

Ridge Report



Rene Yaws, Jefferson County Public Library, reads to children at Dinosaur Discovery Day on September 1st.

**Volume 19
Number 3 Fall Issue 2007**

Friends of Dinosaur Ridge
16831 W Alameda Pkwy
Morrison, CO 80465
Phone: 303-697-3466
Web: www.dinoridge.org

The Friends of Dinosaur Ridge (FODR), a 501 C3 non-profit tax exempt organization, was established to protect the natural resources on Dinosaur Ridge and Triceratops Trail, and to educate visitors about the area's geological, prehistoric, and natural features.

Major Contributors:

- * Gates Family Foundation
- * Coors Foundation
- * Great Outdoors Colorado
- * Jeddfo Conservation Trust Funds
- * Scientific & Cultural Facilities District (S.C.F.D)
- * Jefferson County Open Space
- * Boettcher Foundation

Friends of Dinosaur Ridge 2007

Officers:

President	Chris Carroll	CO Geologic Survey
Vice-President	Sam Bartlett	Bureau of Recl. (Ret)
Secretary	Bob Reynolds	Consulting Geologist
Treasurer	Keith Meakins	Accountant

Executive Committee Members:

Norb Cygan	Geologist
Duff Kerr	Kerr & Associates
Kathleen McCoy	Lawyer
Pete Martin	U.S. Bureau of Reclamation
Betty Rall	Geologist
Ed Warren	Geological Engineer (Retired)

Board of Directors:

Tim Connors	National Park Service
Harald Drewes	Geologist
DuWayne Ebertowski	Federal Highway Admin (Ret)
John Ghist	Earth Science Teacher
Jan Jacobs	Technical Editor
Susan Landon	Thomasson Partner Associates
Martin Lockley	University of Colorado, Denver
Marge MacLachlan	Geologist
Judy Peterson	Paleo-artist
Kermit Shields	Geologist
Beth Simmons	Metro State College
Andrew Taylor	Metro State College
Lou Taylor	Consulting Geologist

Committee Chairs:

Pete Martin	Budget
Beth Simmons	Education
Joe Tempel	Fundraising
Tom Moglestad	Outreach
Sam Bartlett	Preservation
Martin Lockley	Publications
Kermit Shields	Volunteer

Staff - Friends of Dinosaur Ridge:

Executive Director	Joe Tempel
Programs & Operations Director	Tom Moglestad
Education Programs Assistant	Erin Fair
Visitor Center Manager	Roger Bennett
Visitor Center Assistant	Jack Davidson
Visitor Center Assistant	Barbara Davidson
VC Assistant and Compter Tech	Brian Davidson

Executive Director's Report by Joe Tempel

Status of Ancient Environmental Education Center:

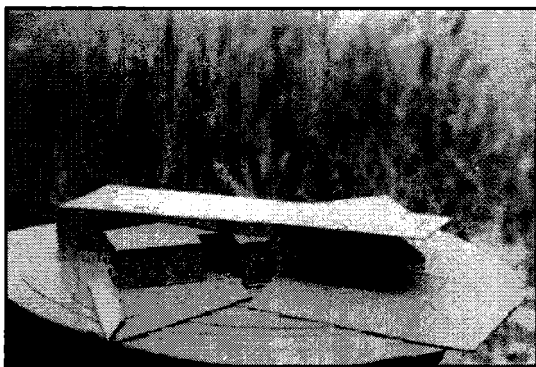
The outside of the barn was finished by Lee Pease and the light boxes for the 5 murals were finished by Paul Nielsen and Dan Green. We have received the first mural depicting the Western Interior Seaway from Michael Skrepnick and are in the process of turning the transparency into a 5' x 5' backlit mural. We have also received three Apatosaurus bone benches from Eric Lenorovitz and Dan Grinor for the video room. Terry Heister has completed the five display cases. Clare Marshall is coordinating the design and Julia Koller is preparing the graphics that accompany the murals. Because of the delay in receiving the murals, we will be scheduling a grand opening in March 2008.

Status of the New and or Improved Visitor Center:

The Jefferson County Open Space is appraising the Rooney Ranch to determine how much they want to purchase from the developer, Greg Stevinson. If they purchase the property around us, we will stay where we are and expand on adjacent open space property. If Jeffco Open Space does not purchase the property around us, we will focus our efforts to move west on the property where Grandma Rooney's house is located. Andrews and Anderson have produced a design for this site (see photograph of scale model) with sweeping vistas of the Ridge and Green Mountain. Preliminary discussions have taken place with Greg Stevinson and Jefferson County to move Rooney Road to the east of our future site in order to remove through traffic from our new visitor center complex. This would not only allow us to safely close Alameda Parkway over the Ridge, but it would provide a private access to our new visitor center. Alameda Parkway is scheduled to be closed to through traffic after the Alameda/C470 interchange is constructed in 2008.

Mac and Martha Turner's Contribution to the Turner Field Experience Fund:

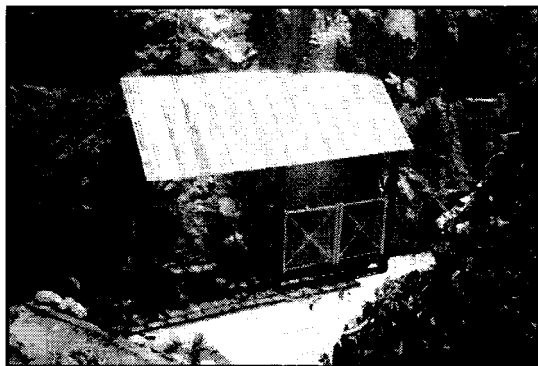
The estate of Max and Martha Turner (see photograph) have bequeathed \$25,000 to the Turner Field Experience Fund to provide transportation for students coming to Dinosaur Ridge. They passed away in 2006 and Dinosaur Ridge was recently notified that we were recipients of this challenge grant that we have already matched. These funds were in addition to the \$10,000 that Dan Turner, family and friends established when Dan, Mac's brother, passed away in 2001. While Dan Turner was a geologist, Mac Turner went into the aerospace and manufacturing business. He and Martha lived in the Los Angeles area for most of their lives. We are very grateful to the Turner family for all they have done for school children in the Denver Metro Area. Over 2,500 children have benefited from the Turner Field Experience Fund to date.



