepospondyl hypothesis and suggest that tetrapod and amphibian origins both involved a number of important evolutionary novelties. Furthermore, these data call into question whether "lepospondyls" are a natural group at all. At least one group of lepospondyl, the serpentine aistopods, appear to be extremely basal tetrapods from within the Devonian fin-to-limb transition, suggesting that the earliest tetrapods may have been more diverse than previously thought. Finally, new temnospondyl fossils from the Triassic are showing that there may be more than one viable "temnospondyl hypothesis," suggesting that the search for amphibian origins has not yet finished.

### Biography

Jason Pardo grew up in Pittsburgh, Pennsylvania. He completed his undergraduate education at the University of Colorado in Boulder, where he conducted undergraduate research in developmental ge-

netics of fish with Dr. David Stock and palaeontology with Bryan Small and Dr. Dena Smith. He completed a M.Sc. in Ecology and Evolutionary Biology with **Dr. Jason Anderson** at the University of Calgary in 2014, in which he used micro-CT to investigate skull anatomy and relationships of a group of early tetrapods, the lysorophians. He is currently pursuing a Ph.D. at the University of Calgary studying the developmental biology of tooth regeneration in salamanders. His research interests include late Palaeozoic vertebrate evolution, origins of modern amphibians, and development of the vertebrate head.

## November

### Robert Kuchinski

Alberta Palaeontological Society

#### *Exploring the fossils of the Middle East anticlines*

**Friday, November 17, 2017, 7:30 P.M.**

Mount Royal University, Room B108

[This 15-minute presentation will precede the main speaker, **James Campbell**.]

Among the best-known features of Middle East geology are the numerous anticline structures that are common in many of the countries near the Persian Gulf. These anticlines, which formed due to the folding and thrusting of the Arabian Plate and salt movements in the subsurface, are very well defined and form the immense petroleum traps in the region. They are also expressed on the surface, and are excellent places to explore the late Mesozoic and Cenozoic sediments and fauna of the Arabian Plate.

For the most part, the sediments in the section are carbonates that formed on a large passive margin of Gondwana that was positioned in the equatorial waters of the ancient Tethys sea. Today, the arid climate of Arabia, with the lack of vegetation and the slow rate of chemical weathering, make these outcrops well exposed and easy to view their areal extent.

Although this depositional environment is comparable to the Devonian and Mississippian of Western Canada, the fossils preserved in these rocks are much younger and represent ancestors to many of today's marine organisms. Sediments of the same age in Western Canada are either representative of a

different sedimentary environment, or absent due to erosion.

This presentation will introduce the basic elements of Middle East geology and discuss the various life forms that flourished in this region starting from about 70 million years ago to about 20 million years ago. Anticlines in both the United Arab Emirates and Qatar will be discussed with many informative photos and diagrams to illustrate the stratigraphy and structure of these interesting features. A few specimens of the fossils from these locations will be available to examine.

### Biography

Robert Kuchinski received a B.Sc. (Specialization in Geology) from the University of Alberta in 1979. He spent his entire career working in formation evaluation where he assumed various roles from doing field work to senior management positions with international service companies.

For 28 years until 2006, Robert was based in Calgary and worked throughout the Western Canada Sedimentary Basin doing wellsite geology and petrophysics. In 2006 he accepted a business development position with Weatherford International which led him to Dubai, UAE. For the next 10 years, he traveled extensively throughout the Middle East, North Africa and Asia, working with oil companies on formation evaluation challenges. During this time, he was active in various professional societies and is currently the past president of the American Association of Petroleum Geologists, Middle East region. He returned to Canada in 2016 and is currently retired and living in Calgary.

### James Campbell

University of Calgary

#### *Plesiosaur (Reptilia: Sauropterygia) body size comparisons between marine and non-marine depositional environments*

**Friday, November 17, 2017, 7:45 P.M.**

Mount Royal University, Room B108

Plesiosaurs are a bizarre group of aquatic reptiles that lived from the Late Triassic to the Late Cretaceous, and achieved a global distribution. They were generally large-bodied (up to 15 m), and ecologically unique, with a proportionately short

trunk and tail, four flippers for underwater flight, and a neck of variable length, including the longest ever evolved. Plesiosaurs are known predominantly from marine deposits, but are also known sparingly from non-marine units such as the Late Cretaceous (Campanian) Dinosaur Park Formation (DPF) of southern Alberta. The DPF represents a fluvial to estuarine environment, which was situated along the western shore of the expansive Western Interior Seaway (WIS) of North America.

The DPF includes an elasmosaurid (long-necked) plesiosaur assemblage composed of individuals of variable size, and likely growth stage, based on the differing degree to which their external features are developed. This assemblage is unusual, however, as large plesiosaur specimens, such as those found in the more offshore Bearpaw and Pierre formations of the WIS, are conspicuously absent. The relatively small-bodiedness of the DPF assemblage may be attributable to immaturity, or alternatively, to the presence of a small-bodied elasmosaurid taxon in this formation.

