Diggers, Loaders, and Fossils: Uncovering the Ice Age in Alberta

Chris Jass

Royal Alberta Museum

The "Bisotaskiwin" Specimen

Era	Period	Epoch	Time Scale
			Present
Cenozoic	Quaternary	Holocene	10,000 years ago
		Pleistocene	2.58 million years ago
	Tertiary (Neogene)	Pliocene	5.3 million years ago
		Miocene	23.8 million years ago
	Tertiary (Paleogene)	Oligocene	33.7 million years ago
		Eocene	54.8 million years ago
		Paleocene	65.0 million years ago

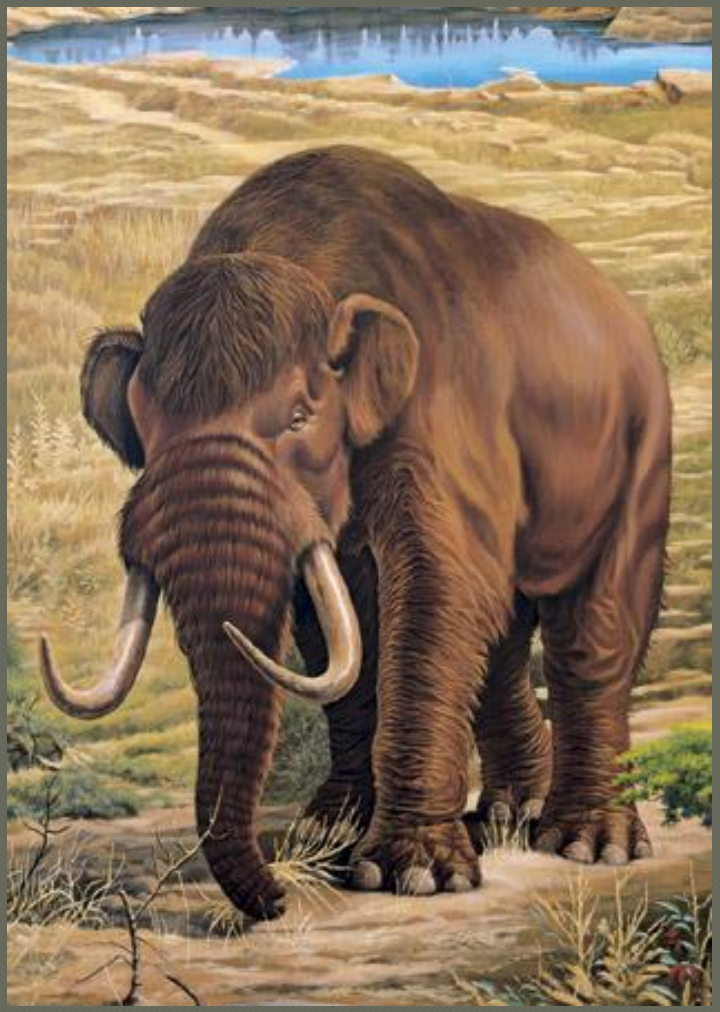
Alberta's Ice Age Fossil Record

- > 22,000 years ago (Pre-LGM)
- ~10,000 year gap when ice is present (LGM)
- < 12,000 years ago (Post-LGM)

