Palæontological
Alberta
Society
Bulletin

VOLUME 39 • NUMBER 3 albertapaleo.org SEPTEMBER 2024

ALBERTA PALAEONTOLOGICAL SOCIETY

THE SOCIETY WAS INCORPORATED IN 1986 as a non-profit organization formed to:

- Promote the science of palaeontology through study and education.
- Contribute to the science by: discovery; responsible collection; curation and display; education of the general public; preservation of palaeontological material for study and future generations.
- 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

ON THE INTERNET

Website	**albertapaleo.org**
YouTube™	**www.youtube.com/@albertapaleo**
Facebook™	**www.facebook.com/AlbertaPaleoSociety/**

MAILING ADDRESS
Alberta Palaeontological Society
PO Box 68024, Crowfoot PO
Calgary, AB, Canada T3G 3N8

THE BULLETIN IS 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
editor2@albertapaleo.org

Back issues are available at **albertapaleo.org/resources/bulletinarchives/**

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 18, 2024—*Meeting topic to be announced.*

Friday, November 15, 2024—*Tako Koning short talk and Dr. Sally Hurst on palaeontology and fossil collecting regulations in Australia vs. Canada (Dr. Hurst will be online only).*

Friday, December 13, 2024—*Christmas Social!*

Check the APS website for updates! albertapaleo.org/events/monthlymeetings

ON THE COVER: Alberta fossils! A mystery fossil on the summit of The Rimwall (mountain, south of Canmore, AB). Lower Carboniferous, Banff Fm. Finger tip for scale. Photo by Howard Allen. For yet another Rocky Mountain mystery fossil, see Page 11.

Program Summary

September

Dr Emily Bamforth

Philip J. Currie Dinosaur Museum and
University of Saskatchewan, Department of Geological Sciences

Fifty Years at Pipestone Creek: What northern Alberta's Wapiti Formation is revealing about boreal dinosaur palaeoecology

Friday, September 20, 2024, 7:30 P.M.

Talk was presented online, via Zoom.

The Pipestone Creek Bonebed, located just outside the small town of Wembley in northwestern Alberta, was discovered in 1973 by **Al Lakusta**, a local high school teacher. He had stumbled onto one of the densest dinosaur bonebeds in North America, with an average of 100–300 fossils per square metre, over an estimated area of three football fields.

The rhinoceros-sized ceratopsian dinosaur that made up the bulk of the bonebed specimens was described as a new species, christened *Pachyrhinosaurus lakusti*.

Subsequent palaeontological interest in the region led to the discovery of other dinosaur bonebeds, several microvertebrate localities, dinosaur trackway sites and hadrosaur specimens displaying soft-tissue preservation.

In 2015, the Philip J. Currie Dinosaur Museum opened in Wembley, with an aim to inspire and educate visitors about the Pipestone Creek Bonebed, and about Canada's northwestern dinosaur communities.

There are still many questions to explore in the Wapiti Formation. The formation is Late Cretaceous (80 – 68 Ma) in age and stretches from northwestern Alberta to northeastern British Columbia. The formation is divided into five units, with Unit 3 and Unit 4 being the most fossiliferous.

The dinosaur communities within these terrestrial units are significant because they fill the "Bearpaw Gap," a time interval when southern Alberta was covered by the Western Interior Sea. Outside of two *Pachyrhinosaurus* bonebeds, the dinosaur faunas of the Wapiti Formation are dominated by the hadrosaurs *Edmontosaurus* and *Lambeosaurus*. Theropods and ankylosaurs are known from footprints and teeth, but their diversity remains largely unknown.

Figure 1. Angiosperm leaf from the Spring Creek palaeofloral site. Photo by E. Bamforth, 2022.

