Lab 1: Exploring Paleoecological Data with Neotoma Explorer

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1. -89.73205 W; 43.4178 N; Site ID: 666

2a. Louisiana

2b. New Mexico

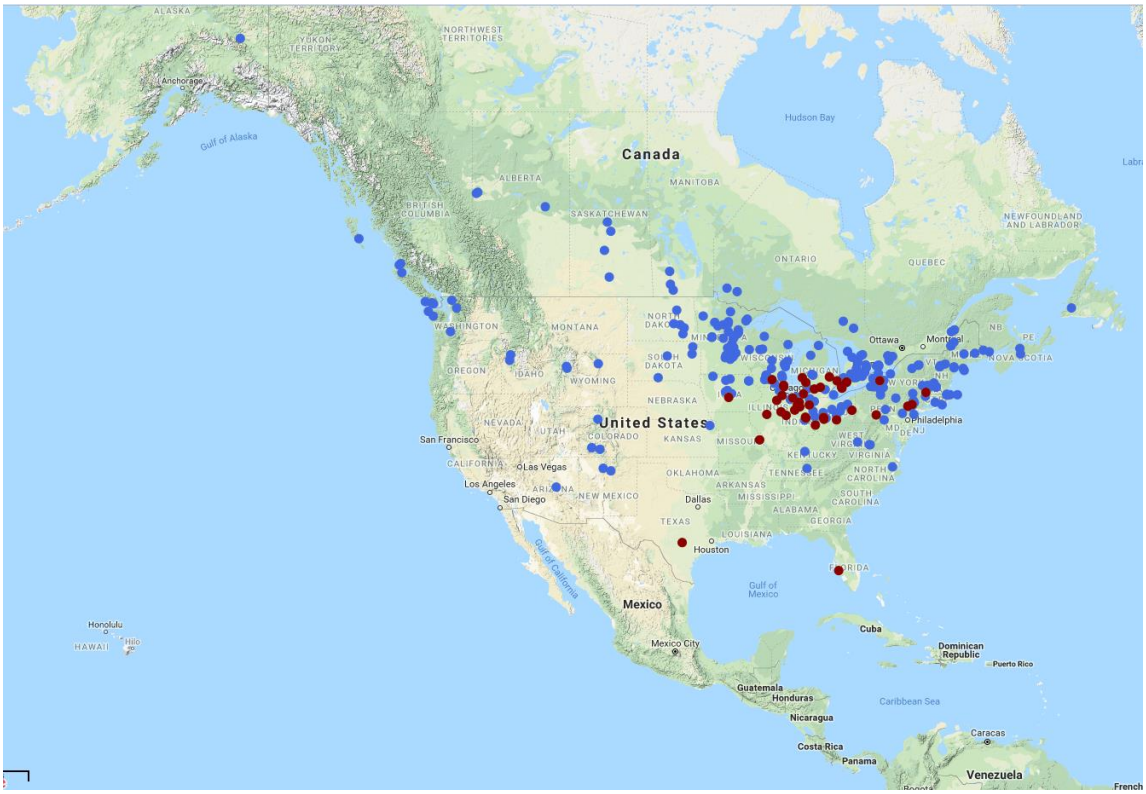
3. Wisconsin

4a. 1450 sites (1640 datasets) Note: I wasn't able to get the explorer to search within the shown map field, but instead used the search within the extent of a drawn shape and was able to get results.