Model of New Visitor Center if relocated west to Grandma Rooney's Site



Mural in Morrison depicting Morrison through time beginning with dinosaurs



Track enclosure at Triceratops Trail



Mac and Martha Turner

Program Director's Report By Tom Moklestad

Visitation & Attendance:

	Jan-Aug 06	Jan-Aug 07	Change
Visitors to Visitor Center	37,256	35,674	- 4%
Tours (Attendance)	4,701	5,750	+ 22%
Fireside Chats, Hikes, Trips	542	544	+ 0%
Dinosaur Discovery Days	2,910	3,975	+37%

Dinosaur Discovery Days - Thanks to Event Sponsors and Participating Sponsors

Event (Attendees)	Event Sponsor(s)
Jun: DDD-National Trails Day (475)	Andrews & Anderson Architects
Jul: DDD-Raptor Day (450)	Bandimere Speedway & The Fort Restaurant
Aug: DDD-Geocaching (850)	Denver Area Gem and Mineral Council
Sept: DDD-Septem-bo-rama (500)	Andrew Taylor

Participating Sponsors include: American Hiking Society, Jeffco Open Space, and Bear Creek Lake Park for June; Wild Birds Unlimited, Rocky Mountain Bird Observatory, HawkQuest, and the Stone Company for July; Geocaching Colorado for August; Jefferson County Public Library and the Jefferson County Public Library Foundation for September. The July Discovery Day was a very successful joint event with the Morrison Natural History Museum.

The September Discovery Day was a special event for our FODR authors! Their table was popular and filled to the brim with books, and the authors themselves were there ready and willing to autograph each one sold (photo pictured right).

The final Discovery Day of the year will be the October 6th Girl Scout event, sponsored by the Association for Women Geoscientists and the Girl Scout Mile Hi Council.



Authors Day: (Left to Right) Beth Simmons, Judy Peterson, Harald Drewes, and Andrew Taylor

School Tours:

Attendance at our school tours continues to increase as we offer new programs for Triceratops Trail and the Backyard Bones: Dinosaur Dig Pit and strive to improve Ridge tours. Typically we have one very large tour in the fall and another in the spring, however this fall we will host Evergreen High School (230), Green Mountain High School (450), and Broomfield Heights Middle School (180), requiring a total of four road closures in addition to our normal-sized tours.

Convention Tours:

This fall, special tours will be conducted for the Geological Society of America, the Association of State Boards of Geologists, and the National Science Teachers Association.

Adopt-a-Track (AAT) Program Update:

So far, 57 tracks at the main Track Site on the Ridge have been adopted with the proceeds going to the preservation of the tracksite.

Preservation Committee

By Sam Bartlett

"When it rains, it pours;" not only applies to Morton Salt, but also to the recent rock preservation issues at Dinosaur Ridge. Just as we were about to finish stabilizing the east and west slopes from winter snows and rains, a huge deluge in late July caused more stability and cleanup problems. Most of us who have been around for some time agreed that the July deluge was probably the worst single thunderstorm that has occurred since the Friends of Dinosaur Ridge was incorporated.

On July 19, Yenter Construction Companies Inc. removed two unstable rock slabs near the tracksite and used their backhoe to scale most of the larger, unstable boulders on the westside of the Ridge. Less than a week later, came the near Noachian deluge, causing further stability problems. Large quantities of mud, and debris were washed down the hill, nearly burying the sidewalks in and around the Bulges. In several areas of previous talus accumulation over the Morrison shale, the accumulated talus was removed down to the unweathered rock surfaces.

Fortunately, Joe Temple was able to convince the City of Lakewood to clean the debris off the sidewalk between the Bulges and the Bone-site in addition to moving some of the previously scaled boulders to this area in order to protect the slope from further erosion. However, the City of Lakewood's equipment could not access the sidewalk at the Bulges and it is still covered in debris. We could use some volunteer helpers to finish cleaning off this sidewalk for future visitors.

The good news is that no damage was done to either the Bulges or the bone sites. The support structure at the Bulges appears to be working as intended and no large rock falls were noted at this site. Additionally, no large rocks were dislodged at the bone site and only additional accumulations of mud were observed there. However, the bone site still needs some stabilization to shore up one area of potential instability resulting from the winter storms.

The area near the ash bed and around the upper road-cut did not fair as well. The July deluge combined with continued vandalism at the ash bed has resulted in extremely unstable rock conditions, causing us to close this area to the public. We have cordoned off the ash bed with Caution Tape, but the vandalism continues. We are currently in the process of soliciting bids to stabilize the toppling rock-blocks at the ash bed and to perform some remedial scaling in this area.

On the eastside of the Ridge no additional damage was observed, other than an additional slab sliding at the downhill tracksite, as a result of the July deluge. Either the near Noachian downpour did not reach the eastside of the Ridge, our previous efforts worked to abate the damage, or the severity of the storm was not enough to cause substantial damage. However, we still need a small stability buttress installed at the base of the tracksite before winter.

The biggest news on the Ridge this quarter is the return of a pilfered *Iguanodon* track early in the summer. This track was retrieved in the early 1970's from a CSU dorm and remained on someone's front porch in the intervening years before being graciously returned to the Friends of Dinosaur Ridge this summer. The Tracksite Preservation Team is currently working on a plan of action to restore the juvenile track to its rightful place. Joe Temple and Martin Lockley recently surveyed the tracksite and determined that the juvenile track belonged in the chiseled-out hole near the bottom of the tracksite that we have been using to highlight the evils of track theft. Once Lou Taylor determines the ownership of the track, the Tracksite Preservation Team will make recommendations to the FODR Board of Directors for its final disposition.

As a side note, this returned *Iguanodon* track has increased the number of tracks in the Adopt-A-Track Program by one. As soon as DuWayne Ebertowski learned of the location and importance of this track, he grabbed his checkbook and immediately adopted the track. Not to worry, there are still plenty of tracks left for adoption. However if we keep adopting tracks at the rate benchmarked by the family of Clare Marshall, we could soon run out of adoptable tracks. Thanks Clare!

Across town at the Triceratops Trail, momentous things are also happening. Early this year, it was announced that one or more of the large tracks in the Hadrosaur Pit could belong to a *Tyrannosaurus Rex*. Before this announcement could be made public, the FODR Board of Directors charged the Preservation Committee with constructing a security structure to protect this rare fossil. Under the tutelage of Joe Temple, Jordan Spalding, a boy scout, his father and his troop erected a security structure and the official track announcement was made in a recent issue of the Denver Post. This special track will be a highlight of the upcoming open house at Triceratops Trail on September 22. Please don't miss it!