The palaeoflora that has been studied from the Wapiti Formation suggests a largely deciduous forest with little evergreen vegetation, which experienced strong seasonality associated with photoperiod. Given that these floras would have provided the dietary bases for dinosaur megaherbivores, it lends support to the theory that these animals were migratory. Understanding the seasonal nature of the Late Cretaceous boreal forests and floodplains through palaeofloral analyses and isotope geochemistry may help to elucidate inferred behaviours such as herding and migration and may provide clues as to the environmental tolerances of some of Canada's most northern dinosaur communities.

Biography

Dr. Emily Bamforth is a palaeontologist and museum curator at the Philip J. Currie Dinosaur Museum in Wembley, Alberta, Canada. Her research focuses on Cretaceous palaeoecology, with a focus on dinosaurs, microvertebrates and palaeobotany. She also has an interest in early life, specifically the Ediacaran Period. Dr. Bamforth earned a BSc in Evolutionary Biology from the University of Alberta in 2005 and went on to do a MSc in Precambrian Invertebrate Palaeontology at Queens University with **Dr. Guy Narbonne**. In 2008 she began her PhD at McGill University under the supervision of **Dr. Hans Larsson**, exploring pre-extinction biodiver-

Visit our website for talk abstracts and updates when they are made available.

albertapaleo.org

sity trends immediately prior to the K-Pg extinction in Saskatchewan. In 2014, she started work as a researcher and curatorial assistant with the Royal Saskatchewan Museum, and accepted the position of Museum Curator at the Philip J. Currie Dinosaur Museum in 2022. She has been an Adjunct Professor with the University of Saskatchewan Geology Department since 2021. Dr. Bamforth has published numerous papers and conference abstracts on Ediacaran and Cretaceous palaeontology and was the recipient of the YWCA's 2019 Women of Distinction Award for Science. She loves field work and being outdoors and is often accompanied by her trusty "paleo pooch," Aster. ❑

Dinosaur Research Institute Dinner October 26, 2024

By Mona Trick

Enjoy a great meal (featuring grilled prime sirloin), excellent presentations and support dinosaur research, all at the same time! The Dinosaur Research Institute will be hosting its annual dinner on Saturday, October 26, 2024 (starting at 6:00 P.M.) at the Earl Grey Golf Club (6540-20 Street SW Calgary). **Dr. Francois Therrien**, Curator of Dinosaur Palaeoecology at the Royal Tyrrell Museum of Palaeontology will give the main presentation. In addition, PhD and Masters students from the University of Alberta and University of Calgary will give short presentations on their research. There will be a silent auction of incredible items including jewellery, wine, event packages and art.

All proceeds support research into western Canadian dinosaurs by graduate students.

Individual tickets are $200.00 per person. A tax receipt will be issued for a significant portion of the ticket price.

To register, e-mail **info@DinosaurResearch.com** or phone **Al Rasmuson** at **(403) 861-0532**.

Payment can be made via:

- Interac-E-transfer to **info@dinosaurResearch.com**
- Cheque to "Dinosaur Research Institute" mailed to

  Dinosaur Research Institute
  PO Box 6353 Station D
  Calgary, Alberta T2P 2C9
- Credit card—please phone **Al Rasmuson** at **(403) 861-0532**. ❑

Search for microfossils this autumn, 2024

By Mona Trick

Aid the research of **Dr. Jessica Theodor** and **Dr. Alex Dutchak** of the University of Calgary by searching the matrix (sediment) from the Cypress Hills Formation (Middle Eocene) of Saskatchewan to find tiny fossils. **We will be using microscopes in ROOM B114 at Mount Royal University**. Construction has closed the room we used previously. Join us from 1:00 until 3:30 P.M. on the following **Sundays**:

October 20, 2024
November 17, 2024
December 1, 2024

Tiny Fossils found Dec. 10, 2023. Lizard jaw fragment in square 50. Grid squares are 1 cm on a side. Photo by Atharva Roy.

We are very grateful to Mount Royal University for allowing us to use their microscopes and lab.

