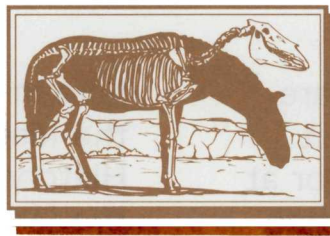


HAGERMAN FOSSIL BEDS NATIONAL MONUMENT

The
FOSSIL



RECORD

SPRING, 2000

VOLUME 9, NUMBER 2

THE BARE BONES
OF THIS ISSUE:

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"Only by going alone in
silence, without baggage,
can one truly get into the
heart of the wilderness.
All other travel is mere dust
and hotels and baggage
and chatter."

John Muir, July 1888

VISITOR CENTER HOURS

Summer hours begin May 26, 9:00
am to 5:00 pm seven days a week.
Join us for the 13th annual Fossil
Days Celebration, May 27 and 28!

FOSSIL DAYS 2000

CELEBRATION - Come
celebrate the kick-off to summer!
Visit our booth in the town park
where activities include a "fossil" dig,
games, and drawing table. Play
games and win prizes! Bring your
fossil treasures to the Bone
Identification Station and have our
paleontologist identify them for you.
View fossils in the ground during
Fossil Days by meeting a ranger at
the Horse Quarry for an "open
House" Saturday, 1-5 and Sunday,
10-3. For information and directions,
stop in our Visitor Center, across
Highway 30 from the High School.
All National Park Service activities
are free!



RANGER PATROL - Trail use has been increasing as more pleasant weather sets in. Numerous trail guides were distributed during spring break and the Visitor Center was very busy during that time. Four new wayside exhibit panels have been installed at overlooks and trail heads to provide current information, and to replace those previously vandalized.

Cooperative law enforcement efforts with the Bureau of Land Management continue. Campers adjacent to the Monument littered and burned tires, leaving the ground sterilized and creating a hazardous materials site. Information gathered from contacts lead to a citation being issued to the responsible person. Several sections in the boundary fence were repaired after they were illegally cut. No apparent resource damage occurred on the Monument.

RESOURCE MANAGEMENT

Upcoming projects - This summer, the fossil field crew will again be relocating known fossil sites that have not been visited in decades, and will also record any new finds. This is the second year of a three-year project.

There are a number of projects

involving general park maintenance including gates and fences, sign replacement, and site restoration.

Non-native plants in a variety of locations will have different control treatments applied to see what techniques work best. Larger areas will be tackled in the future. An Integrated pest Management Plan is underway to determine the best strategies to control pests that may include mechanical removal, chemical treatment or biological control.



A sign plan will be developed and implemented to better guide visitors while maintaining scenic simplicity.

Cooperative trail planning with the Bureau of Land Management continued this spring on the Regional Trail system. More trail should be ready for use next year.

Chemical analysis will be conducted on the artificial groundwater and surface flows in intermittent streams. Other water resources monitoring will continue.

CRITTER CORNER

Being Slothful at Hagerman: The South American Connection

Greg McDonald,
Monument Paleontologist

While many people may be aware that Hagerman Fossil Beds has a great variety of different types of animals they may not be aware how “international” this variety is. One can almost think of Hagerman as a crossroads where animals from different continents have met. Many of the animals found at Hagerman originated in North America and later dispersed to other continents. Certainly horses and camels come to mind as two classic examples of groups that were present only in North America during most of their history, but later crossed the Bering Land Bridge into Asia and Europe. If it hadn't been for this dispersal we might only know about horses and camels from their fossils, since their descendants survived in the Old World after both groups became extinct in their “homeland” at the end of the Pleistocene Epoch or Ice Age. While horses and camels, along with other animals such as beavers, went west, other groups such as the proboscideans, (which includes living elephants and their extinct relatives like mammoths and mastodons) moved east and entered North

