Alberta Palæontological Society Bulletin

VOLUME 33 • NUMBER 1 www.albertapaleo.org MARCH 2018

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, April 20, 2018— Guy Santucci, Cranbrook, BC.
Fossils of the East Kootenays and recent research. See Page 4.

Friday, May 11, 2018 (NOTE Second Friday!)—Dr. Jennifer Scott, Mount Royal University.
Impact of climate cycles on the palaeoenvironments of early hominins in the Kenya Rift Valley. See Page 4.

June, July, August, 2018—No meetings. **Field trips**, see Page 5.

Watch the APS website for updates!

ON THE COVER: Alberta fossils (we think!) *Macginicarpa manchesteri*, probable infructescence of *Platanus* sp. (sycamore tree). ?Paskapoo Formation, Paleocene. APS collection, catalogue number APS.2008.44. Width of specimen is 27 mm. APS file photo. See story, Page 7.

Notice of Annual General Meeting of Members

To the Members of the Alberta Palaeontological Society:

Take notice that the Annual General Meeting (AGM) of the Members of the Alberta Palaeontological Society (Hereinafter called the "Society") will be held at Mount Royal University, Room B108, on Friday the 11th day of May, 2018, at the hour of 7:30 o'clock in the evening, local time, to deal with the following business to be brought before the Meeting:

- Treasurer's presentation of the Audited Statement of the financial position of the Society
- Election of officers and directors to the Board of the Society.

All APS members 18 years and older are entitled to vote. Executive positions are 1 year terms and directorships are 2 year terms. Nominations are being solicited for the following positions:

Officers

President
Vice-President
Secretary
Treasurer

Directors

Editor
Membership

Continuing directorships are Program Coodinator (**Harold Whittaker**) and Field Trip Coordinator (**Wayne Braunberger**). Both positions are entering the 2nd year of a 2 year term.

In addition to the elected positions the APS has a number of committee chairs which are appointed by the Board:

Committee	Chairperson	Term
Fossil Collection	Howard Allen	Unlimited
Library	Georgia Hoffman	Unlimited
Public Outreach	Cory Gross	Unlimited
Social	Michele Mallison	Unlimited
Website	Vaclav Marsovsky	Unlimited

Terms for all positions begin September 1. If you would like more information about Board positions or are interested in chairing or participating on a committee, please contact Past President **Wayne Braunberger** at (403) 278-5154 or by e-mail, **past-pres@albertapaleo.org**. All inquiries will be kept confidential if requested.

If you have any items of new business to be brought forward at the AGM, contact Society President **Cory Gross** at (403) 617-2079 or by e-mail, **president1@albertapaleo.org**.

Upcoming Events

April

Georgia Hoffman

Alberta Palaeontological Society

Adventures in the Waterways Formation: Bagging brachiopods along the Athabasca River

Friday, April 20, 2018, 7:30 p.m.
Mount Royal University, Room B108

[*This 15-minute presentation will precede the main speaker,* ***Guy Santucci****.*]

The Devonian (Givetian-Frasnian) Waterways Formation contains a rich brachiopod fauna, as well as remains of stromatoporoids, cephalopods, gastropods, bivalves, corals, crinoids and ichnofossils (but no trilobites!). During the fall of 2017, Georgia Hoffman was part of a field party that visited more than fifty Waterways outcrops in the Fort McMurray region. Their primary objective was to document geologic structures, but of course they couldn't resist the fossils. This short talk will describe the fossils and their geologic setting.

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. Georgia is an active member in the Alberta Palaeontological Society.

Guy Santucci

Alberta Palaeontological Society

Fossils of the East Kootenays and recent research

Friday, April 20, 2018, 7:30 p.m.
Mount Royal University, Room B108

The unique sedimentary geology of the East Kootenays on the western slopes of the Rockies presents a cross-section of life on Earth through most of the geological time scale from the late Proterozoic to Recent. Fossils have been recovered from virtually all the periods with only a few minor gaps. Recent finds by amateurs and professionals all point to the fact that as more research takes place, these gaps are likely to be filled and more new species discovered.