Registration is not required, but if you inform me, **Mona Trick**, phone **(587) 578-4579** or **giftshop@albertapaleo.org** that you are planning to attend, then I can alert you if we need to cancel a session. No experience is required. Due to the delicate nature of this work, only those **12 years and older** are allowed to search for the microfossils. Bring tweezers or a small paint brush to pick the tiny fossils from the matrix and a pen to label your finds. All of the fossils found will be kept by Drs. Theodor and Dutchak to aid their research.

Watch the December *Bulletin* for dates of the microfossil sorting sessions in January and February, 2025. ❑

Surprise Winter Field Trip!

By Eric Campbell

The Alberta Palaeontological Society is excited to invite you to a special overnight event at the Royal Tyrrell Museum of Palaeontology in Drumheller, Alberta!

Date

Friday, November 22 – Saturday, November 23

Itinerary

Friday Evening:

6:30 P.M.: Arrive at the museum
Participate in fun palaeontology activities!
Enjoy snacks
Lights out for the night

Saturday Morning:

Breakfast
Explore the galleries!

Price: $51 per person

Your ticket includes:

- Evening Snacks & Breakfast
- Palaeontology activities
- Full-day admission to the museum

This is a fantastic event for kids and families, but we require at least **one adult per five children**. Also, **children must be 5 to 13 years old**.

Space is limited—we're only accepting the first 20 registrants, so don't delay! **Registration deadline is October 1, 2024.**

Additional Information

For more details visit Royal Tyrrell Museum Camp-Ins at **https://www.tyrrellmuseum.com/whats_on/activities/camp-ins**

This is a rare opportunity during the winter months when palaeontology events are usually scarce.

To sign up, see the form in this issue or see the events page (**https://albertapaleo.org/events/fieldtrips**) on the APS website.

Don't miss this "Dinovember" adventure! ❑

Look how much fun you could have if you sign up for this field trip! Photo by Eric Campbell.

Your Society needs Volunteers!

Please THINK about volunteering for APS!

Visiting the Cretaceous–Paleogene (K-Pg) mass extinction boundary, Knudsen's Farm, central Alberta

Review of Field Trip 2024-2, July 6

By Tako Koning, P.Geol., photos by Volodymyr Ostapiv

Meeting in Huxley

On Saturday, July 6, 2024 we had an excellent time visiting the Cretaceous-Paleogene (K-Pg) mass extinction boundary at Knudsen's Farm, along the western edge of the Red Deer River valley. We met at 9:30 A.M. in front of the community centre in the hamlet of Huxley where we introduced ourselves, discussed safety issues and then reviewed the regional outcrop geology. The group consisted of about fifteen people including three junior high and high school students. The good news was that despite rain showers the previous evening, the morning turned out to be warm and sunny which helped dry out the outcrops soon to be visited.

Discussing the Chicxulub Meteorite Strike

At the Huxley Community Centre, we discussed the global impact of the meteorite which struck at the end of the Cretaceous, 66.5 million years ago, in the Yucatan area of Mexico. This resulted in the Chicxulub crater with a measured diameter of approximately 200 km and an instantaneous global environmental and climatic cataclysm. Giant fires swept much of North America and the world became a dark place shrouded from sunlight by ejected debris including ash and soot from the fires. Life on Earth was a huge struggle for a few thousand years and non-avian dinosaurs and about 75% of Earth's animals and plants died out almost instantaneously. The demise of predators like the dinosaurs allowed

Figure 1. Field trip leader Tako Koning exposes the K-Pg boundary layer at the Knudsen's Farm site.

Figure 2. A geological bonus, Tako and field trip participants examine an ice-age glacial erratic from the Canadian Shield, at prairie level.

mammals to expand their ecological "niche" and flourish, leading to the "Age of Mammals."