The Tracksite Preservation Team has been busy working on tracksite preservation issues and future plans. Dan O'Brien is in the final stages of completing the preliminary design for a tracksite cover and Erik Lenovitz of the Denver Art Institute is using this design to complete a promotional model. Following the completion of the plans and model, the Tracksite Preservation Team will be working on the final design and fund raising methods for the design and construction of the tracksite cover.

At one of the Tracksite Preservation Team meetings, the issue and dangers of rock climbing visitors came up. Various ideas were discussed. It was decided to first find some NO Rock Climbing signs to install at certain points along the Ridge. Joe Temple is in the process of obtaining four signs from Jefferson County Open Space which will be installed this fall.

Lastly, don't forget the Rock-Out -for-the Ridge on November 2nd. Please plan on attending and supporting our efforts to enclose the tracksite so that future generations can enjoy this magnificent treasure as we have done.

Visitor Center News

By Roger Bennett

We had another very busy summer with many tours and big Dinosaur Discovery Day activities. If we were to have taken a survey of where everyone lived, I am sure we probably had visitors from all the states and many foreign countries. It seems like our brochures, website, and signs have helped people find us much easier. The work on the barn has created much interest and people are looking forward to seeing the new exhibits. The Stegosaurus Snack Shack has been a good addition, and people seem to hang around and have lunch and snacks more often.

Our big excitement this summer was the live capture of two rattlesnakes on the deck. We also have seen a couple of bull snakes which we like because they can kill a rattlesnake. So, many people got quite an education about the snakes and hopefully a better awareness of being more alert when in the area as well as higher up in the mountains. Fortunately we have had no one bitten by any of the snakes. The gift shop was very busy as well, and our sales were again quite good. We continue to try to stock items of interest not only for the kids but the parents and grandparents as well. So, come see us if you haven't been in for a while!

Ramble 7

By Beth Simmons

Ramble 7 to South Park, August 5th. Six ardent Arthur Lakes fans left the Visitors' Center at 8:00. With the contingent was Michael Kohl, Archivist at Clemson University, who wrote two books we sell in the gift shop. For this trip we followed Lakes' journal of the trip to South Park and Florissant in August of 1877, as Mike presented them in *Discovering Dinosaurs in the Old West*. We dined on raspberries and ham for brunch and lunch, just as Lakes had.

We walked in Lakes' footsteps at Kenosha Pass, finding almost the very spot from where he had drawn one of his famous sketches. We observed the worked over placer deposits in Alma that he had sketched; we saw the placer "ranch" south of Fairplay that he mapped. We saw the "Father Dyer" chapel in South Park City where he preached. After lunch in Fairplay on the library lawn, we stopped in "Garro" the site of the Arthur Ranch, owned by Lakes' first cousin, Edward P. Arthur. Lakes often stayed at the ranch when travelling through South Park. At Wilkerson Pass, we read Lakes' description of Pikes Peak and South Park, but could hardly see the Peak through the haze. At Florissant, Andy Weinzapfel treated us to a tour of the Pikes Peak Historical Society's Museum with focus on the outstanding mineral collection (so we didn't have to ride horseback to the top of Crystal Peak). Then, further down the road, Steve Veatch opened up the vault at Florissant Fossil Beds so we could see Lakes' original map of Ancient Lake Florissant.

After getting drenched in a historically correct rainstorm, we ate dinner at the famed Casa Grande Mexican restaurant in Woodland Park. We came home through that rainstorm into Colorado Springs and north along I-25, back to Denver and the VC, tired but satisfied that we had followed in Lakes' footsteps.

The Year of Arthur Lakes - 2007
Calendar of Events
"Rambles and Rhetoric around the Ridge"

Celebrating 130 years since the finds of the dinosaur bones on Dinosaur Ridge
For "Rambles" please purchase the guidebook for the entire season.
Go to www.dinoridge.org for current event information (weather, cancellations, etc.)

Ramble 9 – Sunday, September 23 – Clear Creek Canyon to Green Lake, Beth Simmons & Jack Reed, leaders

Meeting Place: Dinosaur Ridge Visitor's Center

Time: 9:00 AM - 4:00 PM

Topic: Repeat Lakes' many trips to Idaho Springs and Georgetown.

Food: Bring your own lunch.

Ramble 10 – Sunday, October 14 – Hike up North Table Mountain, Harald Drewes, leader

Meeting Place: Dinosaur Ridge Visitor's Center

Time: 9:00 AM - 1:30 PM A strenuous hike up North Table Mountain.

Topic: Repeat Professors Lakes and Moss' hike to the lava beds on top of North Table Mountain.

Food: Lunch on top of the mountain.

Ramble 11 – Sunday, October 21 – Fossil Creek - Gary Raham leader

Meeting Place: Dinosaur Ridge Visitor's Center

Time: 9:00 AM - 5:00 PM Caravan

Topic: Follow Lakes' route on excursions to these famous Cretaceous Seaway sites along the railroad.

Food: Bring your own lunch

Lakes Lecture (Fireside) Wednesday, October 24 – Fireside Chat – Kermit "Oilman Lakes" Shields

Meeting Place: Chevron Classroom

Time: 7:00 PM

Admission: 25¢, as per history. Donations accepted.

Topic: Hear the history of Colorado oil discoveries and experimentation in the late 1800s and first decade of the 20th century.

Rock out for the Ridge – Friday, November 2 –

Ken Carpenter speaker, Lakes one man art show

Dr. Kenneth Carpenter, Denver Museum of Nature and Science, rediscovered the first T-rex tooth ever reported (but not identified) buried in a drawer at the Peabody Museum in New Haven. Lakes and Berthoud had collected it in 1874 in Golden. Tickets required, \$75.00/person.

Lakes Lecture (Fireside) – Wednesday, November 28 – Fireside Chat – Chris "Coalman" Lakes

Meeting Place: Chevron Classroom

Time: 7:00 PM

Topic: Hear the history and future of coal in the state as Lakes projected.

Admission: 25¢, as per history. Donations accepted.

Ramble 12 – Sunday, December 16 – To Bailey, John Ghist, leader

Meeting Place: Dinosaur Ridge Visitor's Center

Time: 9:00 AM - 4:00 PM

Topic: Follow Lakes' route on a very cold Christmas Eve and day as he rode Jenny, his mule, to Bailey

Restrictions: Jenny limited to 1. Caravan.

Food: Dutch treat lunch stop in Aspen Park

Arthur Lakes' Birthday Party – Saturday, December 22

Meeting Place: Chevron Classroom

Time: 1:00 – 5:00 PM

Topic: Celebrate Arthur Lakes 153rd birthday.

Food: Sandwiches and oyster stew! Cake & candles!

