Hagerman Fossil Beds National Monument, ID

National Park Service
U.S. Department of the Interior

SELF-GUIDED TOUR OF THE HAGERMAN FOSSIL BEDS

READ the first two paragraphs **BEFORE YOU BEGIN DRIVING**.

Because we are not yet fully staffed for visitor services, this self-guided tour is provided as an alternative. The tour covers 22 miles and takes approximately two hours. There are no gas stations, food stores, trash containers, or restrooms on the Monument. All natural objects are protected by law from collection or disturbance. This includes, fossils, rocks, historical artifacts, and all plants and animals.

The map and information in the Monument's colored brochure may be helpful in finding your way. **Directions for your drive** are in **bold print and underlined.** Start at the National Park Service Visitor Center and **note your odometer or set your trip meter.**

Drive south through Hagerman on Highway 30.

Although Hagerman Fossil Beds contains the largest concentration of fossil horses in North America, the Monument is **internationally** significant because it protects the world's richest known fossil deposits from a time period called the late Pliocene epoch. The species known to have lived here include 105 vertebrates (having a spinal column), 38 invertebrate species (like clams and snails), and pollen from 35 plant species have been found here. Of these, 43 are considered "holotypes", meaning that they were first identified here; seven of these species are found nowhere else.
These plants and animals represent the last glimpse of time that existed before the Ice Age, and the earliest appearances of modern flora and fauna.

Turn right at the U.S. Bank (Mile 0.4), Hagerman Ave.

The Monument was established in 1988 by Congress to preserve these outstanding paleontological sites for present and future generations. It is best known for the Hagerman Horse (*Equus simplicidens*), Idaho's state fossil. Paleontologists can tell from the teeth that this animal was not a true horse, but more closely related to the living Grevy's zebra of Africa. No one knows if the Hagerman "Horse" was striped. What do you think?

All of the bluffs you can see in front of you are part of the National Monument. It is 4,280 acres of steep terrain - roughly six miles long by one and one-half mile wide.

At mile 1.3. the road curves to the left (south) and becomes County Road 850 East.

THE ANCIENT ECOSYSTEM

The Monument contains an ancient ecosystem. Considering that the fossil record of the earth goes back hundreds of millions of years, the fossils found here at Hagerman are considered to be geologically recent. This Monument documents many kinds of change. The valley you are driving through was not here when the fossil beds were forming. The ground level was hundreds of feet above you! It was a much wetter environment here then. This was a flood plain where numerous, unnamed rivers flowed into Lake Idaho which covered most of the southwestern part of the state. These rivers flooded regularly, like the Mississippi River today, into a body of water about the size of Lake Ontario. Lake Idaho drained into what is now the Pitt River, and later the Klamath River drainages in California. What would have caused such major changes?
The uplift of the volcanic Cascade mountain range blocked the Lake's outflow and forced the drainage northward. As Hell's Canyon eroded upstream, it began to drain Lake Idaho, scouring and deepening the canyon. Today, the Snake River drains through Hell's Canyon to the Columbia River to the Pacific Ocean.

At the stop sign (Mile 2.6), turn right on County Road 2830 South.

The bluffs in front of you are about 550 feet high. They consist of strata, or layers, of sediments (sands, silts, and clays) deposited in the flooding of rivers flowing into Lake Idaho that scientists estimate occurred more than three million years ago. This is one of four different time periods evident here. Each layer represents a different flood or geologic event. One of the lower layers is from a volcanic lava flow and a few are volcanic ash falls from the Cascade Mountains and eruptions near Yellowstone. There may be many other layers that are still covered up. The animals that died and were buried here slowly became fossilized.

The exposed layers are truly a biological time capsule. Scientists estimate that these layers contain more than 500,000 years of earth history, and a glimpse into life as it once existed. The large number of fossil sites over a such a long time span, provides a rare opportunity to understand changes in the environment and how life forms reacted to those changes.

Stop at the Bell Rapids public boat dock turn-around area (Mile 3.5). Pit toilet available.

The only reason you can now see these layers is the Snake River cut down through these ancient flood plain sediments when Bonneville Lake overflowed its rim in southeast Idaho near the present day city of Preston about 15,000 years ago. This is a second time period you can experience here. The Bonneville Flood lasted about eight weeks and carved out the valley you are now in. It is unrelated to the periodic floods that **deposited** the layers of sediments of these bluffs.