As well, work on the early and middle Cambrian have revealed a number of new species of trilobites and some yet to be identified enigmatic species. Much more work and study will be required. The plethora of species now identified from the middle Cambrian McKay Group show a diversity as great or greater than any other site on Earth, including Chinese and Moroccan beds. To date, fifteen McKay sites have been found just on the Bull River alone, including a possible Eager Formation site not previously catalogued.

Along with these discoveries comes the growing pains of government protection of the sites and implications for future study and access by collectors.

Biography

Guy completed his BA in Psychology in 1974 and a degree in Urban Land Economics in 1984. He also has three years of an unfinished Bachelor of Science. Law school was originally in the works, however a good government job derailed future educational and vocational plans. Guy became interested in fossils when he moved to Cranbrook, BC in 1975 and started digging at the Rifle Range site. He has since explored numerous sites in the Kootenays, has been included in articles and has also written numerous non-scientific articles on fossils. Other interests include writing, photography and natural history. He is also an artist and has even appeared in a Hollywood production. Currently, he serves on the Board of the Cranbrook History Centre as the Palaeontology coordinator and advisor. He conducts fossil talks and displays at area schools and this past summer ran a kids' fossil program through the museum.

May

Jennifer Jane Scott

Mount Royal University

Impact of climate cycles on the palaeoenvironments of early hominins in the Kenya Rift Valley

Friday, May 11, 2018, 7:30 p.m.
Mount Royal University, Room B108

From several drill cores, part of the Hominin Sites and Paleolakes Drilling Program (HSPDP), this collaborative research aims to better interpret the key environmental factors affecting early hominins in the rift valley lake basins of Kenya and Ethiopia. To recognize the influence of climate on the palaeoenvironments, it is essential to try to differentiate between climate cyclicity and other effects such as tectonics on the sedimentary and palaeoecological record. Using trace fossils integrated with sedimentology, we have developed a stratigraphic framework for one of the cores (Baringo) using sequence stratigraphy. By applying the high-resolution Ar/Ar geochronological age model to the thicknesses of the lake cycles, delineated best with flooding surfaces, we see that there is likely a strong climate signal recorded in these rift valley lakes. Our ongoing work now focuses on integrating palaeoanthropological and palaeontological data from field localities with the time-equivalent results from the core. This research helps to provide the framework needed to test hypotheses on the drivers for hominin speciation and behavioural changes through the Plio-Pleistocene in East Africa.

Biography

Jenni Scott is an associate professor in geology at Mount Royal University, and an adjunct professor at Simon Fraser University. Her research focuses on using trace fossils and sedimentology in stratigraphy and palaeoenvironmental analysis. Building on her Ph.D. research in the saline lake settings of the Pliocene to modern Kenya Rift Valley and Eocene Green River Formation, she is presently part of the Hominin Sites and Paleolakes Drilling Program in Kenya and Ethiopia. So far, she has developed a stratigraphic framework for the Plio-Pleistocene Baringo core, useful for integrating multiple palaeoecological datasets. This work aims to deter-

mine if the palaeoenvironments preserve evidence of changing climate and climate cycles at this important time in hominin evolution, and to better calibrate the palaeontological field evidence with the core. Her other research includes a stratigraphic, trace fossil and sedimentological analysis of the Cretaceous Foremost, Oldman, and Dinosaur Park formations in Alberta. She is an associate editor for the *Journal of Sedimentary Research* and *Ichnos*, a board member for the International Limnogeology Association, a former treasurer for the International Ichnological Association, a co-chair for the Lacustrine Systems theme at the upcoming AAPG conference, and will be one of the plenary speakers for the upcoming Limnogeology–Paleolimnology congress in Sweden. ❑

2018 Field Trips

By Wayne Braunberger

Planning is underway for this year's trips. For more information please contact **Wayne Braunberger** at (403) 278-5154 or by email at **fieldtrips@albertapaleo.org**. A field trip registration form is included with this issue of the *Bulletin* and is available on the APS website (**www.albertapaleo.org/fieldtrips.html**). Information will also be available at the monthly meetings. All fees are due at the time of registration. Fees for trips are $10.00.