The impact of the meteorite strike is evident in the geological record worldwide including at Knudsen's Farm. Even though at the end of the Cretaceous, Knudsen's Farm was several thousands of kilometres away from Chicxulub, there is clear evidence of its effect in the outcrop at Knudsen's. In the literature of palaeontology, Knudsen's Farm has been described as the best and most accessible exposure of the K-Pg boundary in Alberta and has been described as a "classic boundary locality." Indeed, the boundary at Knudsen's is probably the best exposure of the K-Pg in Canada. Research has been carried out at Knudsen's since the late 1970s, mainly by **Dr. Jack Lerbekmo**, professor of geology at the University of Alberta and also by researchers from the Royal Tyrrell Museum in Drumheller. Dr. Lerbekmo was one of my professors when I was enrolled as a geology student at the University of Alberta from 1967 – 1971.

The Issue of Iridium

From the late 1800s throughout the 1900s in the scientific world there were questions about the sudden demise of the dinosaurs at the end of the Cretaceous. One could read articles with titles such as "What Killed the Dinosaurs?", "Why Did the Dinosaurs Go Extinct?", "What Caused Cretaceous Ground Zero?", "Were Dinosaurs Doomed Before an Asteroid Hit"? and "Was the Earth Devastated by Meteorites or Were Extinctions Caused by Cataclysmic Volcanism?"

Among those trying to answer these questions was the research team of **Dr. Luis Alvarez**, Nobel prize-winning physicist and his son **Dr. Walter Alvarez**, professor of geology at the University of California at Berkeley. They focused on the K-Pg boundary near Gubbio, Italy. In their analysis of the sediments above and below the boundary, they discovered a spike in iridium at the precise K-Pg contact. Their samples contained thirty times more iridium than could be explained by even the most gradual accumulation of clay. They were the first to discover this relationship and published a paper in 1979 proposing that the "spike" was caused by a meteorite strike. Iridium is more common in meteorites than in Earth's terrestrial sediments. This resulted in the successful search for iridium at K-Pg boundaries worldwide. Samples of the layer collected

Figure 3. Hiking over the badlands terrain at the edge of the Red Deer River valley.

Figure 4. Happy field-trippers pose for a group photo.

from other parts of the world showed even higher concentrations of this rare element than was discovered in Italy.

In the late 1970s, Dr. Lerbekmo and others including **Dr. Art Sweet** of the Geological Survey of Canada had been investigating the K-Pg at Knudsen's Farm. They published that a radiometric age of 66 million years was obtained from a volcanic ash in the Nevis coal in the Paleogene Scollard Formation, just above the Cretaceous contact. The paper published by Luis and Walter Alvarez inspired Dr. Lerbekmo and his team to explore for an iridium anomaly at Knudsen's Farm. Amazingly, they discovered an iridium spike, which was one hundred times the background readings. They also discovered "shocked quartz" as has been reported at other K-Pg boundaries worldwide.

In 1986, Dr. Lerbekmo and **R.M. St. Louis** published in the *Canadian Journal of Earth Sciences* a paper titled "The terminal Cretaceous iridium anomaly in the Red Deer River valley, Alberta." For those interested in a generalized geological description of the Red Deer River valley area, **Dr. Dale Leckie**'s book, *The scenic geology of Alberta* is a useful reference.

Hiking Down to the Boundary

When we had completed the geological review in Huxley, we carpooled and drove about 20 km east to Knudsen's Farm. Thereupon we hiked for five minutes down a steep embankment which led us to the ledge where the K-Pg is exposed. Luckily the outcrop had dried since the rainfall the previous evening. In wet conditions, access to the boundary would have been impossible since the interbedded montmorillonite clays (bentonite) are dangerously slippery when exposed to water. From a safety viewpoint, this is the riskiest part of the field trip.

For the attendees, it was thrilling to be able to touch the layer below which dinosaurs, other reptiles and creatures like ammonites thrived and directly above the layer was the beginning of the "Age of Mammals." We then hiked further down into the valley to view the spectacular landscape carved out by the Red Deer River. By 1:00 P.M. we departed Knudsen's Farm for Dry Island Buffalo Jump Provincial Park for lunch along the west bank of the Red Deer River.