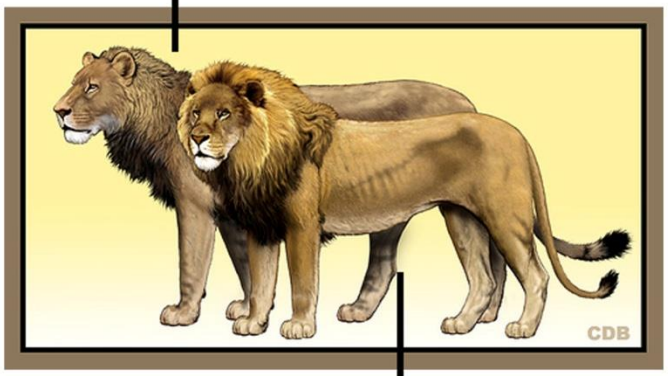

10 cm


IN

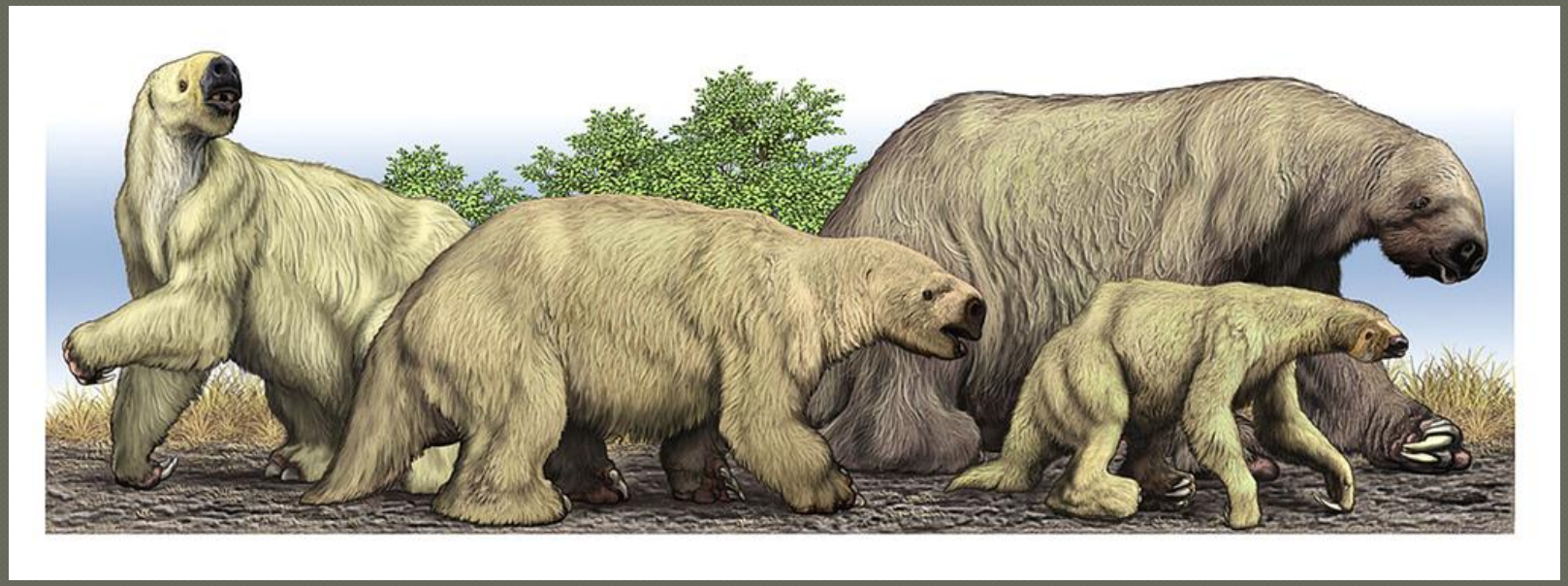

SVP



North American Lion (*Panthera leo atrox)*



Modern African Lion *(Panthera leo)*




cm
IN

Hand Hills Microfauna

Geologic Context

- Caves
- Sediments associated with modern and/or ancient river systems

- Other settings

The Museum's Role

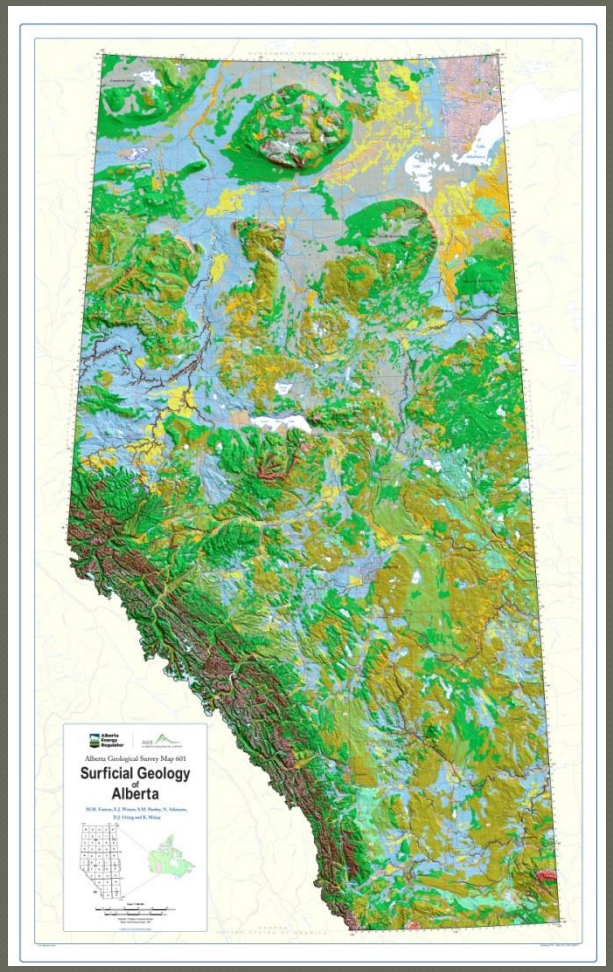
- Research, collection, and preservation of historic resources
- Outreach and exhibits
- HRIA recommendations
- Industry resource

Finding and reporting fossils to us *<u>does not</u>* mean your operation will be shut down!

