



Flatirons Facets

Flatirons Mineral Club of Boulder County, Colorado
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November-December, 2020

Virtual Towel Show - November 12

One of the favorite meetings each year is the Towel Show, our club's annual show-and-tell, where both adults and juniors display their best finds and lapidary projects from the year. The Towel Show this year will be very different, run virtually on Thursday, November 12, starting at 7:00 pm.

Everyone, young and old, is encouraged to enter this year's Towel Show. Take photos of up to eight specimens you acquired or lapidary/jewelry projects you completed this year. Then email them to Brian Walko at earthextractions@gmail.com. Be sure to include your name, the specimen's name of your photo(s), and if you are a junior or senior. These will be shown during the Virtual Towel Show, with each participant explaining his or her entries. Kids will present first, followed by adults.

So, pick out your best from the year and take pictures of them to enter in the Virtual Towel Show. Folks will enjoy learning about places you went and projects you completed, as well as seeing some nice specimens and lapidary art.

And, plan to join us on November 12 for the Towel Show! **The Zoom link will be emailed to all members a few days before the meeting.** If you have not used Zoom before, please see the instructions on page 10.

In this newsletter

- FMC members honored, page 3
- Jr. Geologists activities, page 4
- Mosasaurs, page 5
- A New Look at the Surface of Mars, page 6
- Franz Nopcsa von Felső-Szilvás: European Dinosaur Genius That No One Knows, page 6
- Fossils in the News, page 11
- Dinosaur Ridge Winter Break Camps, page 13
- Open Museums, page 14
- Rockhounding events and activities, page 16



Brian Walko's Towel Show entries from last year

Two More COVID Cancellations

Unfortunately, our two December activities have been canceled, due to COVID social distancing requirements. Both Rocks & Rails, our annual show with the Boulder Model Train Club, and our Holiday Party will not happen this year. We hope that the virus is under control next year, so we can enjoy these activities again.



President's Message

This month I would like to share my recent experience with the Cal-Wood fire. I have lived near the mouth of Lefthand Canyon for 21 years. During this period, I have been evacuated two times and pre-evacuated other times for wildland fires. After my first evacuation I decided to join the Lefthand Fire Protection District as a member of their board of directors. I still hold that position.

The events of Oct. 17th were the scariest of them all. That day my wife and I were shopping in Denver. My fire department pager went off at 12:12 PM with a report of smoke at Cal-Wood ranch. Shortly later other alerts came through requesting more firefighting support. This put me on alert that we should be heading home in case the incident expanded. My son could see the smoke from his home in Erie and drove over with a pickup truck. By the time I was on US 36 heading home, the smoke plume was massive.

During the drive home I was watching the smoke-wind direction and mentally preparing for another evacuation. When I arrived home, the Boulder County Emergency Alert system called and we were put on pre-evacuation notice. We started preparing for evacuation. Find Bubba the cat, pack clothing and toiletries, the computers, collect our valuables, paperwork, and some sentimental items.



Then the official evacuation call came. Within a few minutes we had Boulder County Sheriff Deputies and Fire Department trucks telling us to leave. Immediately the pickup trucks and vehicles were loaded and pulling out. All this happened within one hour after we arrived home from Denver.



I decided to stay a bit longer to take photos of the fire. Then I remembered I had no recent inventory of my home's contents for insurance purposes. I began photographing every room, closet and drawer. I even photographed my rock shed. All during this time I was receiving calls and texts telling me to get the heck out of there.

The Flatirons Mineral Club is a non-profit Organization which is dedicated to developing and maintaining interests in Earth science and associated hobbies. The purpose of this Club includes, but is not limited to, studying geology and Earth science, teaching others about our hobby, including young people, collecting gem, mineral and fossil specimens and learning lapidary skills.

The Flatirons Mineral Club is affiliated with the Rocky Mountain Federation of Mineralogical Societies, the American Federation of Mineralogical Societies, and the Greater Denver Area Council of Gem and Mineral Societies.



When I left, the traffic jam of “lookie-loos” on US 36 and Neva Road made travel difficult. We were fortunate to stay at my daughter’s Longmont house in her spare bedroom. I spent a lot of time following social media and listening to the Boulder County Office of Emergency Management briefings. I took daily trips to roadblocks near my house. After a week we were allowed home. Our home was untouched thanks to the heroic efforts of the firefighters and aerial slurry bombers. Unfortunately, 26 houses just to the north of us were lost.



The Cal-Wood fire burned 10,000+ acres. The extremely rapid growth was due to the timber dryness and wind. It even jumped US 36 and did damage on the east side of the highway. Currently, firefighters are doing mop-up operations. They are looking for hot spots with infrared cameras and by touch that might flare up. Only a couple of snowstorms will put this fire totally out.

Congratulations to Brian Walko, Our Rockhound of the Year

The Rocky Mountain Federation of Mineralogical Societies honored Brian Walko as our club’s Rockhound of the Year. Here is the announcement from their September 2020 newsletter:

The Flatirons Mineral Club is located in Boulder, Colorado nestled against the Fountain Formation (Pennsylvanian), which rises nearly vertically just west of town to form the namesake Flatirons. By a vote of club members for the 2020 Rockhound of the Year award, they have elected club president Walko as the winner. Brian is a retired engineer and currently maintains a mining and extraction consulting company, which keeps him very active in the Boulder County, Colorado, mineral belt.