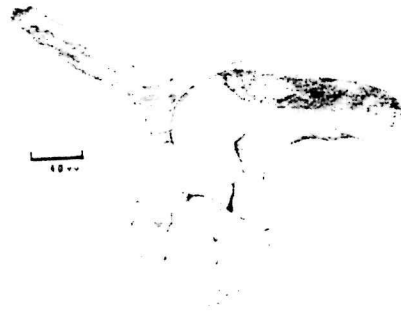
America. We have a primitive mastodon-like animal at Hagerman, whose ancestors originated in Africa long before this animal showed up in North America. This exchange of animals didn't happen all at the same time. We know from the fossil record that during different times in Earth's history, conditions were right for certain groups of animals to become widespread. Occasionally this spreading out coincided with the disappearance of certain barriers, such as a drop in sea level, and resulted in animals reaching other continents. Because different animals have different ecological requirements and different limits on where they can live not all animals on either side of a barrier can cross. When we do see certain groups dispersing into new areas it tells us something about their ecology. The first appearance of a new group of animals in the fossil record on a continent is often used by paleontologists to define periods of geological time.

Besides an international connection with Asia, Europe and Africa to the west, the fauna at Hagerman has a southern connection as well. Previous Critter Corners have discussed the otter, *Satherium*, and the grison, *Trigonicictis*, at Hagerman and how their closest living relatives are found in South America today.

These animals, along with llamas and peccaries, also found as fossils at Hagerman, are among a diverse array of animals from North America that did not enter South America until about 2.5 million years ago. The reason for the timing of their first appearance in South America is that prior to this date the Isthmus of Panama, which today connects the two continents, was submerged and South America was an island continent, much like Australia today. Only after the movement of the continents, due to plate tectonics, pushed up the area we now know as the Isthmus of Panama, were many animals able to disperse from North America to South America and vice versa.

When we think of Australia as an island continent, we immediately think of its strange animals, such as kangaroos, wombats and the duck-billed platypus. Like Australia, South America had its own strange (at least to most people) assortment of animals, many of which unfortunately we only know about from their fossils. One of these groups are the Xenarthrans (the name means strange joint and refers to extra connections between some of the bones of the back) which today includes armadillos, anteaters and tree sloths. While these three groups of animals don't look anything alike.

superficially, they share many features of the skeleton and other aspects of their anatomy that shows they share a common ancestor. As their name implies, tree sloths are very much restricted to living in trees. While today there are only two types of sloths, the two-toed and the three-toed, in the fossil record there are literally dozens of different types of sloths that are popularly called ground sloths. These extinct relatives of the tree sloths ranged in size from animals as large as an elephant down to about a medium sized dog. As the popular name suggests, most were too large to live in trees and lived full time on the ground. Like their living relatives, the extinct sloths were herbivores - some were browsers while others were grazers.



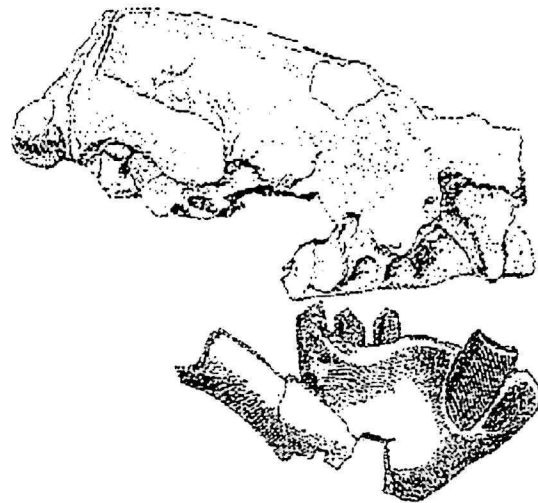
While there were many types of

ground sloths in South America only a few different types moved north into North America. What is interesting is that one type, called the megalonychids, a long word that merely means "great claw" in

reference to the large claws on the hands and feet, actually entered North America about nine million years ago. This was long before the formation of the Panamanian land bridge that let the North American animals move south. In addition to reaching North America, members of this group of sloths were also able to reach some of the islands in the Caribbean and their fossils have been found in Cuba, Hispaniola and Puerto Rico. Not a bad trick for a group of animals that are supposed to be “slothful”. The best known member of this group is *Megalonyx*, an animal first described by our third president, Thomas Jefferson, who coined the name which later was used to form the family name Megalonychidae for this group of related animals.

