

Paleontological Tourism in North Dakota

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Tourism is the third largest industry in North Dakota, accounting for \$3.1 billion in visitor spending in 2015, and that doesn't count tourism related spending within the state by North Dakota residents (NDTD, 2016). North Dakota offers a wide range of tourism opportunities, both in terms of visitation of specific sites (for example, museums and historic sites) and outdoor recreation activities (for example, hiking, camping, fishing, and golfing). Additionally, many people have a lifelong fascination with fossils and enthusiastically embrace opportunities to learn more about past life, whether that is stopping at a local museum to examine prehistoric treasures (termed Classical Paleontological Tourism [Perini and Calvo, 2008]) or signing up to get their hands dirty discovering and collecting fossils themselves (termed Alternative Paleontological Tourism [Perini and Calvo, 2008]). The Paleontology Program at the North Dakota Geological Survey (NDGS) has worked for decades on multiple programs designed to ensure that wherever visitors may pass through the state they have opportunities to learn about North Dakota's prehistory.

Public Fossil Digs

Many people have a deep interest in learning about the past, both within their local area and in far-off locales. Heritage tourism, which involves learning about the local history of an area, is a popular reason for people to plan trips to specific areas, or to plan short stops along their route during the course of longer trips. Another type of tourism that generates a lot of interest is ecotourism, which is centered on experiencing areas of either exceptional natural beauty, or simply enjoying areas where the natural world remains in a relatively undisturbed state. The NDGS public fossil dig program offers a tantalizing intersection between these two concepts: the thrill of discovery, of being the first human to ever lay eyes upon or touch a part of an animal that lived millions of years ago, is combined with being surrounded by the awe-inspiring beauty of the North Dakota landscape (fig. 1).

Traditionally, fossil digs across the state organized by the North Dakota Geological Survey included only paid staff and longtime volunteers. In the late 1990s John Hoganson, then head of the NDGS paleontology program, had a meeting with the North Dakota Tourism Division that resulted in the idea to offer fossil dig opportunities in North Dakota that were open to the general public. That idea was first put into practice in the summer of 2000 and was so successful that the North Dakota Geological Survey now conducts public fossil digs across the state. These digs attract hundreds of participants each year (fig. 2) and provide them with the full experience of being a paleontologist, right down to making scientifically important discoveries about North Dakota's past (Wilson et al., 2016; Boyd et al., 2017). On average, about half of those participants come from outside of North Dakota, and as of 2017, people from 31 other states and two foreign countries have attended the public fossil digs.



Figure 2. A long line of participants hard at work in the main quarry of the Pembina Public Fossil Dig in 2015 searching for fossils in the Late Cretaceous Pierre Formation.

Figure 1. Photograph taken from the main fossil quarry in the Pembina Gorge State Recreation Area highlighting the scenic view looking southeast over the Little Pembina River.

This program is extremely popular and we routinely get contacted by people from outside of North Dakota that are planning on passing through the state and are interested in the possibility of attending a fossil dig while they are in the area. That is one of the reasons why we offer daily registration for our public digs, unlike most other public fossil dig programs in this region that typically require attendees to sign up for a full week. Allowing people to sign up for as little as a single day provides them with the flexibility to be able to attend a fossil dig without significantly modifying their vacation plans, or requiring them to choose between either the fossil dig or other potential activities. In many cases it also entices tourists to stay in the area for at least another day, generating additional revenue via dining and lodging in the local communities. Alternatively, some tourists plan their visit to North Dakota specifically to partake in one of the public fossil digs, and then fill out their trip visiting other attractions within the state. Many of the locations where our public fossil digs are based are small towns where these tourists provide a welcome boost to the local economy.

"Any time we can bring people to Walhalla and give them a unique experience such as the public fossil dig, it's a win for everyone. They are staying in the hotels, eating at the restaurants, shopping in local stores, and best of all, they are telling all their friends about their adventure in Walhalla."

Kristi Wilfahrt
Pembina Gorge Foundation Interim Director

In areas of the state already heavily invested in tourism the presence of a nearby public fossil dig expands the diversity of activities that visitors have to choose from, increasing the likelihood of repeat visits or of planned visits being extended. A great example of this effect is our Medora public fossil dig, where the partnership between NDGS and the Theodore Roosevelt Medora Foundation adds another dimension to the plethora of options available to both new visitors and returning tourists that are looking to expand their experience (fig. 3). Often groups or couples have varying interests and one part of the group may join in on the fossil dig while others take in other activities offered in the area. Thus, the diversity of options available allows all members of a group to participate in an activity they enjoy and then meet up later to share the details of their day.

Other institutions, as well as a few private companies, also run fossil digs for the public in North Dakota, most of which are based in the southwestern corner of the state. The largest of these is the Marmarth Research Foundation, a nonprofit organization that leads multiple week-long public fossil digs during the summer months for up to 16 people each week. Those digs are based in Marmarth, North Dakota, which in 2010 had a population of 136. In small towns like Marmarth, the consistent summer presence of enough tourists to increase the local population by roughly ten percent is a huge boost for local retailers.