Guides Corner: Mesozoic Moments

MeMo #1

By Kermit Shields

Age Appropriateness

Dinosaur Ridge provides tours for all ages, from pre-school kids to retirement home residents. While we show the same footprints, the same bones and the same rocks to all ages, it is very important that we give a different message to each group, depending on their age, their ability and their objectives.

The first step is to understand the type of group that is taking the tour and their objectives. Clearer information at the time of tour booking might help to get us started on the right foot. In some cases, the tour guide can call the person who booked the tour and confirm tour logistics, group demographics and anticipated objectives. If all else fails, sometimes we need to determine this in the few minutes between when the bus arrives and when the tour starts.

Tour presentations might be a compromise between what the tour guide feels comfortable in presenting and what the group says they expect to learn. Elementary students might just want to learn about 'neat dinosaurs' and we need to be able to cater to that demand. Secondary students might be more receptive to learning how science works and about careers in science and geology. University geology students will demand a more rigorous presentation of the geologic and paleontological issues on the Ridge. And senior citizens might be more interested in the cultural and historical aspects of the area.

A second step is to understand how different ages learn things differently. While adults can sit through a 90 minute lecture, elementary students require lots of hands-on activities and they must be involved in question and answer types of presentations, rather than lectures. The active use of the posters and fossil replicas that we have is important for the visual and tactile learners. For some younger groups, we may need to avoid talking about "sedimentology" and "stratigraphy" and talk more about analogies like birthday cakes with lots of layers or making mud pies or pancakes.

Very young (and very old) groups may have a more limited attention span, especially if the weather is not agreeable. We should be ready to shorten tours and maybe limit them to just the bone site and the footprint site when interest is waning. More is not always better.

When in doubt, ask the group leaders (or maybe the entire group) if it is time to shorten the tour. Even though we may have a lot to say, groups might not have the ability to absorb all of that wisdom. Try to keep in touch with your group and keep them engaged throughout the tour.

Dinosaur Ridge provides a fantastic look at a variety of geological principles and processes. It is our job as tour guides to find the best ways to present that information so that it has the maximum impact on our customers.

Visit the MeMo repository in the Dinosaur Ridge Volunteer Room

Pilfered Dinosaur Tracks Return Home Decades Later

Article from the Denver Post, Aug 3rd 2007

By Ann Schrader

Two dinosaur footprints poached decades ago from Colorado paleontological sites have made tracks back home. One is a "significant" Triceratops track that disappeared 20 years ago from what is now Triceratops Trail near the Fossil Trace Golf Club in Golden. The other is an Iguanodon-like footprint chiseled out of Dinosaur Ridge in Morrison 35 years ago.

"This was a pleasant surprise," said Dr. Martin Lockley, director of the Dinosaur Trackers Museum at the University of Colorado in Denver. Lockley said the Triceratops track was returned by people who said they felt guilty about having it in their possession. "This is the largest and best-preserved horned-dinosaur track in the world," Lockley said of the hefty specimen.

The Iguanodon-like track was part of a sequence of footprints left more than 100 million years ago by the large, beaked herbivore. A few months ago, Robert Higgins of Lakewood took the Iguanodon-like track in the trunk of his car to the Friends of Dinosaur Ridge Visitor Center.

"My son was going to Colorado State University in 1973-74, and he found that thing lying in the hallway of a dorm," Higgins said. "It's been sitting on my porch ever since." Higgins described the track as being about 18 inches in diameter and 4 inches thick, with chisel marks around the edges.

"I'm in my 80's now, and I thought if something happens to me, someone just might throw it away," said Higgins, a retired oil geophysicist. His neighbor suggested taking it to Dinosaur Ridge, just a stone's throw from where the experts tracked down its origin.

"We think we have located the hole," said Joe Tempel, the executive director at Dinosaur Ridge. "More than likely we'll put it back in place, grout it in and use it to tell a story."



Reclaimed Triceratops hind foot print

Rock out for the Ridge - Silent Auction and Banquet

Friday November 2nd, 2007

By Beth Simmons

Come and see the greatest art show and sales ever held, celebrate the year of Arthur Lakes, hear about the State of the Ridge, listen to the main speaker Dr. Kenneth Carpenter (Denver Museum of Nature and Science) tell how he re-discovered the Golden T-rex tooth originally found by Arthur Lakes in 1874, and be present for the awarding of the first Arthur Lakes Legacy Award.

This year's silent auction will offer something very special - unique artwork - in addition to a broad array of treasured items! Whether for your geological office, an empty entry way, your dinosaur room, or even over your fireplace, artists have already committed many pieces of custom artwork. We will offer for a one-time special, framed paintings by Michael Skrepnick, copies of the ones specially executed for the FODR new exhibit hall. Our own board member, Judy Peterson, will submit work. Regional dinosaur artist, Greg Sweatt, has donated two paintings. Our own photographer executive director Joe Tempel will donate a framed photo! Larry Jankowski, award-winning videographer, plans to place a number of framed photos on the block. The real hero of the night will be Arthur Lakes, our own noted bone finder and historic western artist, who provided over forty black and white framed sketches for this once in a lifetime event!

Other items already donated for the auction include a weekend getaway at Fortune Valley Casino in Central City, tickets for the Pikes Peak Cog Railway in Manitou Springs, and tickets for a tour of Glenwood Caverns. Many local restaurants have promised gift certificates for free dining. For the at-home-cook, Easy Entrees donated a gift card. Board member Andrew Taylor has promised some of his finest custom cut gemstones. For your grandchildren, Timbuktoys donated a gift certificate and John Kelly gave a "speed-o-saurus" collectible Hot-Wheels.

The planning committee of Janie Bennett, Beth Simmons, and Larry Jankowski are busy rounding up a plethora of even more items for banquet attendees to purchase. If you have anything to donate such as symphony tickets or ski passes, please give them to Tom Moklestad at the Visitor's Center or a committee member by October 15th. Adopt-a-Tracks will also be available if you missed them last year.

See you on November 2nd at 6:00pm at the Red Rocks Visitor Center for the event of a lifetime! Tickets are available from board members or at the Visitor Center for \$75.00/person. Remember, all proceeds go to the "Track Preservation" Fund.

100 Years of *Tyrannosaurus Rex*

Written by Phil Hore of the National Dinosaur Museum in Australia - A summary by Erin Fair

The story of the *Tyrannosaurus rex* is the ultimate pub tale that seems to have grown with the various retellings over the last 100 years. If you do a bit of research on the *T-rex*, you'll find several conflicting reports on simple things like dates, times and locations – even down to who found the *T-rex*.