Given its long history in North America, a number of different species of *Megalonyx* have been described by paleontologists over the years. At Hagerman we have the species *Megalonyx leptostomus*. Leptostomus means narrow mouth and refers to the long and narrow skull and jaw of this animal. This species of *Megalonyx* was originally described from Mount Blanco Texas, the same location where the first specimen of our “Hagerman” horse, *Equus simplicidens*, was found. Specimens of *Megalonyx* were among the variety of fossils first collected at

Hagerman by the Smithsonian field crews in the 1930's. In 1935 C.L. Gazin, the curator of vertebrate paleontology at the Smithsonian in charge of the last excavations at the Horse Quarry in 1934, wrote a scientific paper describing the fossil sloth material from Hagerman. He originally referred to the Hagerman sloth as *Megalonyx leptonyx* (can you figure out what leptonyx means? - the clues are in the other scientific names used in this article - answer at the end). This sloth was found in Castle Creek, Owyhee County in the 1870's but is now considered to be the same as *Megalonyx leptostomus*. While no complete skeletons of the sloth have been found at Hagerman, we have a good variety of bones for comparison with other species of *Megalonyx*. These include lower jaws, isolated teeth, various leg bones and a complete hind foot. Sloth teeth are



very distinctive since they lack the outer enamel covering present in other mammals' teeth. Because the teeth of sloths grow throughout the animal's life, they have no roots and have a simple cylinder shape. As the names suggest, the claws are large and have a distinctive triangular shape that makes them easy to identify.

One of the more interesting aspects of the skeleton of *Megalonyx* is the shape of its heel-bone. The part of the heel where the tendon of the calf muscle, the Achilles tendon, attaches is large and expanded suggesting these animals had a strong and powerful calf muscle. This makes sense when you remember that these animals were one of the browsing sloths and probably sat upright on its haunches while feeding on leaves and twigs. Like in modern sloths, the large claws probably served to hook branches and bring them in range of the sloth's mouth but also probably provided defense against predators like the early saber-tooth cat or hyena-like dog. *Megalonyx* like all sloths lack the incisors, the front teeth in the skull. Instead, it had very large tusk-like teeth that could clamp down on leaves and twigs to help break them off branches. *Megalonyx* at Hagerman probably spent most of its time among the trees lining the various rivers and streams that flowed

through the area and drained into Lake Idaho.

The narrow mouth *Megalonyx* was widely distributed and has been found not only at Hagerman but also to the west in Washington and as far east as Florida and of course, south through Texas into Mexico. The *Megalonyx* lineage continued in North America right up until the end of the Ice Age. One of the trends was that it got larger so that the last species, *Megalonyx jeffersonii*, was almost twice as large as the Hagerman species. Jefferson's *Megalonyx* has also been found in a wide range of localities and even as far north as the Yukon as well as south into Mexico. Unfortunately the success of *Megalonyx* along with all other sloths ended and all became extinct by 10,000 years ago at the end of the Ice Age. Why *Megalonyx* and the other sloths disappeared after surviving so long is one of the many mysteries that paleontologists are still puzzling over. Perhaps the first question to ask is what contributed to their long success. The sloth at Hagerman provides part of the story and further work and comparisons with other sites may eventually help us come up with the answer.

Answer: leptonyx = lepto (narrow), onyx (claw) so *Megalonyx leptonyx* literally means big claw, narrow claw.

Additional Reading:

Gazin, C.L. 1935. Gravigrade sloth remains from the late Pliocene and Pleistocene of Idaho. *Journal of Mammalogy* 16(1):52-60.