Non-members and unaccompanied minors will not be allowed to attend field trips. All participants are required to have their membership in good standing. Any membership applications received after May 2, 2018 will not be reviewed and voted on by the Board of Directors until September, 2018. Therefore, if you are a non-member and would like to join be sure your application is received prior to May 2, 2018. All participants will be required to read and sign a release form (waiver). Detailed information will be provided to all those registered shortly after the registration deadline. After the registration deadline no refunds will be given; however, you will receive the guide for the trip. No late registrations will be accepted. Registrations are accepted on a first come first served basis. Sign up early to avoid disappointment.

For the 2018 field trips I will be sending you the waiver and medical forms along with the trip information. This information will be sent to you via email or Canada Post. Please ensure that your addresses are correct and legible when sending in registration forms. When you arrive at the meeting place please have the forms completed. All participants are required to have fully completed all waiver and medical forms in order to attend the trip. There will be no exceptions. All personal information is held in confidence and ultimately destroyed.

Trip Participant Responsibilities

It is understood that risk is inherent to some degree in outdoor activities. Before registering for a trip please ensure you understand the risks involved and are prepared to accept them.

- As a participant you are responsible for your own safety and equipment at all times.
- Inform the trip leader of any medical conditions they should be aware of in an emergency.
- Ensure that your previous experience, ability and fitness level are adequate for the trip.

Trip 2018-1, June 23 & 24, 2018
Drumheller Marine Tongue, Alberta

This trip will explore the fascinating Drumheller Marine Tongue of the Horseshoe Canyon Formation, exposed at various locations along the Red Deer River and its tributaries in the vicinity of Drumheller. Most locations are short hikes. However, to access the type section requires a hike of 2–3 km (return). At a date prior to the field excursion a lecture/seminar is tentatively planned. A variety of oysters, bivalves and gastropods are known to occur within the Drumeller Marine Tongue.

Registration deadline is June 8, 2018.

Trip 2018-2, July 21 & 22, 2018
Southeastern Alberta

This trip will focus on Cretaceous vertebrate localities in southeastern Alberta. At this time the localities to be visited have not been confirmed.

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. Please note that the area is prime rattlesnake habitat.

Registration deadline is July 6, 2018.

(*continued, next page*)

www.albertapaleo.org

Trip 2018-3, August 18 & 19, 2018
Blindman River/Burbank, Alberta

On the first day of this field trip we will explore the banks of the Blindman River near Red Deer. Our objective will be to find fossil leaves in the upper Paleocene Paskapoo Formation. On the second day we will visit a nearby site where slightly younger Paskapoo beds contain a different assemblage of plant fossils. Bring your **safety glasses**, hammer and fine chisels because we will be splitting the fallen boulders to expose the plant fossils.

Registration deadline is August 3, 2018.

Trip 2018-4, September, 2018
Waterton area, southwestern Alberta

A trip to the Waterton area of southern Alberta is tentatively planned for late September. Exact dates and localities to be visited have not been confirmed. The trip will focus on Precambrian stromatolites. Further details will be announced on the APS website and in the *Bulletin*. ❑

Register Now for Dinotour 2018

By Mona Marsovsky

There are still a few spots available in Dinotour 2018 (August 3–6, 2018). Register now to reserve your seat by contacting **Mona Marsovsky** at **Dinotour@DinosaurResearch.com** or by telephone at (403) 547-0182.

Dinotour 2018 explores important dinosaur localities in southern Alberta including:

- The Hellboy quarry
- The Callum Creek quarry
- Korite Mine
- Devil's Coulee Museum and egg site
- Manyberries
- Dinosaur Provincial Park
- Horseshoe Canyon
- Royal Tyrrell Museum of Palaeontology
- Horsethief Canyon

Your guides will be some of Alberta's greatest dinosaur hunters: **Dr. Philip Currie**, **Dr. Eva Koppelhus**, **Darren Tanke**, **Dr. David Evans**, **Dr. Michael Ryan** and **Dr. David Eberth**. This four-day tour includes bus transportation, all meals, hotel accommodation and all entrance fees.