To be fair, these differences are inaccurate, merely a difference in the interpretation of the question. There were many discoveries being made at the turn of the century over a short period of time and in many different locations. To help you sort through all of the problems, the following article is going to be a sort of timeline (though I can't promise that it will be a sequential one) of events, and should hopefully clear this up once and for all.

In 1892 famed paleontologist Edward Drinker Cope described a large vertebrae belonging to a dinosaur he named *Manospondylus gigas* (giant-thin-vertebrae). What was thought to be a ceratopsian bone in fact turned out to be from *Tyrannosaurus rex*, but more on this bone later...

At the turn of the century, Barnum Brown was in the employ of the AMNH (American Museum of Natural History), which had found itself falling behind some of the other American museums when it came to finding and presenting dinosaur fossils. This was due to the works of men like Cope and Marsh who collected for Yale's Peabody Museum, the Academy of Natural Sciences in Philadelphia, and the Carnegie Museum in Pittsburgh.

It was Barnum's job to find great specimens that could fill the new dinosaur halls at the museum in New York, a job that he was amazingly proficient at. It was said that Brown could smell fossils and he proved this by finding not one, not two, but an amazing eight *Tyrannosaurus* of various completeness over a 15 year period (staggering when you think 100 years or so later there are a total of less than thirty known). He was first sent to Wyoming to find a *Triceratops* skull, but instead he found parts of a large carnivorous dinosaur which he noted to resemble "*Ceratosaurs* of the Jurassic formation". He also found various scutes or armor plates that resemble the armored dinosaur *Nodosaurus* (in fact some armored scales had been found with one of the early *Tyrannosaurus* and scientists at the time thought they had armored backs).

Following advice from others, Brown then found himself digging in Montana in 1902 where he quickly came across the remains of *Triceratops*, *Torosaurus*, and another gigantic carnivore. These were sent to the AMNH in care of Henry Fairfield Osborn who spent the next two years carefully excavating the bones out of the extremely hard rock they were found in. Osborn dubbed his carnivore *Deinodon* (terrible-teeth) after uncertain jaws and teeth from Montana were described in 1856.

Barnum spent the next few years searching for Jurassic fossils and didn't get back to the Montana site until 1905, where he managed to get at what was left of the 'old *Deinodon*' skeleton that he hadn't been able to unearth earlier.

Not wanting to be defeated by the Carnegie Museum, Osborn set about writing his paper on all the Cretaceous carnivores known at the time. In it he called the jawbone from the 1900 Wyoming dig *Dynamosaurus imperiosus*, while he officially called the still to be excavated dinosaur in Montana, *Tyrannosaurus rex* (a name he first used in a letter to Brown in 1904). It should be noted that he used the rest of the bones from the Wyoming discovery to fill in the missing pieces from the Montana skeleton. Later that year, Brown found a second, smaller and far less complete *Tyrannosaurus*, his third. In 1905, he finally published his paper which included *Tyrannosaurus rex* and *Manospondylus*, along with several other theropods.

In 1906, Barnum realized his mistake in giving both dinosaurs separate names as they were clearly from the same animal (though confusingly to them, no more armor scutes were found with the more complete Montana skeleton, meaning they probably weren't armored), so he placed both dinosaurs under the name *Tyrannosaurus rex*.

Brown however was far from finished. In 1908 he unearthed his fourth and most complete *Tyrannosaurus*. This one was only missing its arms and legs, but luckily they had most of those from other finds. This specimen was the only one they finally mounted in the museum in 1915, where it stayed until 2003 when it was remounted into a more 'dynamic' and modern pose.

For all that Osborn got right, he did get a few things wrong, like guessing what the hands of a *T-rex* would look like. He did what anyone would do at the time – he looked at the hands of an *Allosaurus* and assumed they were roughly the same. Unfortunately he guessed wrong by giving his *Tyrannosaurus* three fingered hands. Thanks to recent discoveries we now know that they only had two – though there's rumors of the latest *T-rex* find possessing a third, unbelievably tiny finger. Since those early times only a handful more *T-rex*'s

have been found, with most of these in the last five years. By far the most famous *Tyrannosaurus* called Sue (which is no longer the largest and may not be the most complete – though it is the largest of the more complete dinosaurs) and all of her following troubles with the Black Hills Institute and the FBI, she has given people a different look at fossils.

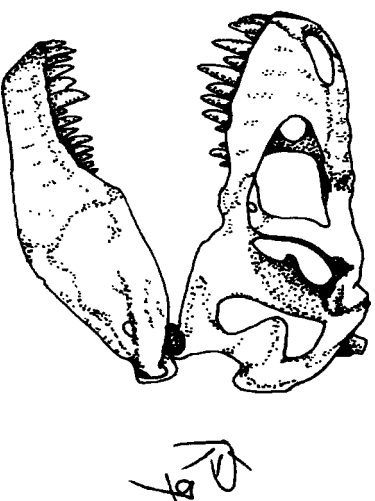
They no longer see things in rocks, they see dollar signs. After all, Sue did sell to the Chicago Field Museum (with a bit of help from McDonalds and Disney) for \$8.4 million. For all the *Tyrannosaurus* we know of sitting in museums, there are probably that many hidden under some dusty tarp in someone's garage waiting to be sold at the highest price.

Now...going back to that very first *Tyrannosaurus* bone that was dubbed *Manospondylus gigas*. A recent search of the area the bone came from has revealed the rest of the original *Tyrannosaurus*. It's now near complete and was found first, so under I.C.Z.N. rules (the International Commission of Zoological Nomenclature – a group that rules on the validity of scientific names), any secondary names should be dropped and the original title should be retained. This means of course that *Tyrannosaurus rex* is now out and *Manospondylus gigas* is in...or is it? Truth is, the name should be changed, but no one seems to want to do it. I don't know about you, but watching a documentary like 'Walking with Dinosaurs' and hearing the nasty *Manospondylus* is hunting a herd of *Triceratops* just doesn't do it for me.

So there it is – though new finds continue to haunt the horizon – the 100 year history of *Tyrannosaurus rex*, everyone's favorite Cretaceous carnivore.

Full article available: tours@dinoridge.org

Original Article copyrighted by Phil Hore, and Prehistoric Times Magazine (pretimes@comcast.net).



