Pleistocene extirpation of east Beringian megaherbivores: first records from Yukon lake sediments

SL Cocker[a,b], TJ Murchie[d], J Harvey[a], MFJ Pisaric[b,c], DG Froese[a], BJL Jensen[a], and HN Poinar[d]

[a] *Earth and Atmospheric Sciences, University of Alberta, AB, Canada*
[b] *Earth Sciences, Brock University, ON, Canada*
[c] *Geography and Tourism, Brock University, ON, Canada*
[d] *Anthropology, McMaster University, ON, Canada*

Here we present preliminary multiproxy palaeoenvironmental records from Gravel Lake, central Yukon Territory, to investigate the environmental response associated with the disappearance of megaherbivores at the end of the Pleistocene. Chronology for the cores is based on radiocarbon and 1 cm loss-on-ignition record of the sediments spanning the Pleistocene-Holocene transition with continued work on cryptotephra and plant macrofossil remains. High resolution loss-on-ignition, coupled with a basal radiocarbon date of ca. 14,000 cal yr BP, allows identification of Bølling-Allerød warming and the Pleistocene-Holocene transition, and has guided subsequent sampling near the expected timing of megaherbivore extinctions in eastern Beringia. We have identified pollen with further identification of pigmented fungal spores, particularly those known to be obligate coprophilous genera. Coprophilous fungal spores have become increasingly utilised as proxies for megaherbivore abundance in Late Quaternary samples and appear throughout the samples from Gravel Lake. *Sporormiella*, *Cercophora*, *Delitschia* and *Sordaria* appear to be the most common taxa. There is a clear decline in coprophilous spores towards the proposed Pleistocene-Holocene transition. We aim to combine results of the coprophilous spores, sedimentary ancient DNA, and an established chronology to identify the timing of local megaherbivore extirpation. The Arctic is currently undergoing dramatic changes that directly impact the stability of ecosystems and northern landscapes. Rapid climate change during the Late Quaternary caused numerous ecosystem responses, including altering vegetation assemblages and possibly contributing to the mass extinction of numerous megaherbivore taxa. This study aims to highlight the direct impact of climatic amelioration on megaherbivore populations.

Corresponding author: scocker@ualberta.ca