Congratulations to Brian and a special thank you for all you do for our club.

Flatirons Facets Places in AFMS Bulletin Contest

The latest American Federation of Mineralogical Society (AFMS) newsletter announced that our club’s newsletter, Flatirons Facets, placed sixth place in the country for large club newsletters. This contest includes newsletters from all of the rock and mineral clubs in the country. We congratulate Dennis Gertenbach, our newsletter editor, on this recognition. The newsletters he produces are outstanding and it is nice to see this recognized nationally.

Club Dues Extended Another Year

Because COVID-19 restrictions cancelled most club activities this year, the Board voted to extend every member’s dues through October 30, 2021. So, your current dues are good for another year.

We hope the coronavirus pandemic wanes next year, so club meetings, field trips, Jr. Geologists programs, and other activities can resume in 2021.

Write an Article for the Club Newsletter



One of the best features in each club newsletter are articles and other contributions by club members. Club members have a wide range of interests in earth science and rockhounding, and are willing to share their interests with other members through articles, photos, poetry, and artwork.

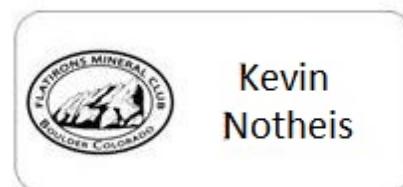
Consider submitting an article, photo, poetry, or artwork for November's newsletter. We are looking for items from all age groups, including adults and Jr. Geologists. You can send your newsletter contribution to Dennis at gertenbach1@gmail.com. All contributors will receive a nice wulfenite specimen like the ones shown in the photo. If you need help with your contribution, please contact Dennis.

And be sure to see the articles written by eighth-grader Alex Morreale on page 5 and Dennis Gertenbach on page 6 in this issue.

Member Name Tags

Would you like a Flatirons Mineral Club name tag to wear at club events and field trips? The club places orders for name tags several times a year for members.

If you would like a name tag, please log onto our website and choose the "Request a Name Tag" link in the Members Area. Add your name to the list as you want it to appear on your name tag and it will be ordered for you. Your first name tag is free!



Example of a club name tag

Jr. Geologists Activities

Unfortunately, two outdoor Jr. Geologists activities were canceled last month, as tighter COVID restrictions were enacted.

We plan to participate in the Towel Show on November 12. All Jr. Geologists who participate will receive their choice of one of these purple amethysts from Mexico or white halite crystals from California. We look forward to seeing what specimens the juniors acquired or lapidary/jewelry projects they completed this past year.

The Jr. Geologists program is open to all FMC families. The program is suitable for ages 6 and older. Monthly Jr. Geologists meetings are on hold until the COVID-19 restrictions for indoor meetings are lifted. However, we will resume online programs this month. If your family is not on the Jr. Geologists' email list, please contact Dennis at gertenbach1@gmail.com to have your name added.



Mosasaurus

Alex Morreale, eighth grader

Mosasaurus were giant marine lizards of the prehistoric seas. Mosasaurus lived from about 145.5 to 65.5 mya. The largest species of mosasaur could have reached about 57 ft long.

Mosasaurus are thought to have evolved from aigialosaurs which were aquatic lizards living before mosasaurus. Mosasaurus had four large flippers that acted like paddles, allowing it to steer its body very well. A mosasaur's tail was very long and made mosasaurus very strong swimmers.



Figure 1. *Mosasaurus* skeleton. Credit: Loozrboy, [Creative Commons Attribution-Share Alike 2.0 Generic](#)



Figure 2. Two mosasaur teeth from my collection

All mosasaurus breathed air and were very adapted to their environment. Also, the mosasaurus had double hinged jaws allowing them to swallow their food whole. They would mainly eat cephalopods and fish, but would also eat birds and other mosasaurus. Mosasaurus had cone shaped teeth that could easily crush through shells.

Tylosaurus and *Mosasaurus* were some of the larger and more well-known mosasaurus and were apex predators in the sea. Mosasaurus gave birth to live young instead of eggs like present day reptiles.

Mosasaur Basic Taxonomic Classification

Kingdom	Animalia
Phylum	Chordata
Class	Reptilia
Superfamily	Mosasauroidea



Figure 3. *Mosasaurus* feeding on a juvenile abelisaurid. Credit: Jonagold2000, [Creative Commons Attribution-Share Alike 4.0 International](#)

Sources

<https://en.wikipedia.org/wiki/Mosasaur>

<http://www.eartharchives.org/articles/mosasaurus-last-of-the-great-marine-reptiles/>