FISH

This area was important to Native Americans who lived here about 10,000 years ago up through the late 1800's (the third time period). Emigrants called these people the Shoshone, Bannock and Paiute tribes. These American Indians called it the Snake River because of its meandering course across the landscape. Here they speared or caught salmon and steel head, their seasonal food source. These fish no longer can make the trip here from the ocean because of changes made along the River to support our modern society. Today, trout and carp are caught here. The Bell Rapids are now covered by the Lower Salmon Falls Reservoir which was built for hydroelectric power production in the early 1900's. The rapids were named for the pioneer Bell family whose descendants still live in Hagerman Valley.

LANDSLIDES

In the last two decades, huge landslides are forming the sheer cliffs and tumbling millions of cubic feet of debris down slope. Water seepage from unlined irrigation canals saturated the soft sediments. Eventually, the saturated layers reach a point where they cannot support the weight above, and an entire slope collapses in a sudden rush of mud. The same kind of displacement occurs where the reservoir saturates the base of the slope, and material slumps into the reservoir. Landslides have occurred in this region in the past as a result of natural forces, but the size and frequency are increased by the unnatural saturation. The landslides displace the fossils and destroy the scientific information about how they were deposited. The National Park Service is working with the irrigation company on top of the bluffs to reach a solution to canal seepage, and with Idaho Power regarding the shoreline.

The property immediately to the north of the boat dock area is the proposed site of a permanent Research Center and Museum at Hagerman Fossil Beds. When constructed, it will offer superb educational opportunities for the public as well as the scientific community. Active research will go beyond treating fossils as trophies, but as tools of discovery that offer a window into the past. Visitors will be directly involved with this learning and discovery process.

Leave the boat dock area and drive along the same road straight (make no turns) to another stop sign (Mile 5.0); at this "T" intersection, turn right.

AGRICULTURE

Livestock ranching and crop farming commenced in the valley in the late 1800's, and has remained the primary land use in this area. Alfalfa production is currently a major crop in this Valley.

BONNEVILLE FLOOD

Notice the large, rounded boulders on both sides of the road. These are river gravels called "melon gravels" and were left behind from the Bonneville Flood. Large sections of basalt rock fell from the canyon walls in the rush of water and tumbled downstream. Imagine the force needed to tumble these huge boulders along. When this flood reached the ancient soft sediments, the water widened its channel and formed this wide valley. The flood lasted about eight weeks leaving behind the landscape before you. Only about 20 percent of the original Lake Bonneville remains today, now called the Great Salt Lake in Utah; the Bonneville salt flats are part of the drained area. So another huge lake drained, and the event is clearly recorded here in the landscape.

The road curves to the left (Mile 5.8)

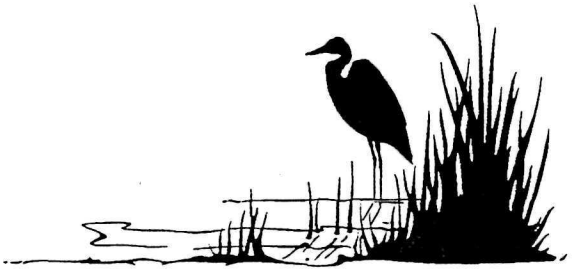
GRASSLAND / SHRUBS

The grassland with interspersed shrubs provides habitat for horses, deer, rabbits, and coyotes as it did in the past. Imagine three million years ago on such grasslands the feeding camels, llamas, elephant-like mastodons, and saber-tooth cats on the prowl for prey.

This road ends at a "T" intersection with U.S. Highway 30 (Mile 6.8). Turn right and go south.

FISH FARMING

There are many private and government Fish Hatcheries in this area. Many of the private hatcheries in the valley produce trout and catfish. Idaho produces almost 70% of the commercial trout in the United States. Government hatcheries produce fish that are released for stocking into rivers throughout Idaho.



WETLANDS

The highway crosses a pond with a marsh shoreline (Mile 7.1). This should give you an idea what this region once looked like three million years ago.

