

MAPPING PALEOENVIRONMENTS, PALEO-GLACIAL EXTENT, AND HUMAN PRESENCE IN THE ROCKY MOUNTAINS DURING THE LATE PLEISTOCENE

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PROJECT INTRODUCTION

- I created maps of the glaciated (20,000 years ago) and post-glaciation (~13,500 years ago) Rocky Mountains, which show changes in environments and how human distributions relate to landscapes and landscape barriers.
- Geological (cosmogenic) data illustrate the extent of paleo glaciers during and after the Last Glacial Maximum (LGM).
- Archaeological data show when humans occupied the area.

INTERNSHIP GOALS

- Mapping Rocky Mountain quaternary geology and prehistoric archaeological sites to reconstruct the paleoenvironment of Colorado and surrounding states.
- Providing scholars and the public with valuable insights into the paleoenvironment of the Rocky Mountains during the Pleistocene period.

HOW DOES THIS APPLY TO MY EDUCATION

I am a PhD student studying paleoanthropology in the Department of Anthropology and Geography. My research interests involve reconstructing paleoenvironments where prehistoric humans and human ancestors lived by studying fossils and lithic materials.

WHAT I LEARNED

- How to use ArcGIS Pro to create maps
- Rocky Mountain paleo-glacial extent and its role in prehistoric human occupation
- The paleoenvironment of Colorado before and after the LGM
- How to incorporate multiple datasets to interpret paleoenvironmental conditions

CONCLUSIONS

- Rocky Mountain glaciers were much more widespread 20 ka, during the LGM.
- No evidence of human presence has been recognized in the Rocky Mountains before the Bølling–Allerød warm period.
- It is unlikely that the paleo glaciers were a barrier to human occupation.
- If pre-Clovis people arrived in this region during the LGM, the glacier-proximal landscapes could have been suitable for habitation. Ice patches could have attracted prey and predators, making this a resource-rich environment. Even if pre-Clovis people inhabited the Americas before or during the LGM, they may not have expanded into this region until later.

NEXT STEPS

I will present my work at the Rocky Mountain Biological Anthropology Association Conference, integrate more archaeological site data, and publish the findings in a peer-reviewed journal.

