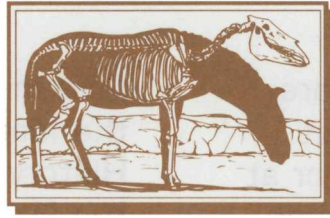


HAGERMAN FOSSIL BEDS NATIONAL MONUMENT

The
FOSSIL



RECORD

WINTER, 2000

VOLUME 9, NUMBER 1

**THE BARE BONES
OF THIS ISSUE:**

Ranger Patrol

Resource Management

Critter Corner

Education

Volunteers in the Park

"Scenic and historic places and objects teach patriotism and nourish moral sentiments, while they care also in some measure for the aesthetic nature. [Once] established, these famous places become unsalaried teachers. They never die, never ask to be retired on pensions, and their voices grow stronger and more convincing with increased age."

Rev. Henry MacCracken, from "Quotable Quotes: Relating to Conservation in General and the National Parks in Particular," Department of Interior, 1951

VISITOR CENTER HOURS

The Visitor Center will remain on winter hours (Thursday through Sunday 10:00 am to 4:00 pm) until May 26. Our Summer hours will be 9:00 am to 5:00 pm seven days a week.

BONE IDENTIFICATION

Do you ever wonder what that "thing" in your closet is? The Monument paleontologist is on-hand to answer your questions and reveal the mystery of your "things." Just give us a call to arrange a time for you to bring in your treasures. Call 837-4793.

RANGER PATROL - A

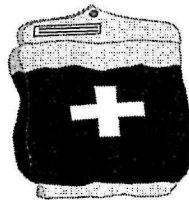
wayside exhibit frame at the Horse Quarry parking lot was vandalized (shot several times) after the first of the year. These panels are made to withstand the outdoor elements for many years. Fortunately, no exhibit



was in place and damage was limited to the metal frame which will cost \$310. Also, a section of fence was deliberately knocked down along the south boundary; an area that continues to pose encroachment problems with a few off-road vehicles.

Trails have seen limited use during the winter months, but are expected to become more popular as spring weather sets in. It is not recommended that steep sections of trails be used within a day or two after rainfall. Layers of mud accumulate on the soles of boots, bicycle tires, and horse hooves, making them extremely slippery. Please remember to close all gates behind you when entering or leaving the trailheads.

A Park Ranger has completed an Emergency Medical Technician (EMT-Basic) course, and will be responding, when able, with the Hagerman Quick Response Unit.

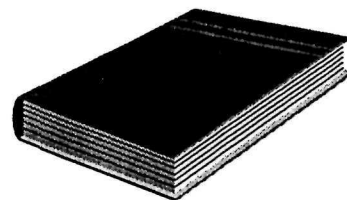


RESOURCE MANAGEMENT

Archeology Finds - A mortar and pestle (grinding stones) were found

this winter at one of the Monument's known Native American sites. The artifacts were collected and curated for their protection; and may be displayed some time in the future. Visitors may not collect artifacts, fossils, or other natural resources because they are then unavailable for research and broad public enjoyment. The park is continuing to seek funding for both historical and pre-history site evaluations.

Resource Management Plan revised - Evaluation is required every four years of the plan that guides resource management on the Monument. The document is a comprehensive overview of the Monument's needs, guides management priorities, and provides proposed projects. The evaluation and appropriate revisions were completed in December 1999. The public may review the plan at park Administration Office in Hagerman. The plan is 45 pages and lists of supporting literature are another 40 pages. Descriptions of 112 proposed projects involve more than 250 pages. The park has completed 7 major projects and made progress on 23 others in 1999. Because Federal funding is limited, a variety of sources are used, including private or corporate donations and grants.



CRITTER CORNER

The Hagerman Mole is no mo'

Greg McDonald,
Monument Paleontologist

Most people's reaction to moles is a negative one. They're pesky animals that burrow in your lawn and make ridges as they dig their tunnels. If you have had mole holes in your yard it was probably not while you were living in Idaho, unless you have lived in the Cambridge-Brownlee area in Washington County. Even in this part of the state they are not common, and only a few specimens are in museum collections. The mole that is found in Idaho today is the Coast Mole, *Scapanus orarius*. As the name suggests it is more commonly found along the coast. Most of the records of this species, place it in Oregon on the coastal side of the Cascade Mountains. The distribution of the animal does extend across the northern part of Oregon and then crosses the Snake River into Idaho. The Idaho records are as far east as the species gets.

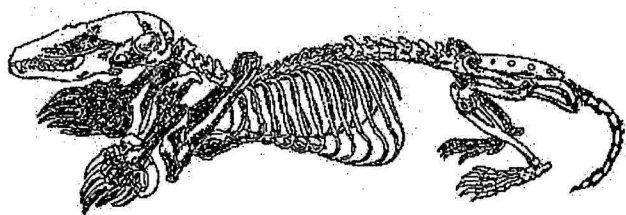
Moles are highly adapted for digging and this can be seen in their skeleton. The arms stick out to the side of the body so that the animal almost swims through the soil by doing the breaststroke. This digging requires powerful chest and arm muscles. The

upper arm bone or humerus, bones of the forearm, ulna and radius, as well as the hand, are stout and show prominent ridges and processes where muscles attach. The hand is broad with an extra bone for support and the claws are strong. The distinctive shape and structure of these bones makes them easy for a paleontologist to identify.