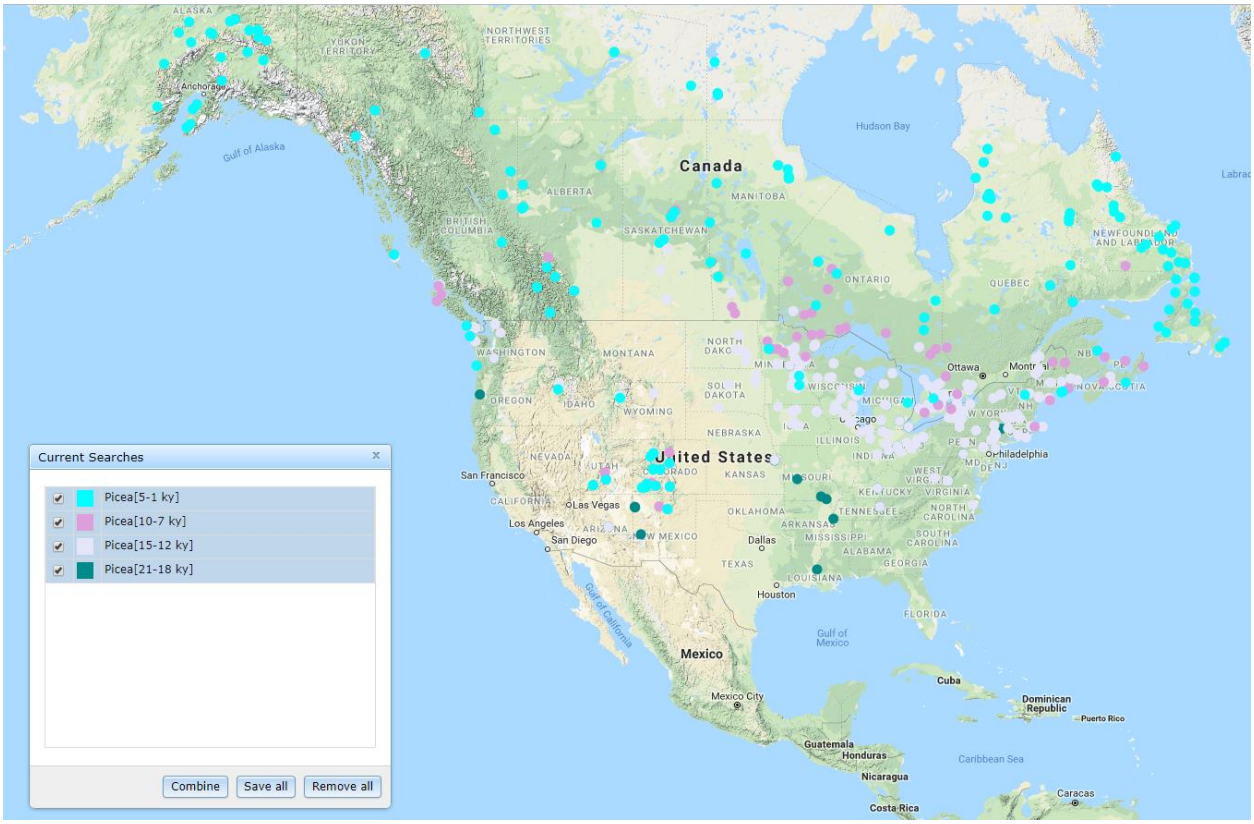
4b. Over a 1,000 person-years; Over $10,000,000

5. I would guess that because of the abundance of lakes/other depocenters for Quaternary-age sediments within the area spanning from Minnesota to Nova Scotia, that this region would be a prime area for sampling fossil pollen.

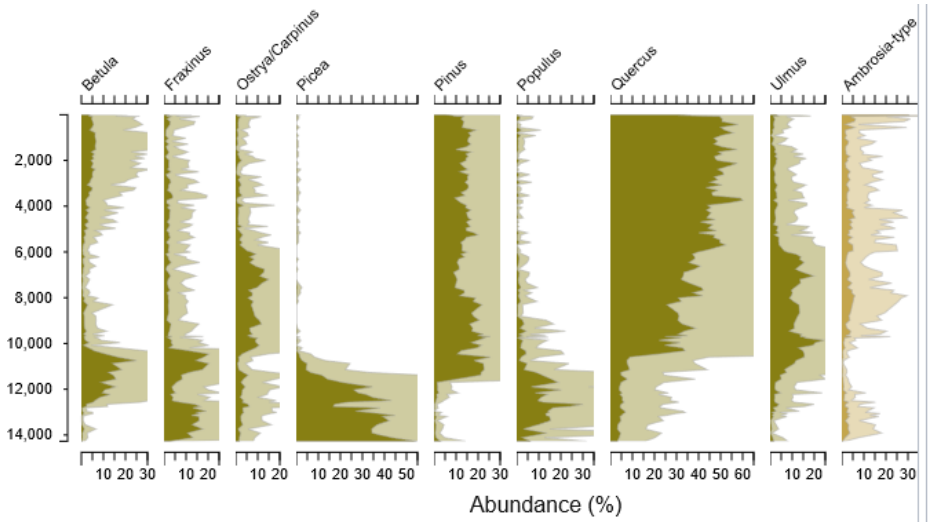
6. It appears that the mastodons did live in areas with spruce. This correlation may suggest that spruce was an important food source for the mastodons or it could simply imply that the climate ideal for spruce growth was also the habitat preferred by the mastodons during that time period.