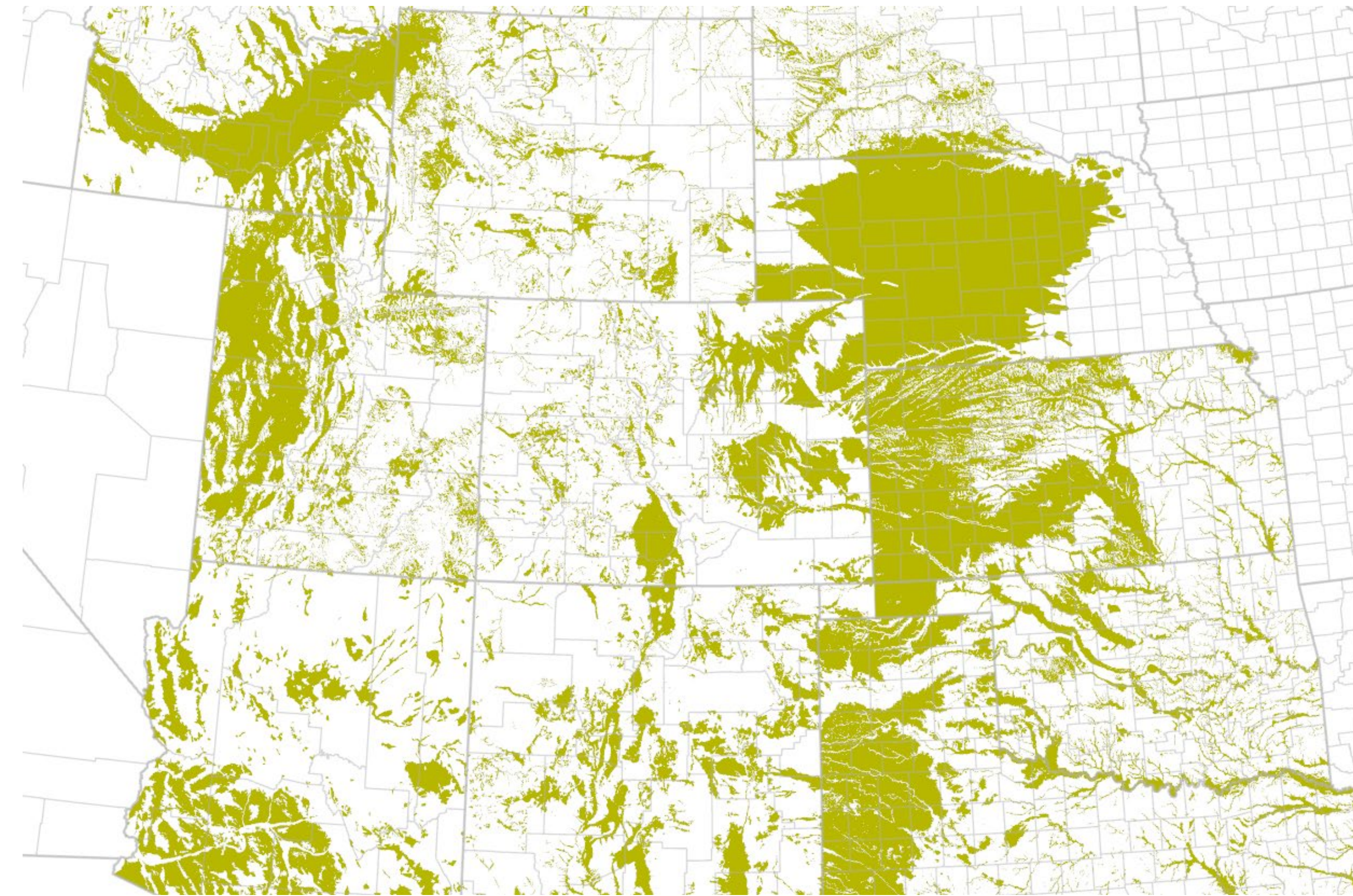


Fig 1. Quaternary outcrop map of the Rocky Mountains

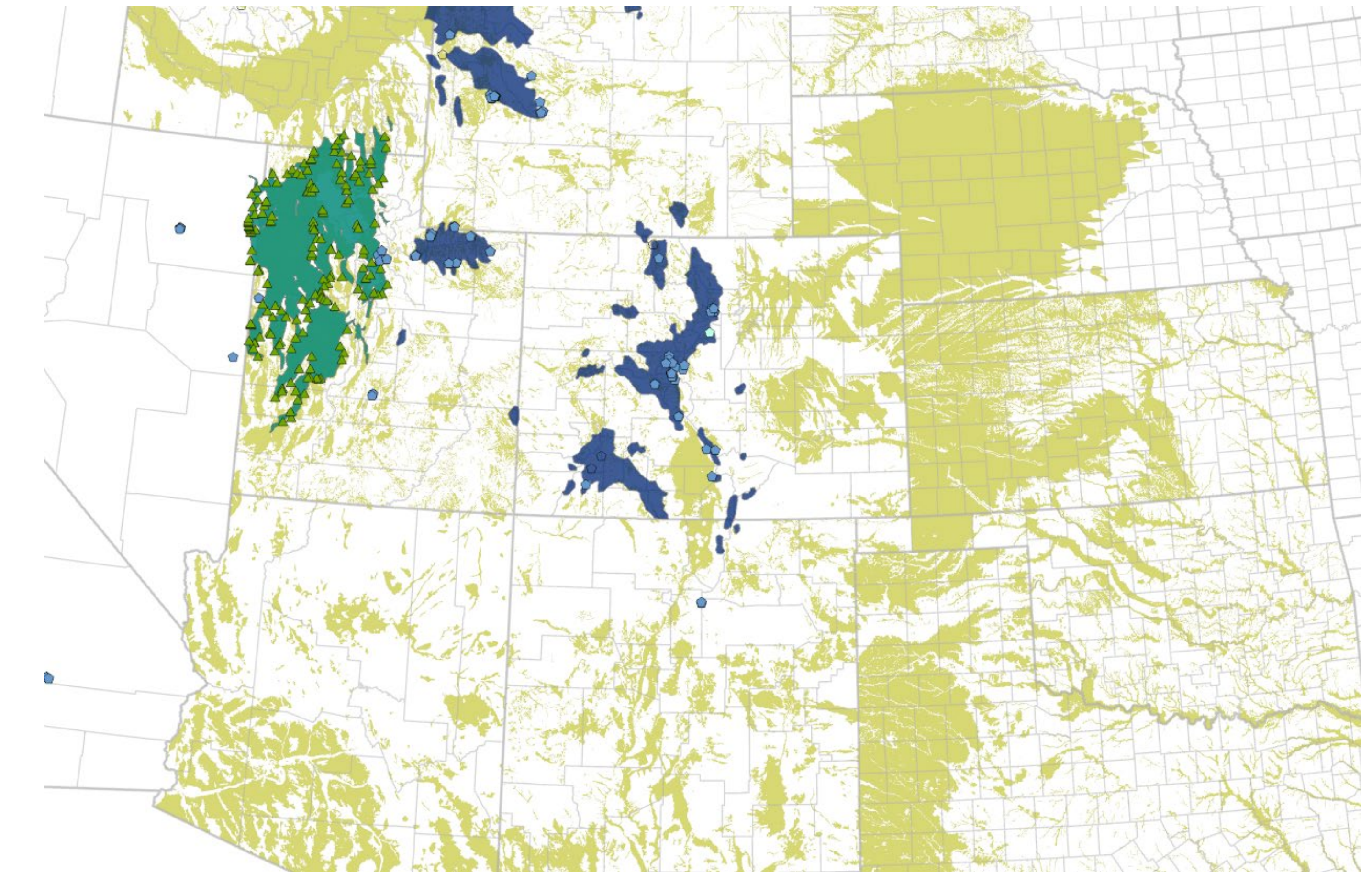