For more information, visit **www.dinosaurresearch.com/5%20Dinotour.htm** or contact **Mona Marsovsky** (**Dinotour@DinosaurResearch.com** or by telephone at (403) 547-0182). ❑

Looking for fossils on Dinotour 2012.

Brandy Yanchyk dino films to play on Air Canada flights

Filmmaker Brandy Yanchyk's *Dino Trails* documentary series will be shown on Air Canada's Inflight Entertainment System from April 1 to June 30 on all flights in Canada, the USA and internationally. See Brandy's Facebook page: **https://www.facebook.com/DinoTrailsFilm/** and her website: **www.brandyyproductions.com**. Her new documentary "The Dinosaur Echo" is available on CBC: **goo.gl/sPFGyj**. "The Dinosaur Echo" introduces us to unknown boneheads and up-and-coming palaeontologists who are leading research and advancing palaeontology in Alberta and British Columbia. ❑

Fossils in the News

Billion-year-old sexual algae found in Nunavut.
www.cbc.ca/news/ (search "bangiomorpha")

400 myo giant toothy worm found in Ontario.
www.cbc.ca/news/ (search "gigantic worm")

500 specimens of new Burgess Shale worm.
www.cbc.ca/news/ (search "Burgess worm")

[*Thanks to Phil Benham and Evelyn Wotherspoon.*] ❑

Four Fossils

By Howard Allen, APS Collection Curator

My random fossil picker delivered a remarkably balanced selection of specimens for this issue: two plants, two animals; an invertebrate and a vertebrate; two marine, two non-marine; two Palaeozoic, two Mesozoic; two from carbonate rocks, two from clastic rocks—something for everyone!

In all of the images, the scale bar is 1 cm.

APS.2008.44

These items are part of a donation of fossil plant material that appeared a number of years ago without any provenance data. A search of the APS Board meeting minutes turned up a record of November 1994 that "**Paul Milo** (former member) has a box of fossils to donate to the Society." There is also an unsubstantiated story that someone anonymously dropped off a box of fossils at the APS booth during one of the CRLC shows a few years ago.

It's too bad these are orphans because they're rather good specimens. The matrix and preservation have a very Paskapoo Formation look about them, so it's likely they came from somewhere in southern or central Alberta. At an APS general meeting in 2016 our resident palaeobotanist, **Georgia Hoffman**, identified them as fruiting structures, known as *Macginicarpa manchesteri*. They are described and figured in her Master's thesis (Hoffman, 2002) on the Paleocene Joffre Bridge locality, east of Red Deer. Georgia reports that they have been found in association with *Platanus* (sycamore tree) leaves, so they are likely to belong to that plant. Indeed, an internet image search for "platanus fruit" turns up a plethora of photos of fuzzy-spiky balls that are the fruit of modern sycamores. They dangle from the tree branches, looking rather like upside-down thistle heads. When dry, they fall apart into scores of fuzzy seeds (*achenes*), also like thistles.

Hoffman, G.L. 2002. Paleobotany and paleoecology of the Joffre Bridge roadcut locality (Paleocene), Red Deer, Alberta. Unpublished M.Sc. thesis, University of Alberta, second edition, pp. 37–38, pl. 8. **http://exhibitions.museums.ualberta.ca/joffrebridge/ghthesis.pdf**

APS.1989.03

Crinoid stems and their component discs (*columnals*, or more generally, *ossicles*) are familiar fossils in our Rocky Mountains where they occur in the countless gazillions, comprising the bulk of some strata, such as the Carboniferous Pekisko Formation (*Bulletin*, June 1992, p. 11). But they aren't always as well preserved as these specimens. Being calcite fossils (each ossicle is a single crystal of calcite) they tend to be firmly welded into their limestone matrix, making them impossible to extract. The best specimens are found in shale or shaly limestone where weathering of the surrounding clay matrix releases them, allowing them to be picked up loose.