Turn into the Rest Area on the left

REST AREA

The rest area has the last available public restrooms and water, and has picnic facilities. It is also adjacent to the Hagerman Wildlife Management Area where there are more ponds. Trails weave through this area providing an excellent chance to view wildlife. Thousands of waterfowl use this area in the winter. The river and some lakes remain above freezing year around because they are fed by springs. Listen for a frog in the water or geese overhead. Try and spot a muskrat, swan, or a water snake. These animals were here in the ancient past, and just as real as they are today. Imagine ground sloths browsing on their favorite plants, or beavers weighing more than 100 pounds, cutting and feeding on the trees adjacent to these wetlands. Animal life was abundant and diverse. Otters, ducks, and pelicans were also here, like they are today.

Turn left when leaving the Rest Area and continue south on Highway 30.

CANYON

In being aware of the canyon you are in, you might recognize that you are still driving on a huge gravel bar left by the Bonneville Flood. As you look up the canyon to the left, you'll notice it gets narrower because the flood was contained by basalt rock instead of the soft sediments.

THOUSAND SPRINGS

Also on the left, you'll begin to notice, especially as you cross the bridge over the Snake River, the springs cascading down from the canyon walls. These are the Thousand Springs, natural flow from the underground aquifer of the Snake River Plain. The emigrants traveling the Oregon Trail on the south side of the River often commented in their journals that it was frustrating to not be able to reach the springs.

Turn at the first right (Mile 9.0) immediately after the bridge onto the Bell Rapids Road and continue west along this paved road.

HISTORIC BRIDGE

At Mile 10.0, look to the right for the historic Owsley Bridge across the Snake River, a suspended span, metal bridge built in 1920. Excavation parties from the Smithsonian Institution used this bridge to cross the Snake River. Please do not attempt to cross this one-way bridge in your own vehicle unless you are certain it will meet the size and load limitations.

UPPER SALMON DAM AND FALLS

Dams for power production along this stretch of the Snake River are not high structures. The Upper Salmon Falls Dam at Mile 10.3 primarily diverts water into the canal close to the road. These dams are not for water storage purposes, but only provide enough lift for the water to flow through the turbines that generate electricity.

The Upper Salmon Falls are a short ways downstream from the dam, and the flow is the greatest during Spring runoff.. As with Bell Rapids, these Falls were also important to the American Indians who lived and fished here. Oregon Trail emigrant journals mention this camp site, and their trading trinkets for dried salmon, a welcome alternative to the bacon carried in their wagons.

SNAKE RIVER OVERLOOK

When you see the sign marking the Monument boundary, watch for the parking lot for the Boardwalk at the Snake River Overlook (Mile 11.8). The Boardwalk is wheelchair accessible and a short distance to a viewing platform. Please sign your name inside the register box. Here you can get a closer view of the sediment layers and read the interpretive exhibits. These flood plain layers are a continuation of the ones you saw at the boat dock. Imagine how expansive these floods must have been, one after another for thousands of years.

Across the road from the parking area, there is a wayside exhibit regarding the Native Americans who lived here. Watch for traffic before you cross the road. The Emigrant Trail is not yet constructed.

OREGON TRAIL

You can walk out to the wagon ruts when you arrive at the Oregon Trail Overlook, but in the meantime, you can also see segments of the trail as you drive. The Oregon Trail parallels the road you've been driving since you turned off Highway 30. The meandering path of 300,000 emigrants remains eroded on the Monument landscape today. PLEASE, do not stop along the roadway because there is heavy truck traffic. The **road shoulders** are **soft** and **vehicles** easily **get stuck**.

By the time the emigrants reached this area about July, most had WALKED 1,300 miles. The emigrants risked everything, including death. Summertime temperatures here usually reach 100 degrees. Dust was deep and choking. The westward migration along the Oregon Trail is generally regarded as the largest peacetime migration in U.S. history. Would you have made such a journey?

Turn right to depart the Snake River Overlook parking lot.

Just after you leave the parking lot, the road is built on top of the Oregon Trail. You will cross a

very narrow portion of the ridge that the emigrants called the "Devil's Backbone" with the Snake River precariously on the right and a canyon on the left. There was barely a wagon's width, so only those who had to ride in the wagon did so. To make it wide enough for modern vehicles, road crews had to add "fill" dirt. To avoid this spot, some wagons likely traveled up the more difficult canyon on your left.