<https://www.britannica.com/animal/mosasaur>

About the author

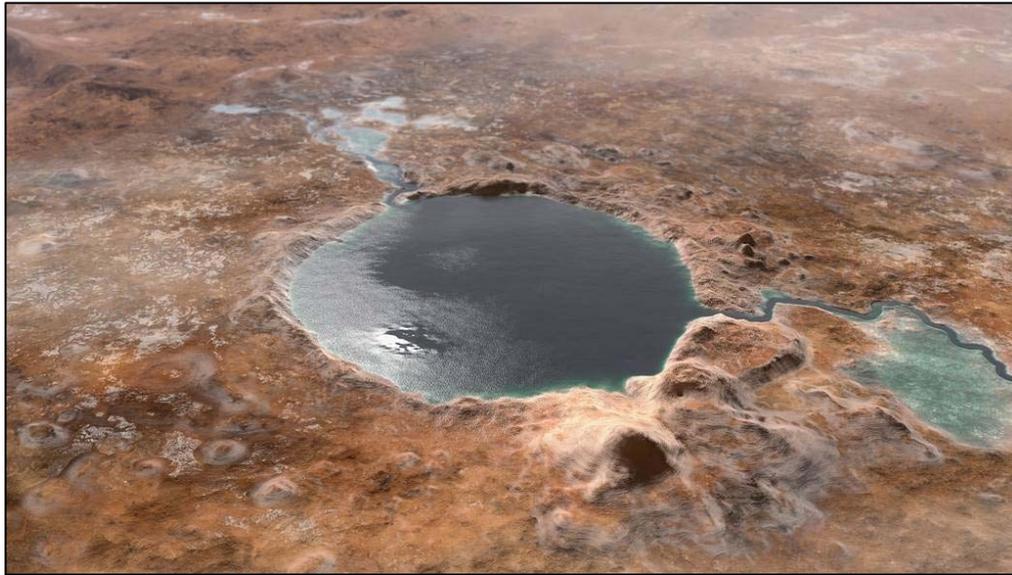
Alex Morreale is an eighth grader. His paleontological interests include dinosaurs and Megalodon sharks.

A New Look at the Surface of Mars

In a few months from now, in 2021, the next NASA 2020 rover, Perseverance, is targeted to land on the now dry inlet area of what was lake bottom of the Jezero Crater. The article at <https://www.nasa.gov/image-feature/jezero-crater-was-a-lake-in-mars-ancient-past> has background information on this event. The rover mission will further knowledge about the planet's geology and past climate, and pave the way for human exploration of Mars. This will be the first mission to collect and cache Martian rock and regolith (broken rock and dust).

Perseverance will touch down on Mars on Thursday, February 18, 2021, at approximately 1:30 p.m. MST. Live coverage will be streamed on the NASA TV-channel at <https://www.nasa.gov/multimedia/nasatv/#public>.

Thanks to Gerry Naugle for submitting this information.



Jezero Crater was a lake in Mars' ancient past. Credit: NASA/JPL-Caltech, used by permission

Franz Nopcsa von Felső-Szilvás: European Dinosaur Genius That No One Knows

Dennis Gertenbach

Franz Nopcsa not only was one of the most famous dinosaur paleontologists during the turn of the last century, but was also a Hungarian baron, swashbuckling adventurer, Albanian scholar, innovative geologist, wartime spy, and would-be king of Albania. With money from his aristocratic family, he lived a life of excitement and intrigue with a flair for the dramatic. He was known to travel through Europe on motorcycle and crossed the Albanian Alps on foot dressed as a local. At times, he would disappear for months, only to arrive for tea at a posh European hotel dressed as a peasant. He corresponded with famous and learned men across Europe for much of his life. Later in life, poverty overtook him and he died penniless with his lover by murder-suicide. Here is his story.



Baron Franz Nopcsa von Felső-Szilvás was one of the first to consider dinosaur biology, leading him to many theories that were ignored during his time, but widely accepted now. Credit: [Wikimedia Commons](#), public



Nopcsa's family home was a castle in Săcel until the end of the First World War, when Transylvania was ceded to Romania.

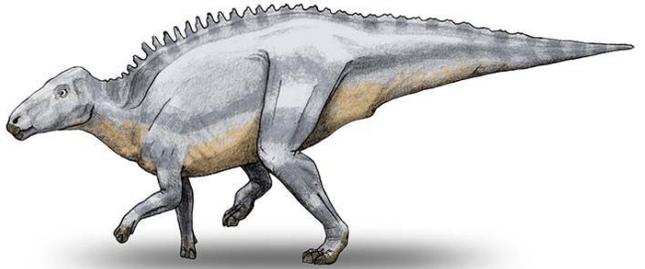
Today, the castle is derelict. Credit: [Wikimedia Commons](#), public domain

when his younger sister, Ilona, discovered dinosaur bones along a riverbank at the family estate near Szacsal in 1895. Among the fossils was an unusual-looking skull, which belonged to a previously undiscovered duck-billed herbivore from the Late Cretaceous, around 70 million years old.

In the fall, Nopcsa entered the University of Vienna and took the skull with him. He showed the bones to Austrian geologist, Eduard Suess, who encouraged him to study them in detail. Back in Transylvania in the library of Sacel Castle, Nopcsa taught himself geology, physiology, anatomy, and neurology to learn more about these fossils. Always on the search for more information about ancient animals, he wrote to scientists all over Europe asking for more books.

With very few dinosaur discoveries in Europe, he was unable to compare his fossils with others. Thus, he had to rely on his observations and imagination. To learn more about this creature, he returned to the riverbank over and over to excavate more bones and prepare them for study. Using knowledge about lizards and alligators, he was able to put the jaw bones he discovered back together and figure out how the muscles attached. This was new ground, comparing dinosaurs to living creatures. In 1899, he published a formal description, showing that the fossils belonged to an ornithomimid dinosaur later named *Telmatosaurus*.

With the professor's encouragement, he began formally studying geology at the University of Vienna in 1897, where he quickly developed into a talented scholar. He gave his first academic lecture in 1899 at the age of 22, presenting his work on hadrosaurs to the Austrian Academy of Sciences, one of the foremost scientific bodies in the world. As was true all his life, his presentation was anything but discreet. Nopcsa savagely dismissed the dinosaur classification system of a prominent scientist named Georg Baur, demonstrating his genius as well as his monumental lack of tact. He later received his PhD from the University in geology in 1903.



