COLLECTION OF FOSSIL VERTEBRATES FOR THE SASKATCHEWAN MUSEUM OF NATURAL HISTORY, 1985

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The collecting objective for the Earth Sciences Program at the Saskatchewan Museum of Natural History (SMNH), Regina, for 1985 (Permit 85-IP) was to examine the marine and terrestrial Late Cretaceous sediments of Saskatchewan for vertebrate fossils. Three distinct areas were prospected, each yielding many fossils.

The first area that was examined was the Frenchman Valley near Shaunavon. Exposures in this part of the valley are dinosaur-bearing and occur in the Frenchman Formation, whose age is about 65 million years before the present (MYP). Previous work in this formation dates back to the early part of this century and has preserved many fossils of plants, invertebrates and vertebrates. In the summer of 1984 (Permit 84-IP), John E. Storer, Curator of Earth Sciences at SMNH, located a small microsite (an area with a large concentration of small bones) and discovered a number of small mammal teeth (SMNH Loc. 72F08-0012). It was not until last summer that we were able to collect this site, which we have called the "Gryde Locality" after Greg Gryde whose land the site is on.

The collecting of a microsite is quite different from the recovering of the larger vertebrates. Since the fossils are very small, some the size of pin-heads, we have to shovel as much rock as possible into burlap sacks and carry it to a stream so we can break down the sediments without using too much force. The sediment is placed into wooden boxes with screen bottoms and then placed in a stream for soak-ing. A classic account of this process, which is commonly called "washing" or "screening," was written by M.C. McKenna.[1] At the Gryde Locality we removed approximately 2.5 tons of matrix.

When the site was first discovered it was realised that it would be very rich in the rare mammals of the Frenchman Formation, but after sorting the residue of the matrix for fossils (most of which was done under a microscope) in the lab, it was found to be far better than it had been hoped. At least 500 mammal teeth, a larger number of lizard and amphibian bones, and some small dinosaur teeth were recovered.

Five new fossiliferous sites were also located in the Frenchman Valley, giving additional information about the area.

Near Unity, Saskatchewan, exposures are known by many of the local residents. For several years Robert Eltom, a Unity high school teacher, has found fossil bones. He later contacted the University of Saskatchewan and Theresa Skwara went to look at the area. It was not until winter that Skwara contacted SMNH for further examination of the area. The exposures are very similar to those in Dinosaur Provincial Park, Alberta (Oldman Formation), approximately 75 MYP (see Fig. 1). The area we were shown looked like a bone bed. This is an area where many bones of animals, sometimes of the same species, have accumulated. During the summer the author spent a week excavating as much of this bone bed

as possible. The results of this will not be known until preparation of the fossils is completed.

In early September, Storer and the author returned to the area to prospect the remaining exposures. Thirteen fossiliferous sites were located. A preliminary faunal list follows:

Chondrichthyes
   Myledaphus sp.: teeth

Osteichthyes
   Vertebra

Amphibia
   Vertebrae

Reptilia
   Champsosaurus sp.: Limb bone, distal end, caudal vertebra

   Crocodilidae, indet.: Scute

   Aspideretes sp.: Shell fragments

Basilemys sp.: Shell fragment

Hadrosauridae, indet.: Cervical vertebra, phalanx of left manus

Ceratopsidae, indet.: tooth

Ornithomimidae, indet.: Caudal vertebra?

Tyrannosauridae, indet.: Caudal vertebra, teeth

Saurornitholestes sp.

Dromaeosaurus sp.: tooth

Dromaeosaurus sp.: tooth

Also recovered from the Unity area were sediments for use in studying fossil pollen. A large variety of palynomorphs were identified by Art Sweet of the Geological Survey of Canada, in Calgary (listed in Report AS-8-1985) and are comparable to those of the Oldman Formation

Alberta

Saskatchewan

★ Unity

Calgary
★

★
DPP

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Regina

of Alberta. Future work in this area should yield even more fossils and will enhance this faunal list.

In August 1984 Robert and Joe Frost of Swift Current reported a partial plesiosaur (a large marine reptile that lived in the seas at the time of the dinosaurs) near the shore of Lake Diefenbaker (Loc. 72J13-0013). Four cervical vertebrae were collected, with further excavation planned for 1985. In mid-June Storer and the author, with the assistance of Dave Baron and Brenda Dew from SMNH and Darren Tanke, then of the Tyrrel Museum of Paleontology (Drumheller, Alberta) excavated the remainder of the vertebrae. No skull was located but a total of 13 cervical vertebrae with a total length of approximately 7 ft. and one cervical rib were recovered. Preliminary observation of the specimen in the field suggests that it belongs to the plesiosaur family Elasmosauridae, in which the neck vertebrae can reach 70 in number. The specimen occurs in the Bearpaw Formation, approximately 72 MYP.

Our program plans to further prospect the Frenchman Valley and the Unity area for additional localities, and to extract as much information as possible from ones that are already known. These areas have yielded many fossils and have added to our knowledge of animals of the Age of Dinosaurs. However, in surveying the Frenchman and Unity areas, we have only scratched the surface of fossil collecting, as each year the elements expose new fossils that have never been seen before.

Acknowledgements

[1] MCKENNA, M.C. 1962. Collecting small fossils by washing and screening. *Curator* 5(3):221)235.

Rabbitbrush

Blake Maybank