Acknowledgments

As always, we are grateful for permission to access the site from **Kent and Marion Knudsen** who have been supportive of decades of scientific research on their farm. A hand of thanks is also extended to **Keith Mychaluk**, APS Field Trips Coordinator, for having organized the annual field trips for a total of eleven years. I have led this field trip for APS in 2022 and 2023, also in 2023 and 2024 for the Canadian Energy Geoscience Association (CEGA). I am hoping to lead this field trip again for the APS and CEGA in 2025.

Usually when I lead this field trip, long-time APS and CEGA member, **Dr. Les Eliuk**, retired Shell Canada geologist, who now lives in Three Hills, Alberta also attends the field trips. His ever-enthusiastic input, comments, insights into the geology and palaeontology at Knudsen's Farm is appreciated by the attendees and also myself. Thanks, Les! ❑

Tako receives the Canadian Energy Geoscience Association's Honorary Membership award from CEGA President-Elect Shelley Leggitt. Photo by Pritpal Sandhu.

Tako Koning awarded CEGA Honorary Membership

On June 19, 2024 APS member Tako Koning, P. Geol., was awarded Honorary Membership by the Canadian Energy Geoscience Association (CEGA), formerly the Canadian Society of Petroleum Geologists (CSPG). The award ceremony was held at the Calgary Petroleum Club and officiated by **Shelley Leggitt**, CEGA President-Elect. Tako was awarded this recognition for his forty years of volunteering for CEGA/CSPG but also for highly active volunteering and presenting technical papers while living overseas and working in Indonesia, Nigeria, and Angola. This included presentations and papers for the American Association of Petroleum Geologists, Indonesian Petroleum Association, Nigerian Association of Petroleum Explorationists and to technical societies in Angola, including the local branch of the Society of Petroleum Engineers and the Society of Petrophysicists and Well Log Analysts.

The award also recognized Tako's continuing leadership of annual geological field trips for CEGA, palaeontological field trips for APS—including his annual Tyndall Stone tour and Knudsen's Farm K-Pg field trip—and environment-focused field trips for the Alberta Wilderness Association. Attendees include energy industry professionals, university students, environmentalists and the public-at-large. Tako is Holland-born, Canada-raised and graduated in 1971 from the University of Alberta with a B.Sc. in Geology and a B.A. in Economics from the University of Calgary. He is a member of many professional and technical societies includ-

ing the Association of Professional Engineers and Geoscientists of Alberta (APEGA) which he joined in 1974—a half century ago.

Tako takes the view that anyone who has enjoyed a long and fulfilling profession and despite being semi-retired or fully retired is still obligated to share some of his or her knowledge and experience with those who will benefit from it. Accordingly, he plans to keep leading field trips and giving presentations to various organizations including the Alberta Palaeontological Society for as long as he can.

Congratulations and thank you for your service, Tako! ❑

We need a new Field Trip Coordinator!

Our current Events Coordinator, **Keith Mychaluk**, will be stepping down this year, so this will be a great opportunity to volunteer for your Society!

Keith will assist the new coordinator with the hand-over, so you will be able to make a smooth transition into the job! If you're willing to give it a shot, please contact Keith by email: **kmychaluk@gmail.com** or phone, **(403) 809-3211**. You can also contact any member of the APS Executive (see contact information on Page 2). **Thank you!** ❑

More thoughts on photographing fossils

By Wayne Braunberger

Thanks to **Dan Quinsey** for his note in the June *Bulletin* about photographing fossils. To follow up on Dan's note the following websites and books may be of interest.

Wayne Itano, a member of WIPS (Western Interior Paleontological Society, Denver CO) gave a presentation on photographing fossils at the 2005 WIPS symposium. His presentation can be found on his personal website: **itano.net/fossils.htm**. Besides a PDF of his presentation, he has information on several fossil localities.