Telmatosaurus was the first dwarf dinosaur Nopcsa discovered. He published his findings in 1899 initially naming the reptile *Limnosaurus*, although he later changed this. Credit: © Debivort via Wikimedia Commons (https://commons.wikimedia.org/wiki/File:Telmatosaurus_sketch_v2.jpg)

Nopcsa is most famous today as the father of paleobiology, being one of the first scientists who put flesh onto bones. At this time, most paleontologists were focused on finding new bones and describing new species, while Nopcsa studied fossils to learn about the physiology and living behavior of dinosaurs. Many of his theories were ahead of his time. He was the first to suggest that archosaurs cared for their young and exhibited complex social behavior, an idea that did not become widely accepted until the 1980s. His study of Mesozoic reptiles led him to suggest that some were warm blooded, an idea now shared by most vertebrate paleontologists today. And, he also wrote that birds evolved from ground-dwelling dinosaurs and theorized how their forearms evolved into wings with feathers that eventually led to flight. Decades after Nopcsa's death, bird evolution from bipedal dinosaurs would gain widespread acceptance among paleontologists.

His extensive study of Transylvanian dinosaur fossils led him to the theory of insular dwarfism, also known as the island effect. He found that Transylvanian dinosaurs were much smaller than their cousins elsewhere. Paleontologists believed that these dinosaurs were just juveniles, but Nopcsa's careful examination of the fossils showed fused bones of adults, refuting this. He deduced that this part of Europe was an island (now known as Hațeg Island), theorizing in a 1914 paper that limited resources on the island led to smaller animals. This theory is widely accepted today.



while *Giraffititan* reached about 75 feet long. Credit: © [Nils Knötschke](#) via Wikimedia Commons (https://commons.wikimedia.org/wiki/File:Europasaurus_und_Giraffatitan_skulls.jpg)

By watching modern birds, he developed another revolutionary idea. He recognized the similarity between the brooding patterns of birds to fossil dinosaur eggs and nests, reasoning that like birds, newly hatched dinosaurs were too underdeveloped to survive on their own. Thus, some dinosaurs must have parented their young.

Nopcsa published extensively in a number of languages, including a 700-page tome on the geology in and around Albania. He was fearless in publishing creative theories. Even though his ideas contradicted current beliefs, his papers were taken seriously and were highly regarded. Not all of his theories were accepted at the time, but they did succeed in stimulating discussions and advancing the field of paleontology.

Over his lifetime, he would identify 25 genera of reptiles and five dinosaurs. He was also a brilliant structural geologist, mapping sections of Transylvania and northern Albania. While most geologists dismissed the theory of continental drift, he provided some of the strongest evidence for such movement. These ideas languished for decades, not to be widely accepted until the early 1970s.

Doda, His Constant Companion

In Bucharest in 1906, Nopcsa met an 18-year-old Albanian, Bajazid Elmaz Doda, and hired him as his secretary. Doda was from a shepherd's village high in the mountains. From the time they met until the outbreak of World War I in 1914, Nopcsa and Doda were often on the road. As recounted in a later memoir, Nopcsa related that Doda was the only person that truly loved him and never doubted for a moment that Doda would misuse his trust. Apparently, the feeling was mutual. Probably because of his wealth, Nopcsa felt no need to hide the fact that Doda was much more than his devoted secretary.

Albanian Scholar, Spy, and Would-Be King

While Nopcsa was establishing himself as a scientist, he became enthralled by tales of Albania's mountain tribesmen from an acquaintance. Nopcsa was determined to visit the mountains and study the land and the people there. Nopcsa was one of the few outsiders to venture into the mountains of northern Albania. When he first arrived, he was met with a gunshot that pierced his hat and narrowly missed his skull. But he was undeterred, becoming fluent in local Albanian dialects and building friendships with the tribesmen.

At that time, Albania was a province of the crumbling Ottoman Empire, striving for independence. Over time, he got on good terms with the leaders of the Albanian nationalists who fought against the Turks, giving passionate speeches and smuggling in weapons.

The Balkan states join forces in 1912 to drive out the Turks. Once accomplished, the newly liberated states plunged into internal conflicts. During the Balkan Wars, Nopcsa spied for Austria-Hungary. When Albania arose as an independent state and sought a king from among European aristocrats, Nopcsa volunteered. He suggested that he would provide money for the war by marrying a rich American heiress aspiring to royalty. But, to his great disappointment, Prince William of Wied of Germany was chosen as the Albanian king.

With independence, Albania became a buffer state between Austria-Hungary and the Ottoman Empire. As tensions continued to build across Europe leading to World War I, the Austrian government sought accurate geographical information and maps of the country. Because of his intimate knowledge of the country and its people, Nopcsa was instrumental in providing this information. No foreigner knew more about Albania than Nopcsa.

With the outbreak of World War I, Nopcsa was again hired by the Austria-Hungary government as a spy, this time working undercover as a shepherd in Transylvania. During the war, he led a group of Albanian volunteers and in 1919 was the first person to hijack an airplane in history (to escape the short-lived Hungarian Soviet Republic).

From 1907 to 1932, Nopcsa published more than fifty scientific studies of Albania. Subjects included linguistics, ethnology, history, folklore, and kanun (Albanian customary law). In his time, he was known as the leading expert on Albania.

