Custer County, Arnold, Nebraska 69120

TUESDAY, JANUARY 17, 2016
VOLUME 99, NUMBER 29

The Arnold Sentinel
Serving the South Loops River Valley

Jeremy McMullen, assistant to State Highway Paleontologist Shane Tucker, brushes dirt from the vertebra of a Bison antiquus in a dig east of Arnold before enclosing the remains in a plaster field jacket for transport to the laboratory. At the lower left is an upper arm bone. (Courtesy photo)

Ice Age Fossil Discovered During Arnold East Highway Project

Bison antiquus, sometimes called the “ancient bison,” was the most massive large herbivore of the North American continent for over ten thousand years, and is a direct ancestor of the modern domestic bison. A few weeks ago, Nebraska State Highway Paleontologist Shane Tucker removed specimens of one of these Ice Age mammals from an excavation site near Arnold. Placing the specimens in field jackets for loading and transport to the University of Nebraska at Lincoln’s lab concluded nearly eight months of site work for Tucker. The removal caused some people to delay their travel on Highway 92 to witness the preservation of Nebraska’s prehistoric past brought about by legislation enacted in 1959.

Tucker actively monitors approximately 150 highway construction projects that may have potential to uncover fossil remains of Nebraska. The first bones of the large Bison antiquus were uncovered in the Arnold East Highway Project in the spring of 1995.

“Most of the construction excavation is covered quickly so as not to erode, so to find anything on the day that you arrive is pretty rare,” said Tucker. “Throw into that how rare it is to find a fossil and the chances are very minute.”

Tucker explained that the Bison antiquus found at this location is from the Pleistocene Epoch of geologic time, and was probably buried within the Peoria Loess, dating it anywhere from 12,000 to 23,000 years old, but it could be as old as 40,000 years old. The area south of the Sandhills has very thick deposits of loess that is silt size particles that blow down wind of the actively migrating sand dunes. Since the particles are so small, they get blown up into the higher level winds and deposited many tens to hundreds of miles downwind. Therefore, loess is more or less a dust accumulation. If bones aren’t buried within a relatively short period of time, they will break down due to freeze/thaw or wet/dry conditions.

“It is very similar to a cow that they are most common to find, as well as mammoths, camels and horses. There are far more macrofossils, including ground squirls and gophers, that typically die in their burrows and are buried when the tunnels collapse.

“Fossils are extremely rare,” he said. “We estimate that for less than one percent of all the bones from all of the animals that have lived in the geologic past become a fossil. Most deteriorate prior to burial. There are lots of factors acting against the bone in its chances to become a fossil.

Bones are extremely fragile and typically have cracks in them, so they can’t be lifted out of the ground without risking damage. After mapping all of the post holes into a grid, Tucker and his student assistant covered the bones with plaster and burlap for transport to the lab.

“Site documentation is the most important part of the fossil collection process,” he said. “Once in the lab, we will uncover the bones using scalpels and brushes and stabilize the bone for research.”

The fossil preparation process may take several weeks to months, dependent upon the condition of the bones. Eventually, the fossil will be housed in the Nebraska State Museum’s paleontology collection. It will be available for researchers around the world to analyze and include in their studies.

“The Nebraska Highway Paleontology Program is a cooperative between the Nebraska Department of Roads and the University of Nebraska State Museum. The program was started in October 1980 and was the first of its kind in this nation. The goal of the program is to collect fossils that are threatened by highway construction and add to our knowledge of Nebraska’s geologic past. More than 250,000 specimens have been collected from highway projects throughout the state, including many new species to science. Typically, less than 1 percent of the annual highway projects produce fossils. In the past 50 years, more than 200,000 specimens including the remains of a thumberlong-jawed elephant, giant land tortoise, large carnivore and sea lizard have been curated into the museum’s permanent research collection.”

Tucker, who has been part of the program for 15 years, said he thinks that he has found bones on five or six projects in 2015, which is pretty good. Several of these will be further evaluated into the fall of 2016. Four of the projects have bones from the Ice Age. These are mostly gopher and ground squirrel skeletons, but there was a partial mammoth tusk on one of the projects. The other sites are approximately 11 million years old, and he found a camel partial skeleton that is roughly the size of a llama.

He said that he can be reached any day of the week by the State Highway Paleontologist Shane Tucker, at 308-520-2391 to issue burn permits and answer the question of whether he is going to lift the bone out of the ground. For more information on the program and other finds, go to http://www.nebraskalife.com.

The skull and lower jaw bone from the fossil species Bison antiquus is photographed by Nebraska Highway Paleontologist Shane Tucker before being moved to a lab at the University of Nebraska at Lincoln. (March 2015 issue of Nebraska Magazine: Monday)