Manospondylus gigas (aka) *Tyrannosaurus rex*

The Footprints of a Dinosaur
Colorado Springs Gazette, March 30th, 1902
Submitted by Beth Simmons

Introduction:

About 105 years ago in 1902, our hero of Dinosaur Ridge, Arthur Lakes, was out searching sandstone layers that might contain oil south of Colorado Springs, near the El Paso southern county line. He and his partner, Henry B. Slater, came upon a rock that had broken free from the Dakota hogback with a series of three-toed footprint impressions in it. Recognizing, from his visit to the dinosaur track site in Connecticut back in 1878, that these were probably footprints of the dinosaurs he had collected in Morrison, or something similar, he came back to the Springs and reported the find to his friends, the professors at Colorado College.



Dinosaur tracks at Colorado College

The announcement of this great find made headlines of the local newspaper, the only literary evidence of this important find of the first tracks in the Dakota formation in Colorado. This find extended the range of dinosaurs into the Cretaceous from the Jurassic, the first evidence in this area to do so. Lakes recommended that the college manage to bring the tracks into town, an incredible feat which they accomplished about two weeks later. For a while, the tracks were on display in the library at the College, then they were moved outside to a garden in front of the geology building, when somehow, three of the tracks were lost. Recently the remaining two tracks were moved to the garden in front of Tutt Science Center, but the specimen was cracked in the move.

This discovery shows that local people were well aware of the existence of dinosaur tracks along the hogback long before the tracks were exposed on Dinosaur Ridge in the 1930s. Arthur Lakes fans, Martin Lockley, Beth Simmons, Steve Veatch, Judy Peterson, Kathy Honda, and British guest Judyth Sassoon visited the tracks in August and cast them for the collection at UC-D. A mold of the tracks will soon be on display at Dinosaur Ridge. We repeat the original newspaper articles, transcribed, here so everyone will know that Arthur Lakes struck again, finding the first dinosaur tracks in the Dakota formation in Colorado!

Article:

Professor Arthur Lakes and Mr. Henry Bryon Slater, two eminent geologists well known in Colorado and throughout the west, have made a discovery near here that will revolutionize some old accepted theories of geology.

While examining some oil lands near Turkey Creek, a few miles southwest of Fountain they discovered the tracks of a huge dinosaur on top of the Dakota sand deposits. The tracks are on solid stone and are so perfectly outlined that every claw is accurately depicted. Hitherto, geologists have held that the dinosaur was typical of the Jurassic period, and no traces have ever been found of it in any period following this until Professor Lakes and Mr. Slater made this discovery on the Dakota deposit, a period long after the Jurassic. Just what length of time is intervening between the two eras is beyond imagination, but as Father Time records the passing of days, one hundred feet of sand has been heaped up between the two periods. It has been held that the dinosaur became extinct after the Jurassic period, and the discovery that this huge lizard lived long after that period will cause scientists to change some of their ideas.

The tracks are five in number and are uncommonly distinct. They show a tridactyl foot, with a distance of 19 inches from heel to the foremost toe. The spread of the toes is 18 inches, and the stride is 5 feet, 7 inches. The species is supposed to be *Brontozoum Giganteum*, a variety of dinosaur, or lizard, characteristic of the age of mammoths. Professor Lakes found the femur of a dinosaur near Morrison a few years ago in the deposits of the Jurassic period. It is about five feet in length. The museum at Yale exhibits this interesting specimen. Other bones were found by Professor Lakes in Oil Creek, near Canon City. These are on exhibition at the free library there.

It has been suggested by Professor Lakes and by Mr. Slater that Colorado college possess this latest discovery of the post-Jurassic period. To do this, it would be necessary that some accredited person go to Fountain and have these interesting evidences dug up from the ground. They could be cut out in solid blocks. The museum at Colorado college would be greatly enriched by this valuable discovery.

The Footprints of a Dinosaur Article 2
Colorado Springs Gazette, March 30th, 1902
Submitted by Beth Simmons

Aided by Friends of the College, Prof. Cragin Has Landed One of the Rarest Scientific Specimens Ever Found in the West.

After a week of effort Professor Cragin has succeeded in bringing from the Merit ranch to Colorado College to form a part of the collection that will be exhibited in the new science building, a slab of Dakota sandstone bearing the large dinosaur footprints recently announced in the Gazette as having been examined by Mr. H.B. Slater and Professor Arthur Lakes. The location is in Rule Canon on Turkey Creek near the south line of El Paso County some thirty miles distant from Colorado Springs.

Some of the old settlers are said to have known of these footprints for years and to have commonly referred to them as turkey tracks. But for calling especial attention to them through the medium of the newspapers Colorado College and the scientific world are indebted to Messrs. Slater and Lakes. The special interest of these footprints is that they are the first footprints of the gigantic reptiles known as dinosaurs that have ever been found in the Dakota sandstone. Evidences of land surfaces and of forests abound in the Dakota formation in the fossil leaves thousands of beautiful specimens of which today may be seen in North American museums, but knowledge of the vertebrate fauna of this important formation of the Cretaceous age except as inferred from the knowledge of older and earlier periods is confined to a single footprint of a bird and a poorly preserved cast of one fish.

Dinosaurs abounded in the Triassic and Jurassic ages, and in the Denver Cretaceous Rocks, representing a time as late as a closing part to the latest part of the Cretaceous age, then remains still occur. Hence, by inference they must have continued from the Jurassic through the Dakota and other epochs of the Cretaceous. In the Dakota however not a vestige of their remains has hitherto been found. The inference that they existed in that epoch is now confirmed.

Of the three great groups into which these remarkable reptilian animals are divided, viz. Sauropoda, Theropoda, and Ornithipoda (according to whether they are lizard-footed, beast-footed, or bird-footed) the dinosaurs now first found from the Dakota belong to the group last named. As the footprints have not yet been studied no estimate can be given as to the size of the animal that made them, but it was large. The hind foot was three-toed and there are five imprints of it each about 18 inches across and one of these indicates the presence of large claws. Of the anterior foot there is but one imprint, not very distinct but sufficient to show that the fore limbs were much smaller than the hind ones as usual in the bird footed dinosaurs. The distance from one heel print to the next one of the same foot is about seven feet.

The surface over which the dinosaur walked represents a horizon in the Dakota about 50 feet below the top of the formation. The footprints were found on a block of sandstone, measuring some 40 X 23 feet across the top, and having a thickness of about 15 feet. The block had fallen down from the adjoining wall of the canon and lay in a highly inclined position. This, together with the unfavorable character of the rock itself, rendered the procuring of the footprints peculiarly difficult as the workmen had to perform with very insecure footing and five or six tons of rock had to be removed part of it to give leeway to quarry the portion desired. As the rock was traversed by meandering seams it was necessary to remove it in a number of irregular blocks which can be cemented together and dressed down to a suitable thickness so as to make a single slab about 16 feet long and four feet wide, when the museum in the new science hall is ready to receive it.