Off-site Exhibits

In the United States, 76% of leisure travelers visit cultural and heritage sites, including museums. Travelers that visit these sites on average spend 60% more than other travelers (AAM, 2017). Thus, having a robust network of museums and other cultural sites in North Dakota is important to entice these travelers to

the state and boost the tourism economy. To assist with that goal, the Paleontology Program has an extensive outreach project that involves collaborating with museums, visitor centers, and other institutions throughout the state to produce displays on the paleontology and geology of North Dakota. This program was started by John Hoganson, now emeritus paleontologist with the NDGS, and is termed "A Fossil Exhibit in Every Town" (Hoganson, 2005). There are currently two dozen exhibits throughout the state as a result of



Figure 3. Participants in the Medora Public Fossil Dig work on removing rock overlying the fossil layer while surrounded by the beauty of the North Dakota badlands near Theodore Roosevelt National Park in 2015.

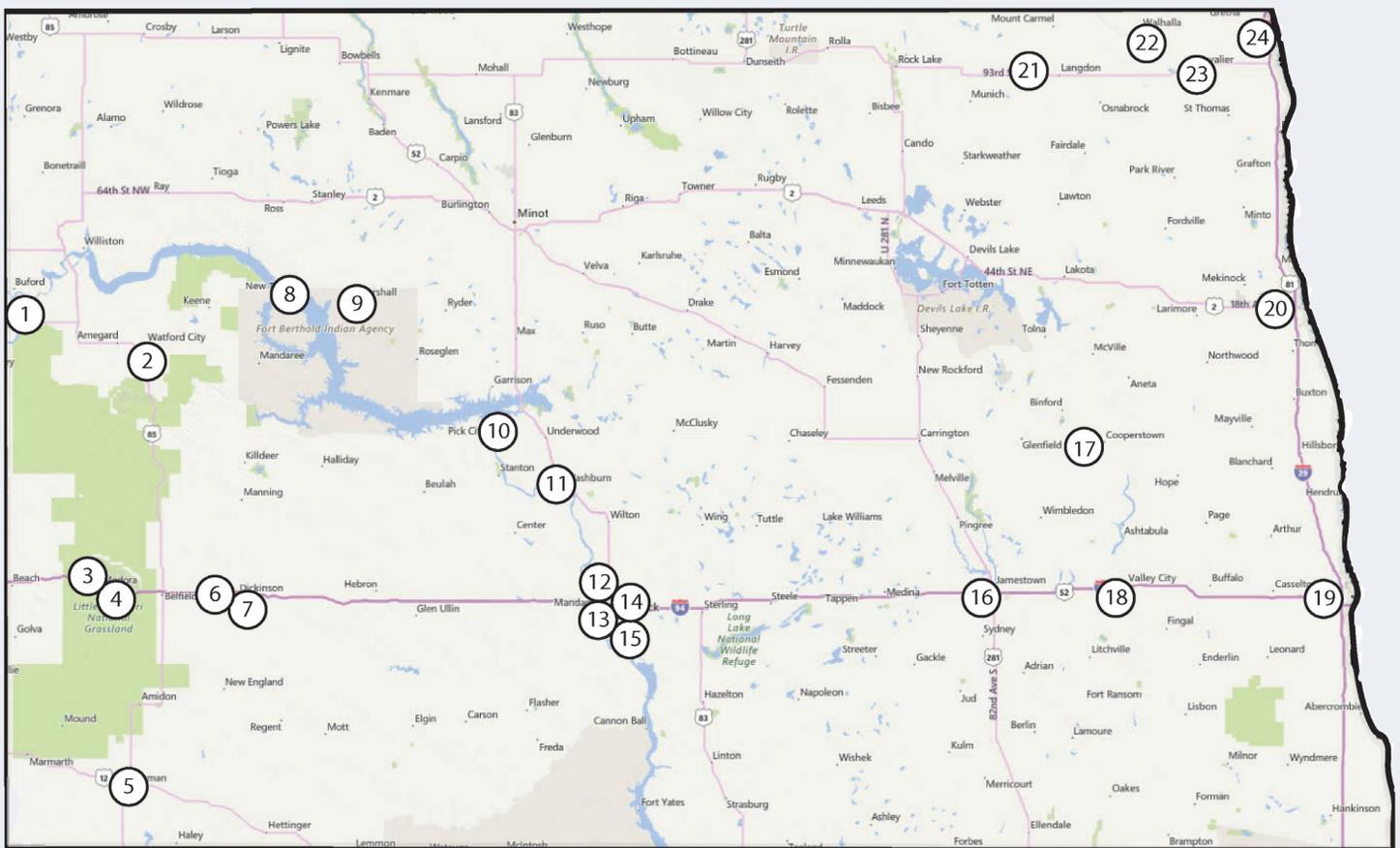


Figure 4. Paleontological and geological exhibits throughout North Dakota that the North Dakota Geological Survey paleontological resource management program has assisted in developing as a part of the “A fossil exhibit in every town” program. Background layer from Bing Road Maps. Key: (1) Missouri-Yellowstone Confluence Interpretive Center, Buford; (2) Long X Trading Post Visitor Center, Watford City; (3) Theodore Roosevelt National Park South Unit Visitor Center, Medora; (4) North Dakota Cowboy Hall of Fame, Medora; (5) Pioneer Trails Regional Museum, Bowman; (6) Dakota Prairie Grasslands, Medora Ranger District Office, Dickinson; (7) Dickinson Dinosaur Museum, Dickinson; (8) Three Affiliated Tribes Museum, New Town; (9) Paul Broste Rock Museum, Parshall; (10) United States Army Corps of Engineers Headquarters, Riverdale; (11) McLean County Museum, Washburn; (12) Industrial Commission – North Dakota Geological Survey and Oil and Gas Division Headquarters, Bismarck; (13) North Dakota Heritage Center & State Museum, Bismarck; (14) Dakota Prairie Grasslands Supervisor’s Office, Bismarck; (15) Bismarck Municipal Airport, Bismarck; (16) National Buffalo Museum, Jamestown; (17) Griggs County Museum, Cooperstown; (18) Barnes County Museum, Valley City; (19) North Dakota State University, Stevens Hall, Fargo; (20) University of North Dakota, Harold Hamm School of Geology and Geological Engineering, Leonard Hall, Grand Forks; (21) Cavalier County Museum, Dresden; (22) Walhalla Museum of Natural History, Walhalla; (23) Icelandic State Park, Cavalier; (24) Pembina State Museum, Pembina.

this program (fig. 4), and the paleontology program continues to update current exhibits and explore opportunities to expand into new areas (Person and Boyd, 2016).

The most visited of these exhibits is the Geologic Time Gallery in the North Dakota Heritage Center and State Museum on the Capital Grounds in Bismarck (Hoganson et al., 2014). Since the newly expanded museum was opened in 2014, more than 200,000 visitors a year have viewed these exhibits. The exhibits in the Geologic Time Gallery provide the most comprehensive overview of the history of past life in North Dakota, with exhibits on the flora and fauna of all of the formations exposed at the surface within North Dakota. Many of the other exhibits throughout the state are more focused on the rocks and fossils that come from that specific

