

## Serendipity, opportunity, and toil: development of the *Lagerstätten* collections at the Manitoba Museum

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Over the past 20 years, the Manitoba Museum has built a large collection of fossils from three Ordovician *Konservat-Lagerstätten*, deposits that preserve soft tissues and soft-bodied organisms. Collecting began purposefully in 1997, with fieldwork in the already-known Cat Head-McBeth Point area on Lake Winnipeg's north basin. There, the Cat Head Member of the Red River Formation (Upper Ordovician, Katian) is known for seaweeds, trilobites, and conulariids.

Collections from the other two *Lagerstätten*, though, developed through a combination of contacts, serendipity, and hunches . . . followed by many days of intense toil. In the 1990s, a geologist in the Grand Rapids Uplands discovered fossils on the reverse sides of flat slabs selected as substrates for artwork. This was brought to the attention of a Manitoba Geological Survey geologist, who passed the information to the Manitoba Museum. Subsequently museum personnel found a eurypterid in this area in 2001, but the bedrock source was not located until 2004. Since then a detailed excavation of this locality has been carried out, now called the William Lake site.

At William Lake in 2005 unusual fossils were collected, including the first specimen of a creature that would later be described as the horseshoe crab *Lunataspis aurora*. Contemplating the lithology, a similar rock 650 km away was investigated at Airport Cove, near Churchill. At the latter site a few weeks later, an area of dolostone blocks having the appropriate appearance was located and additional specimens of *Lunataspis* were quickly discovered. In the past decade, return visits to that site have allowed the Manitoba Museum to amass a substantial collection.

The William Lake site in the Williston Basin, and Airport Cove site in the Hudson Bay Basin, are both of latest Katian age. They share several elements: horseshoe crabs, lingulid brachiopods, gastropods, and large problematic tubes. Several other groups are unique to William Lake: jellyfish and other gelatinous zooplankton, pycnogonids, and abundant eurypterids. The assemblage at Airport Cove includes other arthropods, beautiful seaweeds, and scolecodont assemblages.

All collected material is at the Manitoba Museum: about 1500 slabs from William Lake and 400 blocks from Airport Cove. These constitute one of the most important fossil collections at the Manitoba Museum. Ordovician *Lagerstätten* are rare, and Manitoba's deposits have enhanced the understanding of global Ordovician biodiversity. Studies of the collection are ongoing, but it has also

contributed to exhibits and public knowledge: several of the fossils served as models for animated creatures in *Ancient Seas*, a digital panorama of marine life.