Much credit is due Mr. William Frizzell of Manitou, the experienced quarryman and stone contractor, under whose careful direction the work was performed and the heavy load was transported safely across 30 miles of hilly roads and across bridges some of which were supported by broken stringers and had to be strengthened by props. The college owes grateful acknowledgement to Mr. W.S. Stratton by whose kind permission Mr. Frizzell was permitted to leave Mr. Stratton's work in Manitou upon which he has been employed, to do this work in the interest of the college. Thanks are due also to Mr. Merit of the Merit Ranch for permitting the removal of the specimen and for other favors.

For important aid to the enterprise, the college is also greatly indebted to Prof. M.C. Gile and Mr. H.B. Slater. The blocks obtained are now in the basement of Coburn library, where they will be stored until such time as the science building is completed.

The Dinosaur Trackway at Clayton State Park

By Sam Bartlett

(Geology and figures modified from McLemore, V.T., 1997, Clayton Lake State Park; *New Mexico Geology*, v.19, p. 22-25)

Clayton Lake is a man-made 170 acre reservoir approximately 12 mile northeast of Clayton New Mexico (figure 1). Clayton Lake was originally built by the New Mexico State Game and Fish Commission to provide a habitat for migratory water fowl. Construction of the earth fill dam across Seneca Creek was started in 1955 and was completed in 1957. Clayton Lake State Park was established in 1965. During the winter months, Clayton Lake State Park is home to thousands of migratory waterfowl, including several species of ducks, at least two species of geese and many Bald Eagles. The daily cycle of thousands of waterfowl take-offs and landings is truly a spectacular sight to behold and well worth the visit. The birds feed on grain fields several miles away and migrate to and from the lake several times a day depending upon the weather. In late January, when we were first there, it was a truly magnificent site in the afternoon to see the gaggles return and alight on the lake and by the end of the day thousands upon thousands of birds covered large portions of the lake.

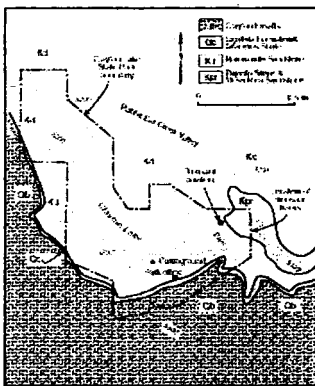
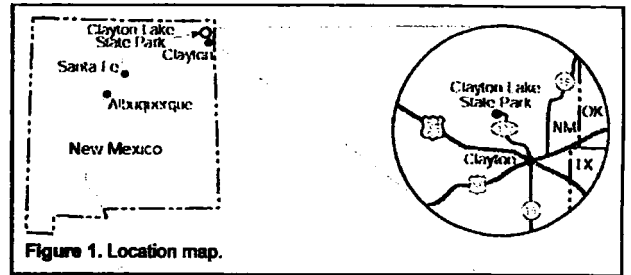


Figure 2. Geologic map of Clayton Lake State Park (modified from Baldwin and Muehlberger, 1959; Lucas et al., 1986; Lucas, 1980).

An uncontrolled, over-flow spillway was completed on the left abutment of the dam as part of the original construction. Over the years, the construction debris and loose rock covering the spillway floor was gradually removed by natural processes and the dinosaur trackway was discovered in 1982 by an amateur paleontologist. The site came to the attention of park officials when they observed multitudes of people making casts of the dinosaur tracks. Doing what they know best, the officials began citing the individuals for vandalism of State property.

More than 500 tracks have been plotted at the site. The tracks are in several relatively thin layers of the Pajarito Shale and the Mesa Rica Sandstone, the middle and lower units, respectively of the Dakota Group (figure 2). The tracks have been made by approximately eight different species of dinosaurs and reptiles on mudflats adjacent to the Western Interior Cretaceous Seaway approximately 100 mya. All of the dinosaur tracks were made by bipedal animals, including both carnivores and herbivores. All three types of prints, actual prints, print casts and sub-prints are evident at the site. As at Dinosaur Ridge, Iguanodon tracks make up the large majority of the 500 tracks with Coelurosaurs also being well represented. Hadrosaurs, Camptosaurus and two additional types of Theropods make up most of the remaining tracks.

At least two sets of tracks were quite exceptional when first discovered. One set of tracks was originally believed to be the "hand print" of a Pterodactyl; however, it was later identified as a crocodile track. The second exceptional set of tracks is a unique set of diamond shaped prints left by a web-footed, unnamed Theropod (under track?). This Theropod is unusual because it had a definite heel along with the webbed feet.

The Clayton Lake Trackway is similar to the Dinosaur Ridge Trackway, but contains significant differences. Structurally, the main difference is that Clayton Lake Trackway is still horizontal and a basalt flow covers the site above the elevation of the dam crest. There are no Iguanodon fore-foot prints at this site.

Among track differences between the two sites, the Clayton Lake Trackway contains a very distinct tail-drag where a large bipedal, herbaceous dinosaur is interpreted to have slipped in the mud and used its tail to balance itself to keep from falling. This tail-drag sequence can be traced for 8 steps. In a similar manner, another track shows a dinosaur slipping down a shallow incline before finding its footing on firmer ground. In another area, a transitional trackway exists where a dinosaur stepped from a partially-dried mud puddle with well developed mud cracks and where the tracks are distinctly preserved to a clean, loose sand that did not preserve any tracks. In another area, a large herbaceous dinosaur hesitated, rocking back and forth, until it finally made up its mind and turned to the right and walked into a muddy area. Some of the tracks form recognizable trackways up to 20 steps in length, indicating a direction of travel and speed.

The Dinosaur Trackway at Clayton State Park Continued

By Sam Bartlett

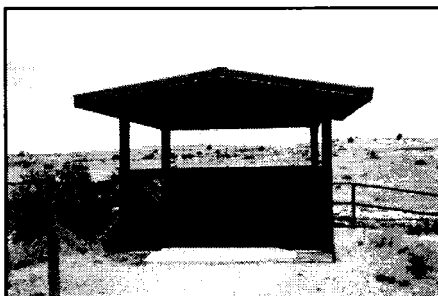
Minimal steps have been taken to preserve the trackway, the long term prognosis for the Clayton Lake Trackway is not good. Other than building a minimal interpretive shelter and providing a raised walkway with interpretive signs around the site, nothing has physically been done to preserve the trackway.