The Later Years

At the end of World War I, Austria-Hungary was defeated and dismantled. Transylvania, home of Nopcsa's castle and family lands, was ceded to Romania. As a consequence, his estates and other possessions were confiscated in 1920. As his money ran out, he was compelled to find paid employment for the first time in his life. Eventually, he landed a job as the head of the Hungarian Geological Institute.

A lifelong illness, most likely manic depression, worsened. He became bored with his administrative job tied to a desk, and resigned three years later. He and Doda took off on his motorcycle to tour Europe and study fossils, with Nopcsa on the bike and Doda in a sidecar. Later when he returned to Vienna, financial difficulties caught up with him. To cover his debts, he sold his fossil collection to the Natural History Museum in London. Later, he was forced to sell his extensive library for a pittance. By 1928, Nopcsa's health was so frail that he addressed the audience at a paleontological symposium from a wheelchair.

Depression deepened, and finally in 1933 at the age of 56, he slipped sleeping powder into Doda's tea and shot him in his sleep. He turned the gun on himself, committing suicide. In his suicide note, he stated that he shot Doda, because he did not wish to leave Doda behind sick, in misery, and without a penny, because he would have suffered too much. Nopcsa was cremated in his motorcycle gear, as he wished, and was buried in Vienna. Doda was buried in the cemetery's Muslim section.



During his lifetime Nopcsa, wrote a memoir of his life from 1897 to 1917. Even though he finished the memoir in 1929, it was never published during his lifetime. Published in German in 2001 and translated to English in 2014 as *Traveler, Scholar, Political Adventurer: A Transylvanian Baron at the Birth of Albanian Independence*, the brilliance and idiosyncrasies of this man came into the public eye.

Over his career, Nopcsa published several technical books and more than 150 scientific papers. He was one of the most prominent researchers and scholars of his day. Many of his theories were forgotten, only to become widely accepted today. Yet, sadly his name is mostly unknown to the world and even to many paleontologists.

References and Additional Reading

- Brusatte, Steve (2018), *The Rise and Fall of the Dinosaurs*, William Morrow Publishers, p. 254-259.
- Osterloff, Emily, "Franz Nopcsa: the Dashing Baron Who Discovered Dwarf Dinosaurs," Natural History Museum, <https://www.nhm.ac.uk/discover/franz-nopcsa-the-dashing-baron-who-discovered-dwarf-dinosaurs.html>
- Scott, Michon (2019), "Franz Nopcsa," Strange Science, <https://www.strangescience.net/nopcsa.htm>
- Veselka, Vanessa (2016), "History Forgot This Rogue Aristocrat Who Discovered Dinosaurs and Died Penniless," Smithsonian Magazine, <https://www.smithsonianmag.com/history/history-forgot-rogue-aristocrat-discovered-dinosaurs-died-penniless-180959504/>
- Wikipedia, "Franz Nopcsa von Felső-Szilvás," https://en.wikipedia.org/wiki/Franz_Nopcsa_von_Fels%C5%91-Szilv%C3%A1s

FMC Virtual Meetings on Zoom: How to Participate

The 7:00 PM meeting on November 12, will be a virtual meeting presented over **Zoom**. Try to join by 6:55 PM using a URL link to be emailed to you before the meeting. Seasoned Zoom veterans will know what to do.

If you are a Zoom novice, this summary with video links gets you started. Zoom allows a Host presenter who controls the roles of other **Participants**. As a novice, allow yourself a *minimum* of 15 minutes to set up before the time of the presentation. (It could take less, but be pessimistic.) These short videos describe what you will do - the same basic information presented three different ways. *Watch them well before the meeting:*

<https://support.zoom.us/hc/en-us/articles/201362193> 'Joining a Zoom meeting.' 1.09 min.

<https://www.youtube.com/watch?v=6fiYWnfTc5o> 'Joining a Zoom meeting for the first time – A cozy step-by-step guide.' 6.08 min.

<https://www.youtube.com/watch?v=NIYudDeULLw> 'How to join a Zoom meeting for the first time.' 2.26 min.

These videos are for laptops versions (Windows or Mac) and explain a Zoom download and install if required. The link you will receive also works for your iPad or Smartphone, but with some screen variations. Download & install the Zoom App ahead of time

The many on-line guides and videos mainly address the Host function rather than the Participant function. Participants can reset various options including their background image, but this is beyond the scope of this introduction. Controls/options may be frustratingly hidden by default until you hover the mouse over the bottom edge of the screen. At top right of the default screen, as a participant you can toggle between **Speaker** and a **Gallery** of the participants - see this link: <https://support.zoom.us/hc/en-us/articles/201362323-How-Do-I-Change-The-Video-Layout->

Enjoy, and smile for the camera!

Fossils in the News

Dennis Gertenbach

No Feathers on Prehistoric Flying Reptiles

Fossil evidence is clear that many dinosaurs had feathers. But what about those flying relatives - the pterosaurs? In 2018, scientists lead by Zixiao Yang reported evidence of feather-like branching filaments called protofeathers on the skin of several pterosaur fossils. However, further study by David Unwin from the University of Leicester and David Martill of the University of Portsmouth refutes this conclusion. Unwin and Martill propose that these filaments are not protofeathers, but rather tough fibers that formed part of the internal structure of the pterosaur's wing membrane. The branching filaments are simply the result of these fibers decaying and unravelling. So, pterosaurs were not covered with feathers, but instead were bald.