Books that may be of interest include:

Savazzi, Enrico. 2011. Digital photography for science—Close-up photography, macrophotography and photomicrography. Lulu Enterprises, Raleigh NC, 704 pp.

This is a comprehensive volume that covers all aspects of photographing palaeontological specimens. It is specifically written for digital photography. Savazzi has a website, **www.savazzi.net** which has more information about photography and his palaeontological projects.

Scovil, Jeffrey. 1996. Photographing minerals, fossils and lapidary materials. Geoscience Press, Tucson, Arizona. 224 pp.

Written prior to the widespread use of digital cameras, there are sections on using film cameras, lenses and film types. However, the value of the book is in the information on how to set up specimens (lighting, backgrounds, etc.). There are also sections on magnification, photographing with microscopes and making stereographs. Included are numerous black and white plates and drawings, and sections of colour plates.

Lewton-Brain, Charles. 1996. Small scale photography—How to take great shots of your work. Brain Press, Calgary, Alberta, 90 pp.

Also written before digital cameras, this book has sections on using film cameras and film types. Written as a guide to photographing art objects, most of the techniques can be applied to fossil photography.

Don't discount works written prior to the use of digital cameras. Lighting and setup are key aspects and the techniques illustrated in older publications are still useful.

Learn how to use your equipment! Digital cameras are powerful and to put them to best use I would recommend courses on how to use your camera. A great advantage of digital photography is that you don't have to wait for the film to be developed to see your work and adjustments can be made quickly. You will probably have to invest in photographic software to manage and manipulate your photos. I would also recommend courses on how to use your software. Taking courses will save you time and headaches. ❑

An unusual fossil from the Mount Head Formation (Lower Carboniferous) of the Rocky Mountain Front Ranges, Alberta

By Howard Allen

Figure 1. The specimen.

While hiking in a remote area of the Rocky Mountain Front Ranges in the summer of 2023 the author collected an interesting fossil of uncertain affinity. This note is written to draw readers' attention in hope of resolving the identity of the organism.

Geological setting

The specimen was found loose on a very steep scree slope, so its precise stratigraphic position is not known, and no effort was made to trace its origin. Rocks underlying the scree and exposed above the general fall line are mapped as "Mount Head Formation, lower part" by McMechan (1995) and nearby rocks observed by the author were generally consistent with that assignment. The matrix hosting the fossils is a very finely crystalline dolomudstone. The Mount Head Formation is interpreted to have been deposited in a shallow marine environment dominated by carbonate sediments (Douglas, 1958; MacQueen and Bamber, 1968; MacQueen *et al.*, 1972; Mundy *et al.*, 1997). Considering only the mapped bedrock unit and the dolomitic lithology of the specimen, it seems most likely that the specimen originated from one of the recessive, dolomite-dominated members of the lower Mount Head Formation: the Wileman, Salter or Marston members.

Description

The fossil consists of "blades" (for lack of a better term, in an analogy to grass) of a narrow, flat, linear skeleton with a microstructure of rectangular reticulation. The blades have a very uniform width (about 2 mm) and, in their state of preservation, appear to have been originally flat, with no evidence of any substantial thickness beyond what is presently visible. The rock matrix, a grey-brown, very finely crystalline, dolomitized mudstone, contains an abun-

Figure 2. Detail of Figure 1, showing bifurcation of two "blades."

dance of the same fossils throughout its stratigraphic thickness (a maximum of 28 mm), to the exclusion of any other organisms. The white substance of the fossils is calcite, which is likely recrystallized and/or a replacement. Blades are straight or gently curved and occasionally bifurcate (Figure 2). They appear to be randomly oriented and strictly parallel to bedding.

The reticulate microstructure is uniformly developed along the blade, comprising a simple rectangular grid of parallel, longitudinal members, between five or six (Figure 3) and about twelve or more in number (Figure 4), crossed at right angles by transverse, subequally spaced members of approximately equal thickness. In their state of preservation the grid cells are sharply rectangular and filled with the matrix sediment, or hollow—which may be an artifact of weathering. No other microstructure is visible under magnification.