This lack of attention stems primarily from the overall purpose of the spillway structured containing the trackway and the governmental organization responsible for its use. The basic function of the spillway is to pass flood-waters around the dam to keep it from overtopping and failing. Anything that might be done to alter or impede that function is not allowed. Another issue is the conflict between owner and operator. Although Clayton Lake State Park is overseen by the State Game and Fish Division of the Energy, Minerals and Natural Resources Department, the dam is owned and overseen by the State Engineer's Office. Hence the classic conflict between bureaucracies. Although the Park's people have proposed to construct a protective shelter over the trackway, the State Engineer has adamantly refused to allow any structure that would impede or alter the flows through the spillway. The raised walkway around the track site was a major concession by the State Engineer and would appear to be an exception: however, in the event of high flows through the spillway, this walkway would quickly be washed away. This may already have been the case since there is evidence of a pre-existing walkway on the spillway floor. There does not, however, appear to be any evidence of previous spillway flows. Given this bureaucratic infighting, there does not appear to be much hope of preserving the tracks.

Physically, the tracks are in very poor condition, nothing has been done to preserve them and within about 10 years they may well be completely gone. A large carnivore track near one of the interpretive signs has already disappeared since the sign was erected. The preservation philosophy at this point in time is to do nothing, with the hope that the gradual infilling of mud and debris will preserve the tracks. However, wet/dry and freeze/thaw cycles within the tracks and the surrounding rock are causing irreparable damage. In addition, the rock layers above, level and below the track layer are deteriorating and damaging the tracks.

On a lighter note, the visitor's center at Clayton Lake State Park was the first such structure in the state of New Mexico to use Straw Bale Architecture in its construction.

If you go to see the trackway, the town of Clayton has several modern motels and an excellent restaurant in the historic Eklund Hotel. Clayton, incidentally, lies at the western edge of the Great Dust Bowl of the thirties and figures prominently in the history of that depression era calamity. Also, don't forget to stop at the nearby Capulin Volcano National Monument, which was created to preserve one of the most perfectly shaped cinder cones in the United States. The masonry walls along the access road, constructed by the WPA during the Great Depression are also worth seeing.



Interpretive shelter at the edge of the spillway



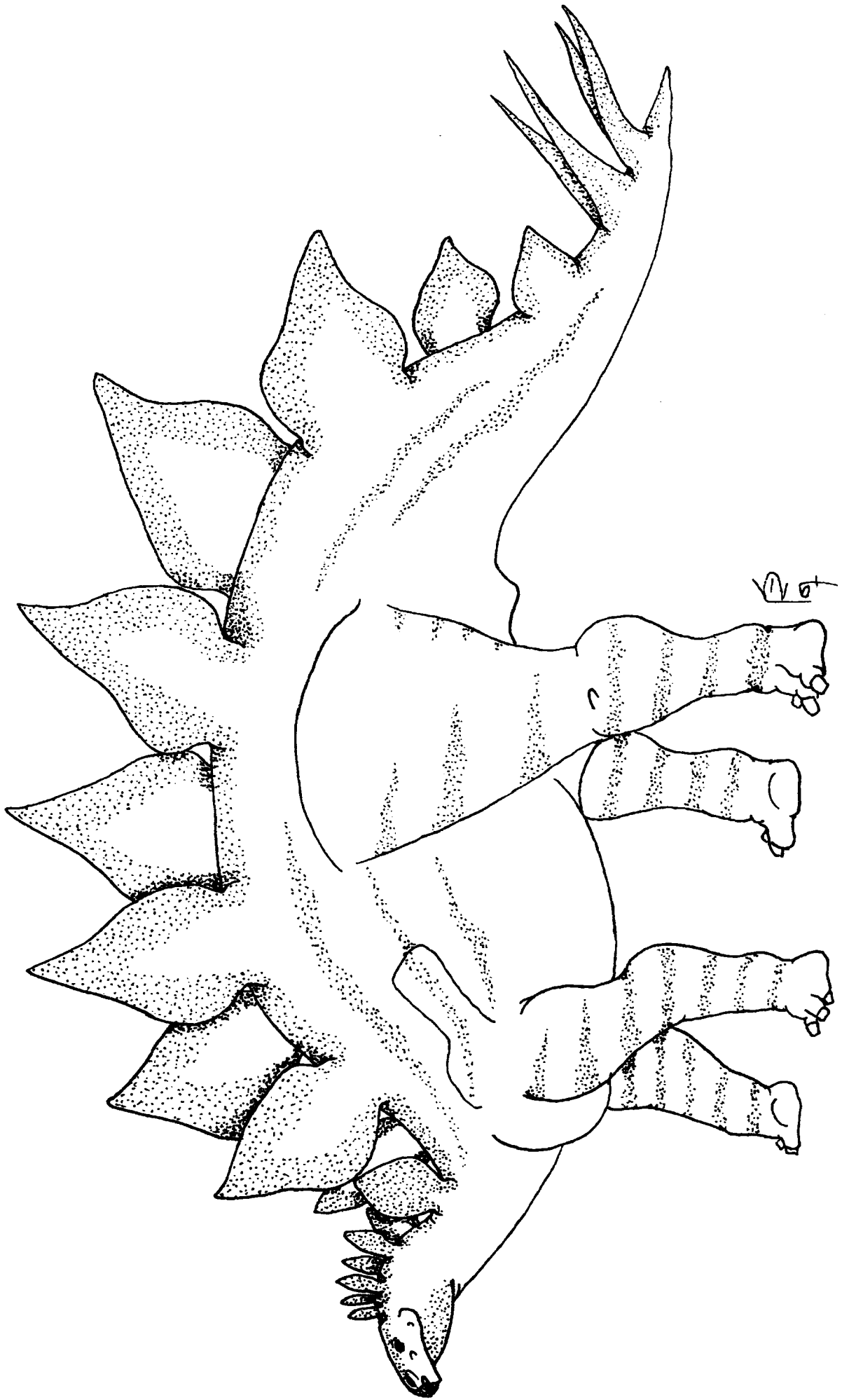
Photo taken from across the lake at the spillway which contains the trackway and shelter.



Overview of Clayton Lake Trackway taken from the top of the dam



Photo of a distinct track with damaging ice in the center



Friends of Dinosaur Ridge
16831 W. Alameda Parkway
Morrison, CO 80465

NON-PROFIT
ORGANIZATION
U. S. POSTAGE PAID
PERMIT NO. 36
MORRISON, CO

John & Ann Ghist
2980 W. Long Dr #D
Littleton, CO 80120