The trail ruts are marked with white fiberglass stakes. The first one is to your left as you go up the road at Mile 12.2. You'll see many of these white stakes marking the remaining trail ruts; most are on your left. Most people expect to see the two parallel ruts of the wheels, but this usually occurs where a hard surface like sandstone was downcut by the steel rims. Here they are U-shaped because the oxens' feet dug more deeply into the soft soils than the wheels. Approaching the top of the bluff, the trail grade was so steep that the ox teams probably were disconnected from some wagons and hooked to others to "double team" the wagons up the slope.

OREGON TRAIL OVERLOOK

At the top of the grade (Mile 14.7) enter the parking area on your left for a stop at the Oregon Trail Overlook. The half-mile long loop trail has commanding views of the Snake River Plain, interpretive wayside exhibits, and is wheel-chair accessible. Please sign in at the register box which is adjacent to the Oregon Trail. For your own safety and to preserve the historic trail, **stay on the pathway.** It is often windy on top of the plateau; be prepared for the weather conditions.

Turn left out of the parking lot and continue along Bell Rapids Road.

It must have been difficult for the emigrants to leave the abundant water of the Snake River for the dry sagebrush terrain again. With the steep climb behind them, two days of travel lay ahead without water to the Three Island Crossing (now a State Park) of the Snake River You will see our final white trail markers on the right.

MODERN AGRICULTURE

There are 22,000 acres of farmland in the Bell Rapid Project, which were still covered with sagebrush until 1969. The road you have been traveling was not here prior to that time; the only access to this area was the Oregon Trail ruts. Farming became possible only by pumping water from the Snake River into a system of irrigation canals and pipelines. Crops grown in the area include potatoes, wheat, sugar beets, and beans.

At Mile 15.5, turn around at the intersection with the gravel and paved roads, and return along the same road you just traveled.

The graded pad at this intersection is used in the fall during the harvest of sugar beets as a transfer point from the fields to processing plants. Please respect the rights of private property owners in this area.

For those of you who want to experience more of the Monument by hiking, horseback riding or mountain biking, continue north on 400 East, a gravel road, for 2 miles. At 5600 North, turn right and head east for 0.8 miles to the trailhead. Do not drive beyond the parking area. Please obtain a brochure at the trailhead and read all of the instructions.

SUMMER TOURS

During the summer season, park rangers lead tours to the famous Horse Quarry where the Smithsonian Institution lead four excavations, removing over 150 horse skulls and about twenty complete horse skeletons. The first excavation began in 1929, with later excavations in 1930, 1931 and 1934. Many of the bones uncovered here by the Smithsonian were exchanged with other scientific groups, making Hagerman internationally famous. Hagerman Horses can still be seen today on display in museums in Washington D.C., Pittsburgh, Denver, Chicago, and in Copenhagen.

You may have wondered, "why were there so many horses here?" An early theory suggested the site was once a watering hole where animals died. Recent scientific investigations suggest that the fossil bones excavated were from a herd that were caught in a flood near Lake Idaho. Juveniles and adults, both male and female, drowned in one of the swollen, flooding rivers. Their bodies were washed into an eddy and quickly buried. This theory is further supported by the nature of the surrounding sediments which have "cross-bedding" (sands and gravels deposited by flowing water in a stream channel). This is also supported by the presence of complete skeletons. Also, there are no chew marks on the bones which would be found where predators and scavengers eat the dying and dead animals. Such is the detective-type work of the modern paleontologist.

In addition to the Horse Quarry, the Smithsonian Institution conducted excavations in other parts of what is today the Monument area. Many specimens from a variety of species were uncovered, including beaver, muskrat, rabbit, frog, and swan.

Institutions that later conducted research in the Hagerman area include the University of Michigan, the Natural History Museum of Los Angeles County, and the Idaho Museum of Natural History (Idaho State University).

PROTECT AND ENJOY

The resources here at Hagerman Fossil Beds National Monument are precious, and Park Rangers are working to provide more services to the public. We hope you enjoyed this self-guided tour. Return to our Visitor Center for audio/visual presentations about the Fossil Beds and to view the fossils on display! If you're interested in proposed trails and facilities, ask for a free copy of our General Management Plan. Come back again to see how we've grown.