Figure 3. Magnified view of a "blade" showing the rectangular grid microstructure.

Discussion

At first glance the fossils were assumed to be bryozoa, which are common and often locally abundant in some beds of the Mount Head Formation (personal observation). A closer examination reveals the peculiar rectangular grid microstructure, which is not a feature typical of bryozoa. The next hypothesis was that it might be a sponge: some hexactinellid sponges have skeletons arranged in a rectangular grid structure (*e.g.* Finks *et al.*, 2004). The primary arguments against this idea are the narrow, linear shape and the fossil's apparent lack of a significant third dimension. Sponges require a three-dimensional, cylindrical or domal geometry to "work," since they live by circulating water in through pores and out through a central, chimney-like opening. This wouldn't work in a flat, blade-like structure. While it's possible that the blades were originally three-dimensional and have been flattened taphonomically, as previously noted there is no visible evidence that that is the case: the

Figure 4. Two "blades" showing the rectangular grid structure, each with about twelve longitudinal grid members; compare to the five or six longitudinal members visible in Figure 3.

longitudinal grid members of the microstructure are always perfectly parallel to each other and to the edges of the blades; if the blades were originally cylindrical, one would expect to see some deviation from this arrangement in at least some specimens.

The specimen was examined by **Dr. David Mundy** (personal communication), a scientist with expertise in Carboniferous invertebrate fossils. He suggested that it might be a plant fossil, pointing out that, even though the Mount Head Formation is known to have been deposited in a marine setting, plant fossils have been reported from these rocks, albeit very rarely: see for example Hoffman, 2006. If this were the case, the organic substance of the fossils would have been completely replaced by calcite and the reticulate microstructure would represent a network of veins.

The fact that the blades are abundant to the exclusion of any other fossils in the matrix might suggest that they grew in a "thicket" of individuals living in a relatively restricted environment. Alternatively, the apparently broken and randomly oriented state of the fossils could be the result of a single, brief event (*e.g.* a storm or flood) that washed organisms from a limited area (land? fresh water?) into an otherwise barren, shallow marine mud deposit.

Readers are encouraged to be on the lookout for similar fossils when they're in the mountains. Any who have seen similar fossils or have suggestions on the identity of this organism are asked to contact the author (see Page 2).

References

Douglas, R.J.W. 1958. Mount Head map-area Alberta. Geological Survey of Canada, Memoir 291, p. 42–56.

Finks, R.M. and Rigby, J.K. 2004. Paleozoic hexactinellid sponges. *In*: Treatise on invertebrate paleontology, Part E, Vol. 3: Porifera. The Geological Society of America and The University of Kansas, Boulder, CO and Lawrence, KS, pp. 319–448. **https://journals.ku.edu/InvertebratePaleo/article/view/5155/4633**.

Hoffman, G.L. 2006. Lepidodendrid plant remains from the Mt. Head Formation (Mississippian) at Canyon Creek, Alberta. Alberta Palaeontological Society, Tenth Annual Symposium, Abstracts. March 18–19, 2006, Mount Royal College, Calgary, p. 19.

MacQueen, R.W. and Bamber, E.W. 1968. Stratigraphy and facies relationships of the upper Mississippian Mount Head Formation, Rocky Mountains and Foothills, southwestern Alberta. Bulletin of Canadian Petroleum Geology, 16(3): 225–287.

_____, Bamber, E.W. and Mamet, B.L. 1972. Lower Carboniferous stratigraphy and sedimentology of the southern Canadian Rocky Mountains. Guidebook, Field Excursion C17, 24th International Geological Congress, Montreal, p. 26–43.