Fig 2. Rocky Mountain paleo-glacial extent and Lake Bonneville (20,000 years ago)

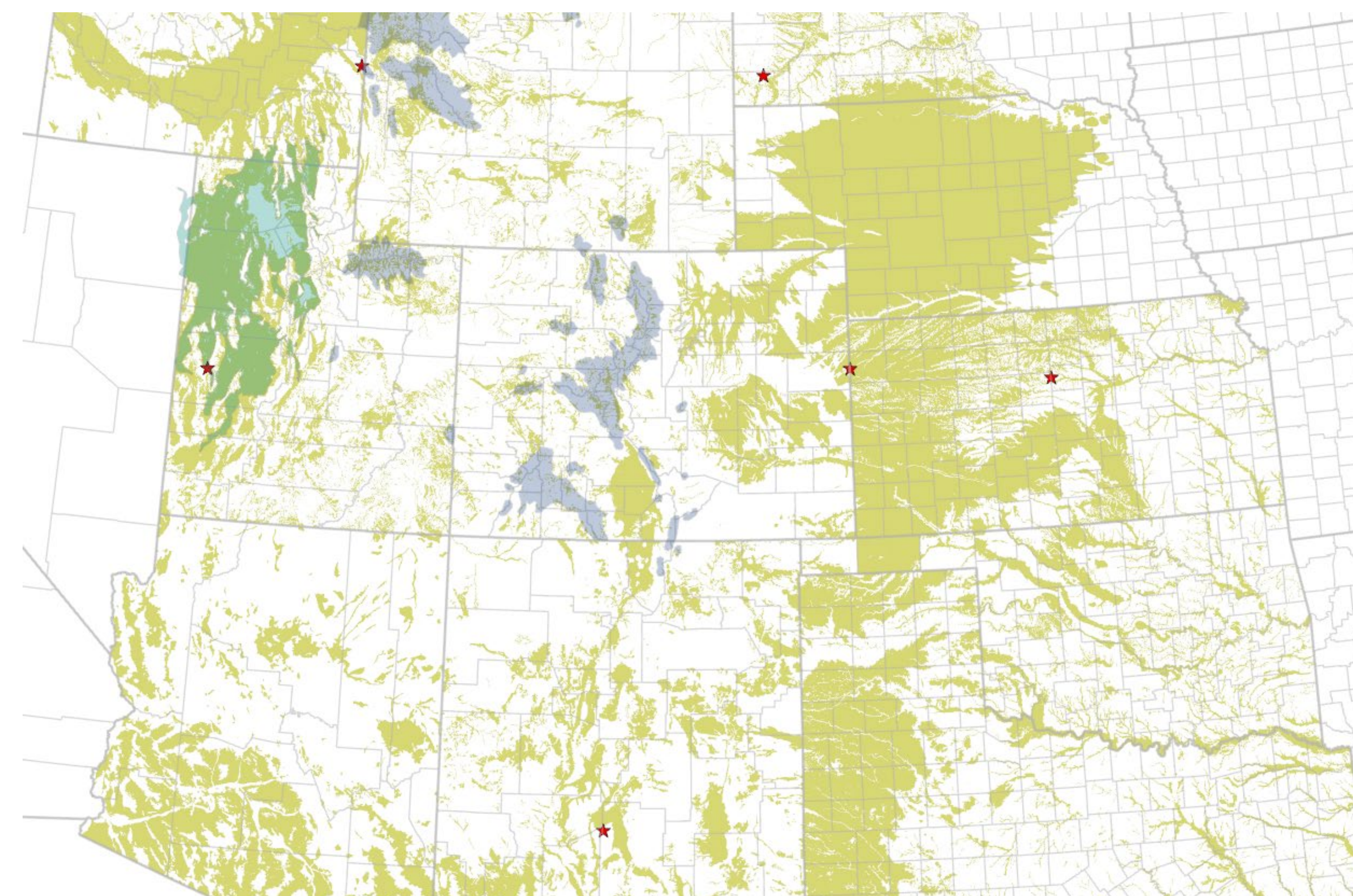


Fig 3. Pre-Clovis archaeological sites (before 13,500 years)