Information from <https://www.port.ac.uk/news-events-and-blogs/news/naked-prehistoric-monsters>



A recent study refutes the thought that pterosaurs had feathers as shown in this image. Credit:

PaleoEquii, [Creative Commons Attribution-Share Alike 4.0 International](https://creativecommons.org/licenses/by-sa/4.0/) license.

Largest Flying Bird Ever

Researchers from California and China have reported the bone of a 50-million-year-old bone giant bird that once flew over Antarctica. This story begins in the 1980 when scientists searching for Antarctic fossils found some delicate bird



A pelagornithid, likely the largest flying bird that ever lived. Credit: Brian Choo, University of California Berkeley press release

feet. This would make this avian the largest bird ever.

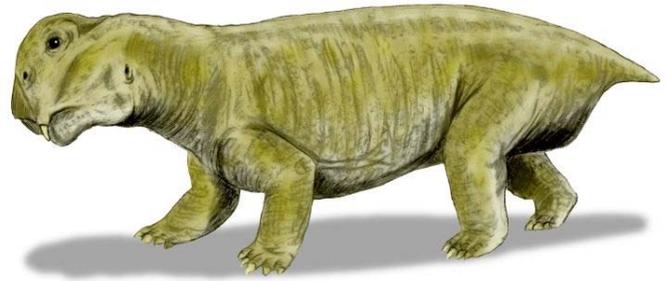
Information from <https://news.berkeley.edu/2020/10/27/antarctica-yields-oldest-fossils-of-giant-birds-with-21-foot-wingspans/>

bones on Seymour Island. Bird bones are relatively rare in the fossil record, because of their fragile nature. These bones, including a jaw and part of a foot, were part of a huge collection stored at the University of Riverside, but never carefully studied.

In 2003, a collection of more than 10,000 fossils was transferred from Riverside to the University of California Museum of Paleontology at the Berkeley campus, including the bird fossils. One fossil stood out - the bony-toothed jaw that reminded researchers of an albatross with a hacksaw mouth. The jaw caught the attention of University of California Berkeley paleontologist Peter Kloess, who recognized it as a type of ancient bird called a pelagornithid. By comparing the jaw and foot bones to more complete pelagornithid skeletons, Kloess and his colleagues estimated the wingspan of this bird at roughly 20

What Caused the Largest Mass Extinction?

At the end of the Permian Period 252 million years ago, Earth saw the largest mass extinction in its history. At this time, more than 95% of the planet's marine species and 70 % of terrestrial life went extinct within a few thousand years. Since its discovery, scientists have puzzled (and argued) about its cause. Now, scientists from Germany, Italy, and Canada have conclusively reconstructed the entire cascade of events at that time using modern analytical techniques. Using the shells of brachiopods, clam-like animals that dominated the ocean up to this extinction, these researchers were able to trace the ocean pH 252 million years ago by measuring different isotopes of the element boron in the fossil shells.



Lystrosaurus, an abundant Early Triassic land vertebrate, evolved after the Permian mass extinction. Credit: Nobu Tamura/ [GNU Free Documentation License](#), Version 1.2

Their work concluded that massive volcanic activity in Siberia led to ever-increasing CO₂ levels in the atmosphere. As CO₂ levels in the air increased, so did the acidity in the ocean, lowering the pH. The increased acidity attacked the shells of sea creatures, cause their demise. The increased CO₂ in the air also led to increased global temperatures, which increased chemical weathering of the rocks on land. Higher levels of chemical weathering increased the amount of nutrients reaching the oceans, resulting in blooms of algae and other micro-organisms that depleted the oxygen dissolved in the seas. This drop in oxygen concentration caused more marine animals to die. The competing theory of increased atmospheric methane, another greenhouse gas, from the oceans cannot explain the increased acidity in the ocean.

Information from <https://www.sciencedaily.com/releases/2020/10/201019125512.htm>

An Ancient Human Parent's Journey Told by Fossil Footprints

Human footprints found at White Sands National Park in New Mexico tell of an incredible journey made more than 10,000 years ago. The tracks of a women (or possibly an adolescent male) run for nearly a mile along what was an ancient lake. Based on the changing depth of the tracks, this woman was carrying a toddler in her arms, shifting the child from right to left and back again. The tracks show that occasionally she put the child down. Return tracks are also present, indicating that the women dropped the child off before she returned. Previously found tracks include mammoths, giant sloths, saber-toothed cats, and dire wolves. Sloth and mammoth tracks were found to have intersected the human tracks after they were made. This indicates that this journey was dangerous for a lone women and child.