Hirschfeld, S.E. and S.D. Webb. 1968. Plio-Pleistocene megalonychid sloths of North America. *Bulletin of the Florida State Museum, Biological Sciences* 12(5):213-296.

Jefferson, T. 1799. A memoir on the discovery of certain bones of a quadruped of the clawed kind in the western parts of Virginia. *American Philosophical Society Transactions* 4:246-250.

Kurtén, B. and E. Anderson. 1980. *Pleistocene mammals of North America*. Columbia University Press, New York, 442.

McDonald, H.G. 1998. The sloth, the president, and the airport. *Washington Geology* 26(1):40-42.

EDUCATION - Take advantage of our traveling trunks! These marvelous tools contain horse skull casts, geology samples, books, videos, curriculum guides, and much more. We currently have 4-6th grade and 7-12th grade trunks available. The trunks are **free** to use for a three week period; you pay only for their return. For more information, contact Judi Hart at 837-4793. **See the Summer Schedule to attend the Teacher Workshop to learn about how to use the Monument in your classrooms.**

Calendar of Events

Programs are scheduled throughout the summer on Saturdays. Participants should plan to meet at the Visitor Center in the town of Hagerman prior to actual tour for information and directions, unless otherwise noted. Dress properly and be prepared for variable weather. Participants are required to drive their own vehicles. Call the National Park Service for more information (208) 837-4793.

May 27

Fossil Days Celebration Begins

Parade, food, music, games, fun!

Visit our booth at the town park. Bring your old treasures to the

Bone Identification Station. View the Horse Quarry site with a Ranger 1-5 pm. Stop in our Visitor Center for directions to the quarry and to view our fossil exhibits and our slide show. Participants are required to drive their own vehicles to the quarry.

May 28

Fossil Days Celebration Continues

Food, music, games, fun!

Visit our booth at the town park. Bring your old treasures to the Bone Identification Station. View the Horse Quarry site with a Ranger 10 am - 3 pm. Stop in our Visitor Center for directions to the quarry and to view our fossil exhibits and our slide show. Participants are required to drive their own vehicles to the quarry.

June 3

National Trails Day

9:00 am

Join Rangers from the Hagerman Fossil Beds on a Monumental trek. Hikers, bicyclists (non-motorized), and horseback riders are welcome! Experience what the westward journey might have been like on the Emigrant Trail by hiking (from the Snake River Overlook) or horseback riding (from the Oregon Trail Overlook), or hike, bike or horseback ride our network of trails beginning at the Regional Trail parking lot.

June 17

Horse Quarry Tour

9:30 am

Go on an historic tour of the world famous Smithsonian Institution Horse Quarry to see 3 million year old bones of the Hagerman Horse, the official State fossil. Participants should meet at the Visitor Center to follow a ranger in your vehicle to the site. The last three miles are gravel road. Wear sturdy shoes and be prepared for variable weather conditions.

June 24

Mining in Idaho Territory

2:00 pm

Lecture and slide presentation by Tom Blanchard about several major gold rushes and lead-silver mining and the transformation to statehood. Sponsored by the Idaho Humanities Council.

July 1

Teacher Workshop

10:00 am

Learn how to utilize this valuable resource that is right in your backyard. Teachers will learn what is available for use in their classrooms and how to prepare and lead their students on field trips of the Fossil Beds. Please R.S.V.P.

July 8

Geology for Kids

9:30 am

Explore the many layers of sediments that make up the Fossil Beds. Learn about the rock cycle and the processes that continually change our Earth.

CAMP PLIOCENE

Beginning July 15, children in 4th through 6th grade will have an opportunity to visit Camp Pliocene for one Saturday of their choosing (July 15, 22, 29, August 5, or 12). The day camp is for students to have fun learning about the sciences of paleontology, geology, and ecology. Activities will include a visit to the quarry, studying animals and plants in the Monument and what our role should be as stewards of the land. Interested participants should contact Judi Hart at 837-4793.