area, providing a more locally centered slant. For example, the fossil exhibit in the Pembina State Museum (Pembina, ND) in the northeast corner of the state, focuses on locally collected fossils from the Late Cretaceous Pierre Formation; whereas the exhibit in the Long X Trading Post Visitor Center (Watford City, ND) highlights fossils found in the extensive Paleocene deposits found in the western part of the state (fig. 5). Many of these exhibits are assembled using fossils collected during the public fossil digs, allowing those digs to have an additional positive impact on tourism opportunities in the state.

Extensive paleontology exhibits can also be seen in Bowman at the Pioneer Trails Regional Museum and in Dickinson at the Dickinson Dinosaur Museum (formerly the Dakota Dinosaur



Figure 5. Examples of fossil and geology displays developed by the NDGS paleontology program. The Geologic Time Gallery (a) in the North Dakota Heritage Center & State Museum provides a comprehensive overview of fossils from across the state, while smaller exhibits like those in the Pembina State Museum (b) and the Long X Trading Post Visitor Center (c) focus on fossils from the local area. Pictured in (c) are NDGS paleontologists Clint Boyd (left) and Jeff Person (right).

Museum). Those exhibits are largely the result of the tireless efforts of Dean Pearson (Pioneer Trails) and the former and current curators of the Dickinson Museum, Larry League and Denver Fowler. Although the NDGS paleontology program did not contribute to the design of most of the displays in those museums, the North Dakota State Fossil Collection, which is managed by the North Dakota Geological Survey, serves as the official repository for all fossils in those museums collected off of public lands (for example, U.S. Forest Service and Bureau of Land Management), including many of the specimens on display. This partnership continues to this day, and in the case of the Dickinson Dinosaur Museum has expanded to include the long-term loan of specimens from the NDGS collection for use in new displays.

The paleontology program at the NDGS continues to make important and unique contributions to the tourism industry in North Dakota. For every

“Help from our friends at NDGS has benefited the Dickinson Museum Center enormously. After our re-opening in 2016, NDGS loaned us a mounted Champsosaurus skeleton and a whole host of other excellent fossils, so that we could have some new specimens on display.”

Denver Fowler
Curator of Paleontology

one dollar of financial support that museums and other cultural and historical organizations receive from local, state, and federal sources, five dollars of tax revenue from increased tourism spending is generated in the local economy (AAM, 2017). Thus, investments in identifying, collecting, and preserving the paleontological resources of North Dakota not only ensure the protection of those resources for future generations and improve our understanding of past life in North Dakota, but those efforts also provide positive economic benefits to the people of North Dakota.

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