7. Over the past 21,000 years, the location of abundant (>20%) *Picea* growth has gradually shifted northward to higher latitudes. This shift is likely the result of the Earth's climate transition into the current interglacial period. Progressively increasing temperatures over the last 21,000 years have shifted the viable ecospace for *Picea*, resulting in a pattern indicative of gradual northward migration. The retreat of the Laurentide ice sheet would have further contributed to "uncovering" more space in which these trees could begin to grow.



8. *Picea* was the most abundant plant taxon at Devils Lake during the Pliestocene, while *Quercus* has been most present during the Holocene.



9. Thirteen age controls are stored for this site with eleven of them being radiocarbon dates.

10. Two publications are listed for this site:

Maher, L.J., Jr. 1982. The palynology of Devils Lake, Sauk County, Wisconsin. Pages 119-135 in J.C. Knox, L. Clayton, and D.M. Mickelson, editors. Quaternary History of the Driftless Area. Field Trip Guide Book 5. University of Wisconsin-Extension, Geological and Natural History Survey, Madison, Wisconsin, USA. Notes: Prepared for 29th Annual Meeting Midwest Friends of the Pleistocene, Prairie du Chien, Wisconsin, May 22 and 23, 1982.

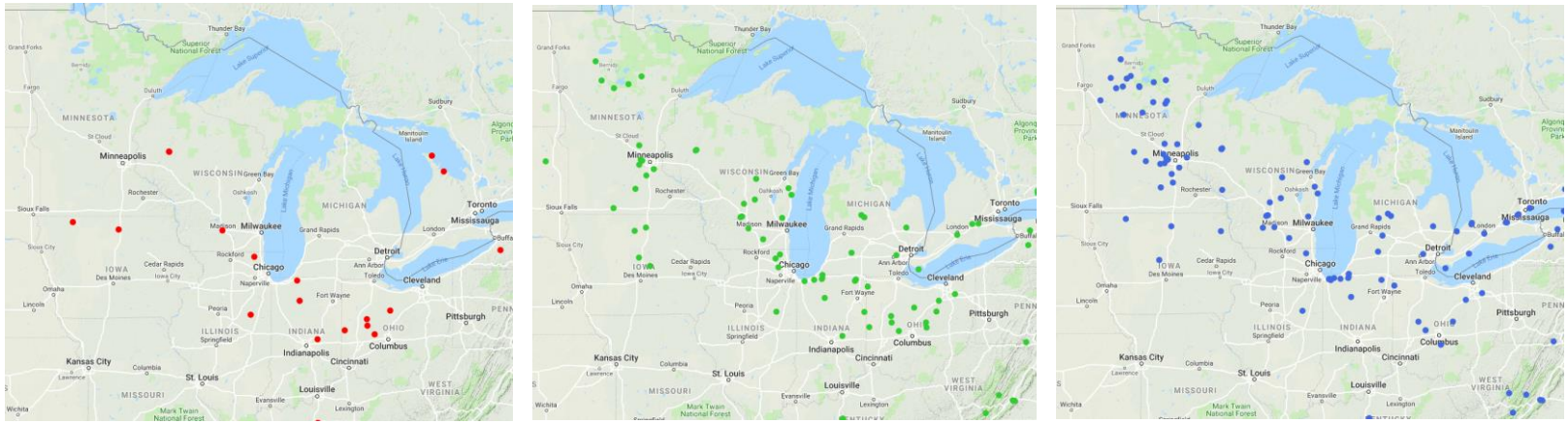
Bender, M.M., D.A. Baerreis, and R.A. Bryson. 1980. University of Wisconsin radiocarbon dates XVII. Radiocarbon 22(1):115-129. [DOI: 10.2458/azu_js_rc.22.599]

11. The most abundant taxon from a depth of 1 cm is *Quercus*.

12. The exercise for question 8 (pollen data from Devil's Lake) lead to me question how the abundance and spatial variation of two dominant vegetation taxa *Picea* and *Quercus* have changed over the past 15,000 years in the Midwest. Below is a time series showing where each of these taxa were found to have made up at least 20% of the pollen assemblage from each time range. By checking out these snapshots in time, it appears that the pollen data from Devil's Lake was recording a change in vegetation that was consistent throughout the Midwest, with *Picea* "migrating" northward and *Quercus* subsequently taking over that available ecospace.

15,000-12,000 years BP | 11,000-8,000 years BP | 5,000-2,000 years BP

Quercus



Picea