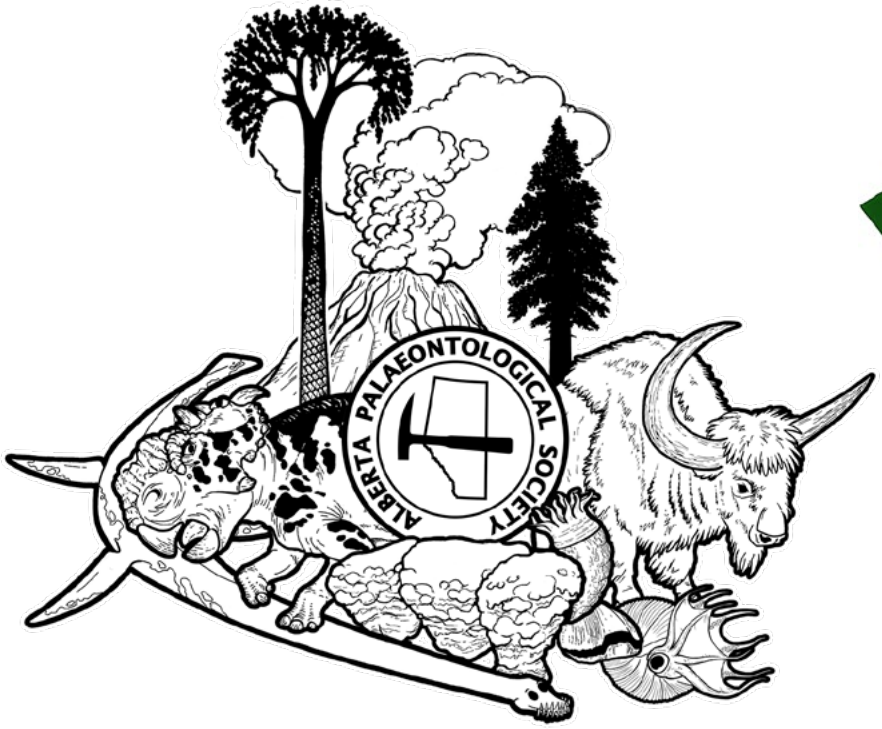
McMechan, M.E. 1995. Geology, Rocky Mountain Foothills and Front Ranges in Kananaskis Country, Alberta. Geological Survey of Canada, Map 1865a, scale 1:100,000.

Mundy, D.J.C., Widdowson, R. and Sabo, D. 1997. Stratigraphy, sedimentology, structural history and exploration history of the Mississipian at Moose Mountain, southwestern Alberta Foothills. Field Guide, CSPG-SEPM Joint Convention: Sedimentary events and hydrocarbon systems, June 1–6, 1997, p. 17.

❑

APS T-Shirts!

Design by Cory Gross



T-shirts are printed with white design on forest green fabric. Available in sizes S, M, L, XL, XXL. Some sizes may be available in limited quantities—please inquire. Pick yours up at the next meeting, or use the order form below.

Shipping and handling is charged at cost. Email **giftshop@albertapaleo.org** or phone or text **Mona** at **(587) 578-4579** with your full mailing address, for a quotation on shipping charges.

APS Members: $15.00 Non-Members: $20.00

Rev 20231107

Order Form

☐ **Cheque or money order** in Canadian funds payable to **Alberta Palaeontological Society**

Mailing Address: PO Box 68024 Crowfoot PO
Calgary, AB, Canada T3G 3N8

☐ ***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 the items for payment in the message field (example "*2 small and 1 XL T-shirts*").
Email a scan or photo of this completed order form to **giftshop@albertapaleo.org**.

Name _____

Address _____

City _____

Province / State _____

Postal / Zip Code _____

E-mail _____

Phone _____

Select your sizes

Small (S)	_____ Quantity
Medium (M)	_____
Large (L)	_____
Extra Large (XL)	_____
Extra-Extra Large (XXL)	_____
TOTAL	_____ × $**15.00 (APS Member)** = $ _____
	× $**20.00 (Non-member)** = $ _____

Shipping and handling—as quoted (see above): $ _____

TOTAL ENCLOSED **$** _____