Although moles are master diggers and produce extensive tunnel systems, they are still limited to where they can live. Since they live most of their life underground, they can only live where the type of soil permits burrows to be dug. If the soil is too hard, soft or wet, then it may not be possible to dig a burrow or it may collapse or fill with water. Certainly many parts of southern Idaho with its thick layers of basalt resulting from numerous lava flows are inhospitable for moles and may be one of the reasons why they are not present in this part of the state. While the extensive lava beds in the south-central and southeastern part of the state may be one reason for the mole's absence, thick extensive lavas are not as common in the southwest part of the state. Much of the geology of Owyhee County is composed of sands, silts and clays of the Glens Ferry Formation, the same as found at Hagerman Fossil Beds, yet there are no moles in this part of the state

today. However, this part of the state is a high desert with limited rainfall. While moles may not like soil that is too wet, they can't live in an area that is too dry either, as it may not support enough earthworms and insects to support a viable population of moles.

While modern moles are limited in their distribution in Idaho today, in the past they were more widespread. The earliest fossil mole in the state is from Power County. This record is late Miocene in age or about 8 million years old. This early mole is the same genus, *Scapanus*, as the living species. Bones of a fossil mole have also been found at Hagerman. It is also the genus *Scapanus*, but was described as a new species, *S. hagermanensis*.



Skeleton of *Scapanus hagermanensis*.

One would expect that a burrowing animal like a mole should be common as a fossil since it would be already "buried" and have a better chance of being preserved. But, like its modern relative it is not common and fewer than a dozen bones have been found in the Monument. The youngest

fossil mole in the state is also from the Glenns Ferry Formation at Castle Butte in Owyhee County. This specimen is about 2.5 million years old, about a million years younger than the Hagerman specimens. After that there are no records until the living species.

Based on features of the teeth and skeleton, the Hagerman mole is related to the Coast mole and to Townsend's mole, *Scapanus townsendi*. Like the Coast mole, Townsend's mole prefers moister habitats and today lives to the west of the Cascade Mountains in Oregon and north into Canada. While we can't say for sure, it is not unreasonable to assume that like its modern relatives, the Hagerman mole preferred a moister environment. Studies of the pollen preserved at Hagerman Fossil Beds National Monument show that 3.5 million years ago, the types of plants that were here needed more moisture than the area gets today. It has been calculated that twice as much rainfall fell in the area then, making it a much wetter, moister environment. Many of the animals found as fossils at Hagerman, such as beaver, muskrat, otter, and waterfowl, are species commonly found in a wetland habitat. Today, the Cascade Mountains to the west trap much of the moisture from the Pacific creating a rain shadow inland. One of the

possible reasons for the wetter environment in Idaho 3.5 million years ago is that the Cascades were not as tall and were not as effective in stopping moisture from the Pacific Ocean from reaching inland to Idaho. As the Cascades pushed upward they became a more effective barrier, resulting in an increasingly more arid environment in southern Idaho. As the environment became drier the different species of animals had to either adapt to the changing conditions, migrate, or go extinct. If the Hagerman mole is the ancestor to either the Coast mole or Townsend's mole then what we may be seeing in the fossil record is simply a reduction in the animal's range in response to this increasing aridity. The moles in Washington County may merely be relicts of a group that at one time was more widely distributed in Idaho.

The fossil record provides paleontologists with many opportunities to study how species respond to environmental change. One response is to expand or contract their ranges depending on whether the changes are more or less favorable for the animal. It is entirely possible that a change in weather conditions could increase the amount of rainfall and moisture in southern Idaho. If that happens, perhaps the moles in Washington County will expand their range into Owyhee County and

throughout the southern part of the state (south of the lava fields). Who knows, perhaps sometime in the future more residents of Idaho may have to deal with pesky moles digging in their lawns and gardens.

Further reading:

Hutchinson, J. H. 1987. Late Pliocene (Blancan) *Scapanus* (*Scapanus*) (Talpidae: Mammalia) from the Glens Ferry Formation of Idaho. *PaleoBios* 12(45): 7 pp.

Tedrow, A.R. 1997. The earliest fossil mole (Insectivora, Mammalia) from Idaho. *Tebiwa* 26(2):233-239.

Yensen, E., D.A. Stephens, and M. Post. 1986. An additional Idaho mole record. *The Murrelet* 67:96.

EDUCATION - Teachers are encouraged to reserve programs for their students early in the spring. May is usually a very busy month, and scheduling may be difficult. Programs are offered here at the Fossil Beds or at your location.

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.

Hagerman Fossil Beds National Monument
P.O. Box 570
Hagerman, ID 83332

RETURN SERVICE REQUESTED

BULK RATE
U.S. POSTAGE
PAID
PERMIT # G83
HAGERMAN, ID
83332

**VOLUNTEERS IN THE
PARK** - Volunteers are being
contacted to assist in putting the
library back in order in the
renovated farm house. If you are
interested in volunteer work,
contact James Ward at 837-4793.