Information from <https://news.cornell.edu/stories/2020/10/fossil-footprints-tell-story-prehistoric-parents-journey>

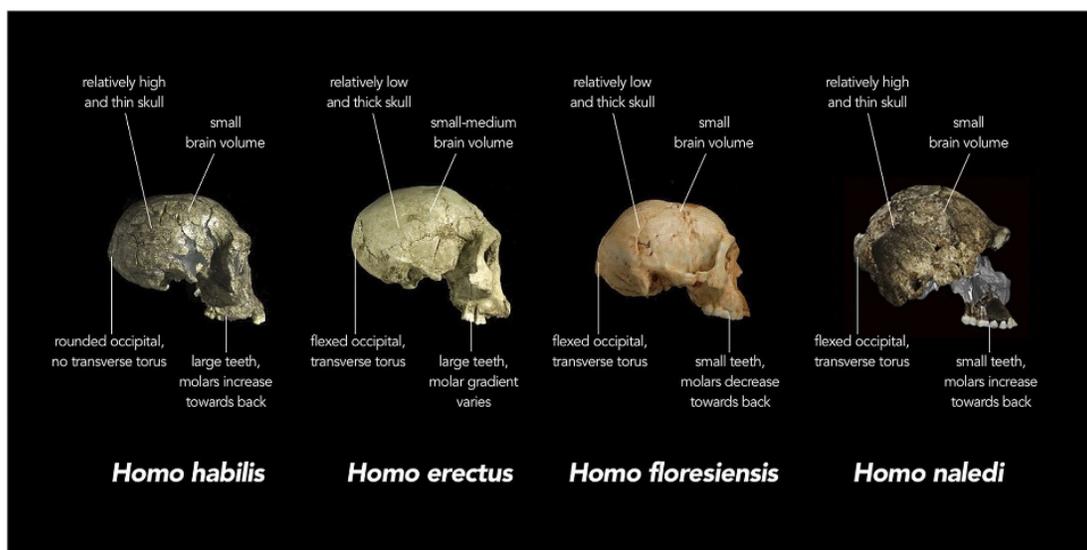
Footprints found at White Sands National Park in New Mexico of an adult carrying a child for nearly a mile, then returning along the same path without the child. Credit: National Park Service, public domain

Climate Change Likely Drove Early Human Species to Extinction.

Scientists have identified six or more different species of early humans belonging to the genus *Homo*. But, only *Homo sapiens* managed to survive. A new study led by Pasquale Raia of Università di Napoli Federico II in Napoli, Italy, explains why *Homo sapiens* won out. The culprit? Global climate change and the inability of the other *Homo* species to adapt to either warming or cooling temperatures.

The researchers used a high-resolution past climate emulator to provide temperature, rainfall, and other data over the last 5 million years. They compared this to extensive fossil evidence from over 2,750 sites of *Homo* habitation. This comparison showed that for three species - *H. erectus*, *H. heidelbergensis*, and *H. neanderthalensis* - their extinction was preceded by changes in climate. For Neanderthals, competition with *Homo sapiens* further made things worse. Only *Homo sapiens* were robust enough to survive these changes in climate.

Information from <https://www.sciencedaily.com/releases/2020/10/201015111729.htm>



Comparison of skull features of *H. naledi* with other small-brained *Homo* (*H. habilis*, *H. e. georgicus*, and *H. floresiensis*) Credit: Chris Stringer, [Creative Commons Attribution 4.0 International](https://creativecommons.org/licenses/by/4.0/)

Dinosaur Ridge Winter Break Camps

Dinosaur Ridge has a number of fun day camps for kids 6 to 11 years old in December and early January. Their camps keep kids moving and discovering in the incredible setting of this National Natural Landmark. These experiences are designed to foster excitement and wonder for science, art, and the outdoors while engaging in their hands-on educational curriculum. These camps run from 9 am to 3 pm and cost \$70 a day.

December 30: Dinosaur Discoveries

What dinosaurs lived in your backyard? Explore local dinosaur fossils and sites with a guided tour of Morrison Natural History Museum and stops at the Dinosaur Ridge fossil sites (weather dependent only if we can't view the fossils or safely access the site – a little snow won't stop us!). Activities and crafts will focus on local dinosaurs. [Register your camper today.](#)

December 31: Nature in Your Backyard

Your kiddos will learn about local ecology and ecosystems around Dinosaur Ridge and get hands-on with skulls other parts and pieces of native critters! Explore the engineering of flight by studying birds, bats, and bugs and compare modern with prehistoric animals. We will have special activities prepared by the Denver Museum of Nature and Science and Parks and Wildlife. [Register your camper today.](#)

January 2: Fun with Fossils

There are more to fossils than dinosaurs, and on this day we'll explore other kinds of old dead things and how they're found and studied. CDOT Paleontologist Nicole Peavey will give a presentation with hands-on fossil-finding in Micro Paleontology, and campers will learn about and create a 3D paper model of a trilobite! [Register your camper today.](#)

January 3: Rocks and Minerals

Rocks, gems, and sparkling things! Campers will study different kinds of rocks and minerals using microscopes and hand-lenses, and even create their own crystal cave out of Epsom salt! Geologist Dr. Rox Safipour will present on rock types with games and activities, and we'll head up to Red Rocks Park to see some of the local geology (weather dependent if we can't access the overlook area safely with the van or boots – a little snow won't stop us!).

Open Museums

Although many activities remain closed, due to the coronavirus, several area museums have opened. Here is the status of these museums. Please check their websites for updated information before you go.

Denver Museum of Nature and Science is open for visitors. Guests are strongly encouraged to purchase tickets in advance online where they will receive a special \$2 discount per ticket. Members are encouraged to obtain their free admission ticket online, too. All guests must follow social distancing measures. See <https://www.dmns.org/>



Smokey Hawk King, the world's biggest amazonite

Colorado School of Mines Museum of Earth Science is closed.



Dinosaur Ridge is welcoming visitors to safely wander and wonder, explore and experience. The main Visitor Center grounds and doors are open to the community, where you can safely roam and run, learn and debate, and enjoy a National Natural Landmark in Denver's backyard. See <https://dinoridge.org/>.