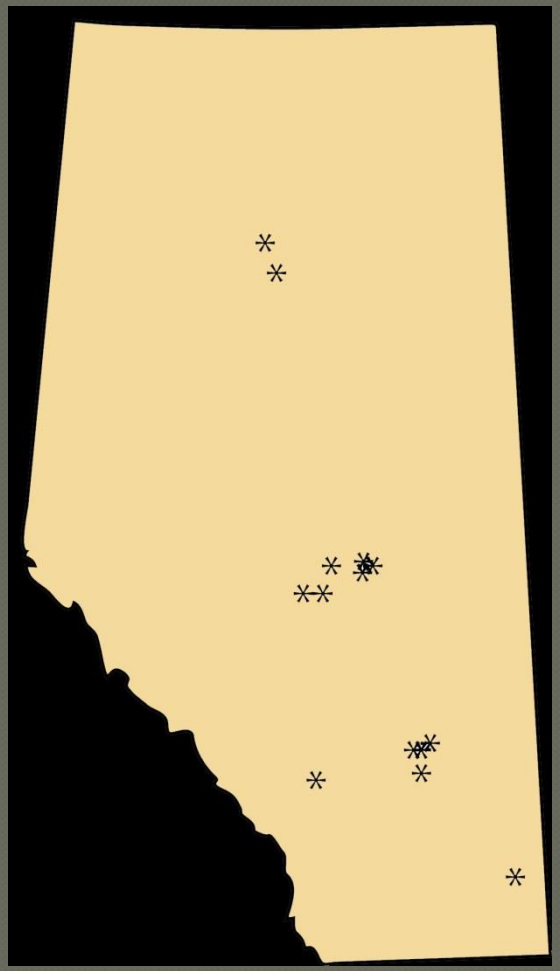
…but your picture might show up in a presentation.

HRIA Recommendations

- Pre-impact assessment
- Post-impact assessment



Site Visits/Collections 2012-15



- Via HRIA; n = 8 (estimated)
- Museum staff visits; n = 13
- Self-reporting; n = 5

Lafarge Nesbit Pit

- *Bison priscus* (Steppe bison); >43500 yr BP
- 59 other specimens; bison and horse

Dahm Pit

- Elk; 1600 ± 30 yr BP
- Bison; undated
- Wood; 1650 ± 30 yr BP

RADIOCARBON DATES OF LATE QUATERNARY MEGAFAUNA AND BOTANICAL REMAINS FROM CENTRAL ALBERTA, CANADA

Christopher N Jass[1] • Alwynne B Beaudoin

Royal Alberta Museum, 12845 102 Ave., Edmonton, Alberta T5N 0M6, Canada.

INTRODUCTION

The chronologic record of late Quaternary biota from central Alberta has broad implications for understanding the archaeological, geological, paleontological, and paleoenvironmental record of western North America. Radiocarbon dates on remains of Pleistocene megafauna were previously used as proxies for the advance and retreat of ice sheets across Alberta (e.g. Young et al. 1994; Dyke 2005), and are important for understanding landscape changes that likely influenced the timing of human dispersal into North America (Burns 1996). ^{14}C records of Holocene age continue to refine our understanding of landscape change leading up to modern environmental conditions (Beaudoin 2003). Here, we report 15 ^{14}C dates from new and previously recorded sites in central Alberta, and one from just across the border within Saskatchewan (Figure 1).

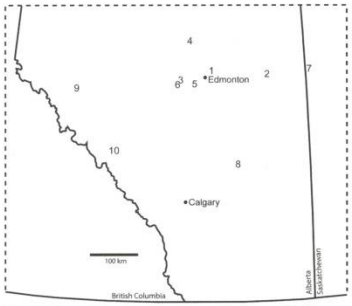


Figure 1 Geographic location of sites discussed in this paper. Numbers correspond to order of appearance in text: 1. Inland Aggregates Pit 48; 2. Vermillion River Bison; 3. Henkel Farm; 4. Pembina River Bison; 5. Juniper Pit; 6. Dahm Pit; 7. Benson Site; 8. Hampton's Dugout; 9. Solomon Creek; 10. "Brian's Creek."

Newly reported sites are discussed individually in the following ^{14}C date list. These localities often consist of isolated finds, may not be the subject of further research, and generally contain insufficient material to justify independent reporting. However, by providing georeferenced chronological "pinning points," these data do contribute to our overall understanding of the ecology and distribution of late Quaternary fauna and flora of central Alberta.

1. Corresponding author. Email: chris.jass@gov.ab.ca.

Steep Rock Pit

Zipper Pit #1

Clover Bar Sand & Gravel

- ~200 Specimens
- Mammoth, bison, horse
- Staff collected!

Oral Sand & Gravel Pit, South Dakota

Exhibits and Outreach

Summary

- ~500 new specimens in conjunction with sand and gravel excavations
- Successful collaboration with industry

- Found a fossil?
- Contact us!

chris.jass@gov.ab.ca
780-453-9127

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- Fred Courtney, Gordon and Kathy Friedly, Reg Gallagher, and the Neu Muehl Hutterian Brethern of Delia