These specimens are among several fossils donated by the late APS member **Emmette Wallace** (*Bulletin*, March 1999, p. 2) from a locality recorded only as "Coleman Co., TX, USA." The original APS collection catalogue gives their age as "Cretaceous," and a specimen from the same locality was said to contain "conodonts." While it is possible that crinoid stems could be Cretaceous (many crinoids are alive and well today), it's not possible that Cretaceous rocks would contain conodonts, which went extinct in the Triassic. Examination of the specimen alleged to contain "conodonts" revealed no conodonts, but

instead a number of large fusulinid foraminifera, a type of fossil protozoa that lived in the mid- to late Palaeozoic and enjoyed their greatest abundance in Pennsylvanian and Permian time, before succumbing to the great end-of-Permian extinction, along with a lot of other critters. With this evidence in hand, a check of some online geological maps of Texas revealed that Coleman County is largely underlain by Pennsylvanian and Permian rocks.

The crinoid fossils themselves appear to belong to at least two different types. Both bear *nodals*, special columnals outfitted with tiny sockets, the attachment points for lateral branches, or *cirri*.

APS.2006.03

Another legacy of the late **Dr. Hope Johnson**, who donated many small vertebrate fossil specimens to our collection, this small and strangely shaped bone fragment is identified as part of a lizard vertebra. It lacks any symmetry and has several broken surfaces, so it is most likely one half of a neural arch, the superstructure that protects the spinal cord and articulates with the adjacent vertebrae. Given its fairly large size (the scale bar is 1 cm) it must have been from a fairly hefty lizard. According to the APS book (APS, 2009), "*Palaeosaniwa canadensis*,

belonging to the Varanidae family, is one of the larger terrestrial lizards in both the Oldman and Dinosaur Park formations (Caldwell, 2005)." So that species is probably a pretty good candidate. Hope recorded that it came from Red Rock Coulee, Alberta, south of Medicine Hat, which exposes the fossiliferous Dinosaur Park Formation.

APS. 2009. Guide to common vertebrate fossils from the Cretaceous of Alberta, p. 71.

Caldwell, M.W. 2005. The Squamates: origins, phylogeny, and paleoecology. *In* Dinosaur Provincial Park, a spectacular ancient ecosystem revealed. *Edited by* P.J. Currie and E.B. Koppelhus. Indiana University Press, Bloomington and Indianapolis, pp. 235–248.

APS.1999.13

This specimen has at least three peculiarities attached to its story. It's a plant fossil—a section of rhizome ("underground stem") showing an alternating pattern of root scars—given the name *Stigmaria*.

One unusual thing is that it was collected in rocks of the early Carboniferous Period (Mississippian). This is very unusual in Alberta, where the vast majority of our plant fossils are found in Mesozoic and Cenozoic rocks. Carboniferous plants are, however, common in other parts of the world (Europe, eastern Canada and USA), where they contribute to economic deposits of coal.

The second unusual thing is that the rock is dolostone—a marine carbonate rock! It was collected from the Mount Head Formation, interpreted as a shoreline tidal flat deposit (Mundy *et al.*, 1997). Presumably a storm surge or some other event caused a mass of plant material to be washed into the near-shore sediments.

The third peculiarity is that the site no longer exists! Discovered by **Les Adler** in the bed of Canyon Creek after a flood in 1995, the exposure was buried again under a metre of flood deposits in 2013 (*Bulletin*, September 2013, p. 6.). ❑

Hoffman, G.L. 2006. Lepidodendrid plant remains from the Mt. Head Formation (Misssippian) at Canyon Creek, Alberta. Alberta Palaeontological Society, Tenth Annual Symposium, abstracts, p. 19.

Mundy, D., Widdowson, R. and Sabo, D. 1997. Stratigraphy, sedimentology, structural history and exploration history of the Mississippian at Moose Mountain, southwestern Alberta foothills. Field trip guide, CSPG-SEPM Joint Convention, June 1–6, 1997, 92 pp. **www.albertapaleo.org/publications.html**