PaleoDigitization Working Group: Linking Ancillary Data to Specimen Records in Paleo Databases

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Why do we have e-catalogs?

• Retrieval
• Access, etc.
• Research—with existing fields
  – Georeferenced specimens
  – Relative abundances
  – Media and images
  – If we added other research data, the research value of our collections databases would increase
Stable isotopes

- Many museum fossils have been sampled for stable isotope data, e.g., $\delta^{13}C$, $\delta^{18}O$
- Add value to specimens for research
  - Paleodiets, paleoecology
  - Paleoclimates
- These are not linked directly to specimens in most databases (how about yours?)
Higher δ13C, δ18O

Lower δ13C, δ18O

Latitudinal Gradient

Modern-day C₄ Grasses
Pleistocene grazers (horses, bison) tooth enamel isotopes (MacFadden et al. 1999)—all based on values taken from catalogued museum collections.
The problem, or opportunity

- Literally tens of thousands of stable isotope data ($\delta^{13}C$, $\delta^{18}O$) have been taken on fossil collections over the past several decades.
- These isotope data are in isolated databases without integration or access (Dark Data).
- There is no unified attempt to integrate.
Challenge with ancillary data

• Wouldn’t it be nice to develop dedicated fields for data like stable isotopes to be attached directly to specimen records?
• Standard data fields would need to be developed.
• Legacy data from decades of research plus new measurements.
How would this happen?

• Research and collections community (requirement of sampling permission)

• Database program developers, e.g., Specify

So, is this important, and what would it take?

And not just for stable isotopes, but 14C dating, other geochemical analyses, etc.
So, if you are all quiet right now!

• Do your collections allow destructive sampling, e.g., for stable isotopes?
• What happens to the data that are produced from these specimens?
• Do you have requirements of the researcher?
• (Unlikely) Do you attach these kinds of data to your specimen records?