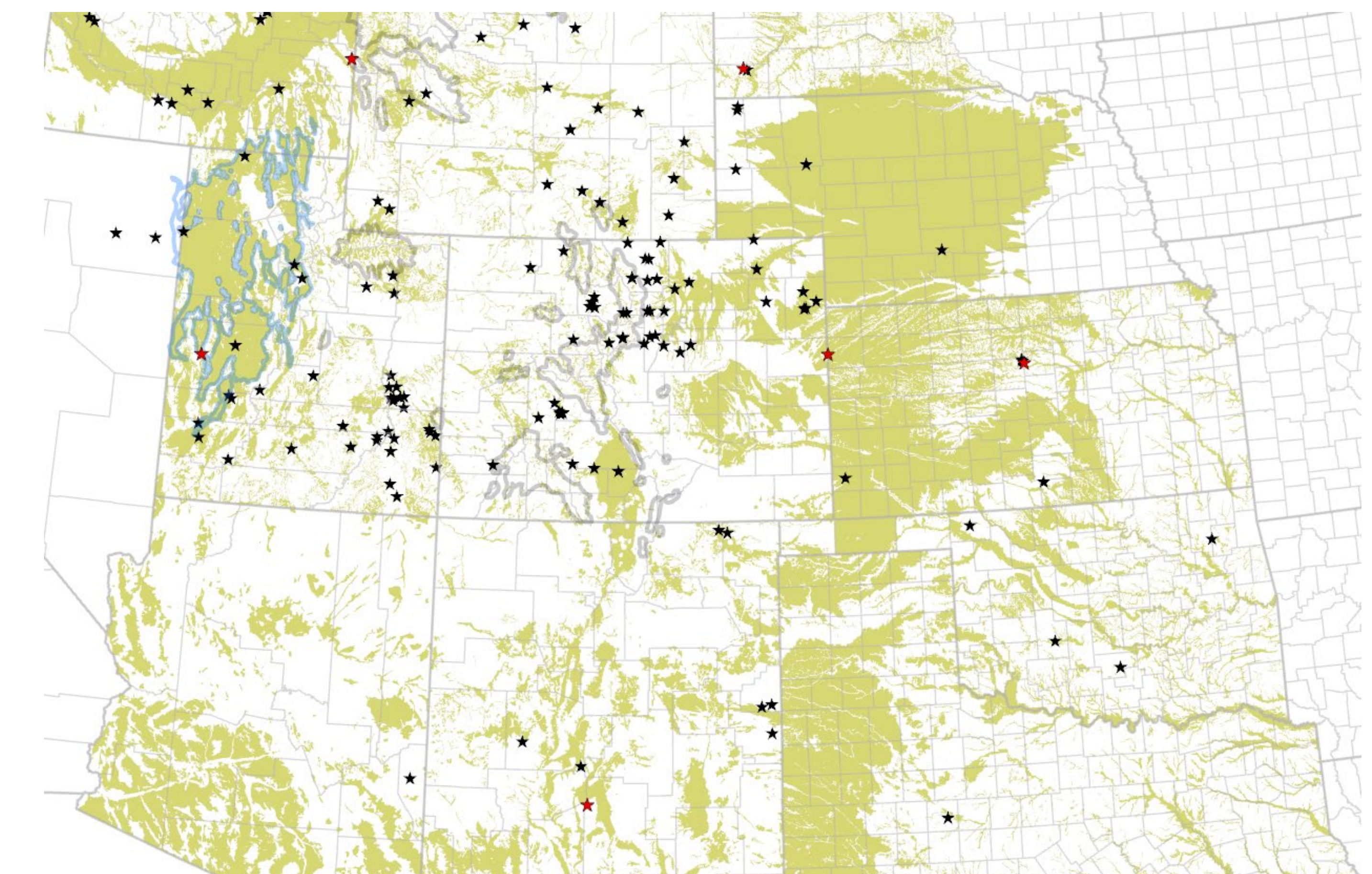


Fig 4. Archaeological sites in the Rockies 13,500-8,000 years ago

- ★ Archaeological sites older than 13,500 years ago
- ★ Archaeological sites younger than 13,500 years ago
- ◆ Cosmogenic exposure dates between 19,000 and 22,000 years ago (LGM)
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- ▲ Lake terraces of Lake Bonneville during the LGM
- Quaternary outcrops
- Lake Bonneville extent during the LGM
- Alpine glacier extent during the LGM