A preliminary assessment of some of the largest DPF specimens suggests that they may belong to the subadult to adult range, which would indicate the presence of a small-bodied elasmosaurid taxon inhabiting a non-marine environment. However, this possibility requires further exploring and testing via ongoing histological analysis of plesiosaur specimens from the Dinosaur Park, Bearpaw, and Pierre formations of western Canada. This study represents a rare opportunity to study the palaeoecology of non-marine plesiosaurs, which may have had greater constraints on body size than those inhabiting deeper marine settings.

### Biography:

James is originally from Ottawa, where he completed his B.Sc. (2011) and M.Sc. (2014) in the Department of Earth Sciences at Carleton University. For his B.Sc. with Dr. Claudia Schröder-Adams, James examined a fossilized assemblage of foraminifera, which served to better constrain the age of a Cretaceous marine basin (Eagle Plain Basin, Yukon Territory)—part of the northern end of the Western Interior Seaway. During his fieldwork in the Yukon, he also discovered a fossil vertebra of a marine reptile, which turned out to be the first plesiosaur fossil from that territory. For his M.Sc. with Drs. Schröder-Adams and Michael Ryan, he conducted a systematic re-evaluation of the horned dinosaurs *Chasmosaurus* and *Vagaceratops* from the Late Cretaceous of

Alberta. For his doctoral work in the Department of Biological Sciences at the University of Calgary, under the supervision of **Dr. Jason Anderson**, James is revisiting plesiosaurs and studying body size differences between marine and non-marine forms from the Late Cretaceous of North America. On the side, James enjoys camping, marathon running, and playing the bagpipes. □

## Dr. Art Sweet Obituary

We reported on the passing of Dr. Art Sweet in the last issue of the *Bulletin* (June 2017, page 4), but we wish to direct readers to an excellent online obituary written for the Canadian Association of Palynologists (CAP) newsletter by two of his colleagues. It includes a comprehensive bibliography of scientific literature that he wrote or co-authored.

<https://capacp.wordpress.com/library-resources/palynological-personalities/art-sweet/> □

## Amber Workshop October 28



Dr. Ryan McKellar

### Exploring Canadian Cretaceous Amber and the Amber Research Process

Saturday, October 28, Room B213, Mount Royal University.

### Registration

Register for the morning or afternoon session by emailing **Harold Whittaker** at [hgwhittaker@shaw.ca](mailto:hgwhittaker@shaw.ca). State your preferred time slot, 9:00 A.M. to 12:00 noon **OR** 1:00 P.M. to 4:00 P.M.

### Cost

The workshop is **free** to APS members. Material costs will be covered by APS events funds. A previously proposed fee has been waived—anyone who submitted a fee will be refunded by contacting Harold Whittaker.

### Presenter

**Dr. Annie Quinney** who conducted her Ph.D. research on amber will lead the workshop. Results from the workshop will be forwarded to **Dr. Ryan McKellar**, Research Scientist, Curator of Palaeontology, Royal Saskatchewan Museum.

### Description

At Paleo 2015 we offered an amber workshop led by Dr. Ryan McKellar and assisted by Annie Quinney. The purpose of the workshop was to identify insect inclusions in amber. The Canadian amber was collected and prepared by **Max Whittaker**. It is from a recently discovered amber site. We were successful in discovering insects in this 78 million year old amber from the Foremost Formation. The workshop participants were able to examine about half of the amber. We would like to complete the project this year by examining the remaining Cretaceous amber for inclusions.

This brief workshop will introduce participants to the range of inclusions found within Canadian Late Cretaceous amber, and provide hands-on experience in the search for inclusions, preparation of amber specimens for research, and many of the steps involved in studying amber inclusions. Once the amber has been examined, the inclusions analyzed and the research completed, Dr. McKellar is hopeful that a research paper can be published.

### Equipment

Participants are asked to bring their own forceps (“tweezers”) for handling amber pieces. Microscopes will be provided by Mount Royal University. □

## Calgary Gem & Mineral Show

October 20, 21 and 22, 2017.  
Stampede Park, Big Four Building.

[www.calgarygemshow.com](http://www.calgarygemshow.com)

# Sort Microfossils This Fall

By Risa Kawchuk

**H**elp **Dr. Jessica Theodor** and **Dr. Alex Dutchak** of the University of Calgary sort through matrix (soil) from the Cypress Hills Formation (middle Eocene) of Saskatchewan to find tiny fossils. All of the fossils found will be used to aid their research into this northern fauna. We will be using microscopes in Room B213 at Mount Royal University from 1:00 until 3:30 P.M. on the following Saturdays:

**November 4, 2017**

**November 18**

**December 2**

**December 16**

We are very grateful to Mount Royal University (especially **Mike Clark**) for allowing us to use their microscopes and lab.

Registration is not required, but if you contact me, **Risa** (rhymes with Lisa) **Kawchuk**, (587) 969-1440 or [rkawchuk@yahoo.com](mailto:rkawchuk@yahoo.com), and let me know you are planning to attend, then I'll be able to inform you in case we need to cancel a session. No experience is required. Bring tweezers to pick the tiny fossils from the soil and a pen to label your finds.