Morrison Museum of Natural History is a natural history museum located in Morrison, Colorado. The exhibits include several dinosaur fossils that were found nearby. Hands-on exhibits are designed to appeal to both children and adults, scientists and non-scientists. Reservations are required. You can book online at <http://www.mnhm.org/246/Morrison-Natural-History-Museum>.



University of Colorado Natural History Museum is closed.

Nederland Mining Museum is closed.



Western Museum of Mining and Industry Celebrate our country's history by experiencing this incredible museum! Enjoy the Colorado blue sky and sunshine — bring a picnic, relax on their 27-acre campus. You can purchase tickets for the museum in advance or at the door. Tours are modified to meet current guidelines and social distancing. See <https://www.wmmi.org/>.

Tucson Gem and Mineral Show Canceled

The Tucson Gem and Mineral Show® (TGMS) is by far the world's largest gathering of gem, mineral, fossil, meteorite and related earth science collectors, dealers and museum scientists. They hoped and planned for the best during these difficult days of COVID-19 but find events have conspired to force the organizers the painful decision to take 2021 off and focus on bringing things back at a higher level in 2022!

It became clear that applying the mandated COVID-19 protocols to reduce risk would mean drastically restricted attendance and curtailment of many programs. Most importantly, the TGMS does not want to be responsible for a single COVID-19 fatality or serious illness.

COVID-19 related risks clearly make it impossible for TGMS to put on anything more than a shadow of the accustomed vibrant event. So, the organizers decided that it makes more sense to conserve resources and apply them towards a **Blockbuster 2022 Tucson Gem and Mineral Show®**. The organizers promise to pull out all the stops to bring you an unparalleled group of eye-popping fluorescent mineral exhibits, colorful minerals and gems from around the world, and some special surprises to shake everyone out of their post-COVID lethargy!!! See you in 2022!

Other Rockhounding Events and Activities in the Area

Although COVID-19 has shut down most rockhounding events, Dinosaur Ridge has several programs of interest.

Everything Dinosaur Talks / *Now Online!*

This 12-part public lecture series is meant to introduce the amazing world of dinosaurs! Dinosaur Ridge's Education Programs Director, Erin LaCount, delivers fun and educational talks about paleontology all year long. Attend as many as you would like in any order. Registration is \$2 per person, per talk. Dinosaur Ridge volunteers can register for free.

- **November 11** | 10-11:30 am | [Register Talk #7](#)
Talk #7: **Iguanodonts** — This seventh talk focuses on thumb-spiked dinosaurs—the iguanodonts.
- **November 18** | 10-11:30 am | [Register Talk #8](#)
Talk #8: **Hadrosaurs** — This eighth talk focuses on the duck-billed dinosaurs—hadrosaurs.
- **November 25** | 10-11:30 am | [Register Talk #9](#)
Talk #9: **Pachycephalosaurs** — This ninth talk focuses on the bone-head dinosaurs—pachycephalosaurs.
- **December 9** | 10-11:30 am | [Register Talk #10](#)
Talk #10: **Ceratopsians** — This tenth talk focuses on the horned dinosaurs—ceratopsians.
- **December 16** | 10-11:30 am | [Register Talk #11](#)
Talk #11: **Non-Dinosaur Archosaurs** — This eleventh talk focuses on archosaurs, the crocodilians, pterosaurs, birds, and a bit on the dinosaurs.
- **December 23** | 10-11:30 am | [Register Talk #12](#)
Talk #12: **Mammals** — This twelfth and final talk focuses on prehistoric mammals.

Walk with a Geologist Guided Walking Tours

Have you ever wondered about the geology behind the discoveries and fossils at Dinosaur Ridge? Join a professional geologist for a tour of Dinosaur Ridge—a 2½-hour walk and discussion of the geology and changes of the Denver area through time. This walk begins at the Dinosaur Ridge Main Visitor Center, 16831 W. Alameda Parkway. You will be transported by van from the Visitor Center to the west side of Dinosaur Ridge for a 1½-mile walk back. The first quarter-mile of the walk gains approximately 100 feet of elevation. The remaining 1¼ miles of the walk is downhill. These exclusive tours offer you private access to scientists who can give you insider secrets about all of the sites at Dinosaur Ridge.

Tour Dates:

- Saturday, November 7, 12:00 pm
- Saturday, November 21, 12:00 pm
- Saturday, December 5, 12:00 pm
- Saturday, December 19, 12:00 pm

Tour Specifics:

- **Tour is suggested for ages 16+**
- Length: 2.5 hours
- Minimum of 2 and maximum of 9 participants
- \$15 for adults
- Tour may be called off for active precipitation, temps below 32 degrees, or lack of registrations.
- Appropriate attire: comfortable shoes, sun hats, sunglasses, removable clothing (windbreakers, fleeces, etc...)
- Bring water
- **At this time, all participants must wear a mask** (available for purchase in our gift shop).

Register:

- \$15 per person (ages 16+)
- Reservations by phone: 303-697-3466

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Denver Show Club Table

open

Practice social distancing
Wear a mask in public
Be Safe
Stay Healthy!



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P.O. Box 3331
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First Class Mail

Upcoming Events

**Join the fun at the Virtual Towel Show on Thursday,
November 12th. See page 1 for details.**

Monthly club meetings resume online in January.