Watch the December *Bulletin* for dates of fossil sorting sessions in January and February, 2018. □

# DRI Gala Dinner November 4, 2017

**Have fun *and* support  
dinosaur research!**

By Mona Marsovsky

**S**upport western Canadian dinosaur research and learn about the latest dinosaur discoveries at the Dinosaur Research Institute (DRI) gala dinner on Saturday November 4, 2017 at Canyon Meadows Golf & Country Club, 12501 – 14 Street SW, Calgary.

**Darren Tanke** of the Royal Tyrrell Museum of Palaeontology and **John Issa** of Korite will speak about the vertebrate fossil discoveries at the Korite mine, south of Lethbridge. Korite mines ammolite—



**Dinosaur excavation** in southeastern Alberta funded by the Dinosaur Research Institute. The Southern Alberta Dinosaur Project crew works on a site in the Pinhorn grazing reserve in the summer of 2013. Photo by Guy McLaughlin.

an Alberta gemstone—the fossilized ammonite shells highly valued for jewellery and displays. While digging for ammonites, Korite has found some significant vertebrate fossils, including marine reptiles and dinosaurs. This presentation will describe some of these significant finds.

In addition to the keynote presentation, this year's event will feature a three-course gourmet dinner, and displays and presentations by Ph.D. and M.Sc. students from the University of Calgary and University of Alberta. A silent auction will allow guests to acquire unique items and personal tours. Try your luck in the raffle draws.

All of the proceeds go to fund dinosaur research in western Canada. DRI's purpose is to coordinate, facilitate, support, direct and fund western Canadian dinosaur research. The Dinosaur Research Institute (DRI) was registered as a charity in 1997.

Individual tickets are \$175.00 per person and a tax receipt will be provided for a significant portion of the ticket price. For more information or tickets, e-mail [info@DinosaurResearch.com](mailto:info@DinosaurResearch.com) or phone **Al Rasmuson** at (403) 861-0532 or mail

Dinosaur Research Institute  
P.O. Box 6353 Station D  
Calgary, AB, Canada, T2P 2C9

I hope to see you there! ☐

## Rock 'n' Fossil Road Show set for October 14

The next session of the popular Geological Survey of Canada/Natural Resources Canada event will be held **Saturday, October 14**, from 11:00 a.m. to 3:00 p.m. at Calgary Public Library's Fish Creek branch, 1161 Bonaventure Drive, SE (north of Anderson Road, east end of the Southcentre Mall complex; <https://calgarylibrary.ca/locations/FISH/>). Scientists and volunteers will engage with visitors to identify and discuss specimens and will display a wide variety of rocks, minerals and fossils.

APS will be represented by **Dan Quinsey**, who will be one of the volunteers and will showcase a display of specimens. If you would like to participate, contact Dan: [dinodan@shaw.ca](mailto:dinodan@shaw.ca), or (403) 247-3022. ☐

## Silent Auctions!

This fall we will be auctioning some of the books and pamphlets from the APS library because we have run out of room for them. Auctions will take place during the regular monthly meetings. There will be some good items available, so be sure to bring your wallet!

# Dinotour 2018

Exploring Alberta's dinosaur locales while funding dinosaur research

By Mona Marsovsky

**D**inotour 2018, to be held August 3–6, 2018, is a unique opportunity to discover Alberta's palaeontological treasures with world-renowned scientists **Dr. Philip Currie, Dr. David Eberth, Dr. David Evans, Dr. Eva Koppelhus, Dr. Michael Ryan, and Darren Tanke.** During this four-day family-oriented event you will:

- Learn about the dinosaurs of Alberta.
- Explore several dinosaur locales in Manyberries, Dinosaur Provincial Park (DPP) and along the Oldman River.
- Hike and tour various sites in Dinosaur Provincial Park and Drumheller areas.
- Tour the Royal Tyrrell Museum and the Field Station at DPP.
- Tour the Devil's Coulee Dinosaur Heritage Museum and dinosaur egg site.
- See how Alberta's gemstone Ammolite (fossilized ammonite shell) is excavated.

Proceeds generated from this tour support the work of the Dinosaur Research Institute (DRI), a non-profit charitable organization that finances dinosaur research in western Canada. Each participant will receive a Canadian charitable tax donation receipt for a portion of the fees. DRI uses the funds raised to support:

- Graduate student projects.
- Dinosaur field work in western Canada.
- Neoceratopsian Research Award.
- Rene Vandervelde Award to cover travel expenses to present at the Society of Vertebrate Paleontology Conference.
- Travel Grant for Canadian Society of Vertebrate Paleontology (CSVP) Meeting.

Dinotour 2018 is a guided tour scheduled for August 3-6, 2018, which includes bus transportation, three nights accommodation, all meals and all museum admissions. **Book NOW** to take advantage of this unique, limited opportunity. For more information contact **Mona Marsovsky** at **dinotour@dinosaurresearch.com**. □



**Dr. Currie** gives a Dinotour orientation talk. Inset: kids learn about fossils in the badlands. Photos courtesy of Al Rasmuson, DRI.