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ABSTRACT

Access to high quality reference material has been a limiting factor in the advancement of archaeobotanical research. However, advancements in web-based database technology and faster downloading times make online curation of archaeobotanical reference images feasible for the first time. We describe the establishment of an open-access online reference collection database (www.paleobot.org) for macrobotanical, microbotanical, and isotopic data to help to standardize and improve the identification of archaeobotanical remains.

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SURVEY RESULTS

Naomi Miller's 2010 survey

The level of confidence with which one is able to make an accurate identification of a given species is closely related to the size of an individual's reference collection. In 2010, Naomi Miller distributed an Archaeobotany Questionnaire (<http://www.sas.upenn.edu/~nmiller0/AbotQ.pdf>) to determine the state of current archaeobotanical research and identify areas in need of improvement.

Call for online reference collections

One of the major challenges listed by archaeobotanists in this survey was the lack of identification tools and reference collection images for their specific region and overall.

Need for unidentified forum

Several participants in Miller's 2010 survey expressed the need for a website dedicated to the identification of unknowns. The primary use of the current archaeobotany listserv has been to disseminate photographs of unidentified plant specimens. Paleobot.org has a special page devoted to the identification of unknown specimens.

Paleobot.org

Establishing open-access online reference collections for archaeological research: macrobotanical, microbotanical, and isotopic data

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CURRENT ONLINE SITES

There are currently a large number of web based resources available to archaeobotanists specializing in macro and microfossil remains.

Macrobotanical remains

Increasing numbers of flora and herbarium sheets have been digitized however only in a few instances do these contain high quality images of seeds which can be useful for as identification tools for paleoethnobotanists. Some exceptions to this include: Digital Atlas of the Netherlands and Discover Seeds. In addition, several paleoethnobotanists (e.g., George Willcox, Gayle Fritz) have created individual websites in which they have uploaded seed drawings and guides to assist in seed identification.

**Wood**

A number of useful websites exist for wood identification. Examples of these include Inside Wood which contains a large collection of reference collection photographs and an online identification key based on morphological characteristics.

**Phytoliths**

Only two websites, the University of Missouri Phytolith Database and the UCL Phytolith Teaching and Research Images, currently host large numbers of reference collection images for phytoliths.

Starch

There are currently no websites hosting reference collection images for starch.

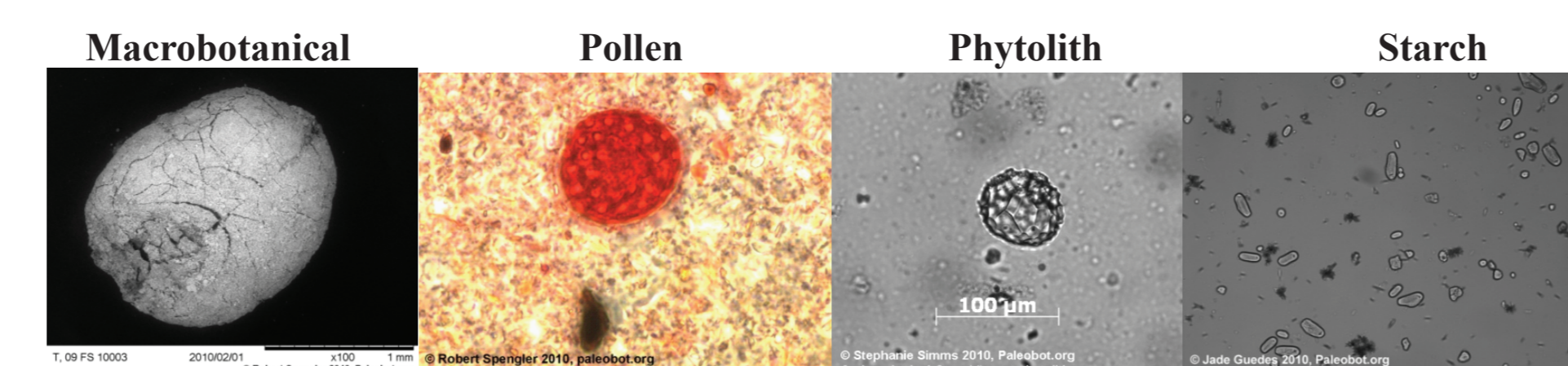
Practical Limitations of Current Online Resources

1. Closed access
2. Regional focus
3. Difficult searches
4. No unidentified forum
5. Few archaeological images

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DATA TYPES

Archaeobotanists work with a wide variety of macro- and microbotanical remains and require access to large reference collections to be able to effectively and accurately identify specimens. Paleobot.org curates images of the most commonly analyzed types of macro- and microbotanical remains to facilitate this process. In addition to image files, C, N, O, & H isotopic data may also be uploaded.



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IMAGE-BASED RESEARCH

Paleobot.org is structured to facilitate the kind of image-based research most relevant for today's archaeobotanists. At the click of a button you can search for a particular taxon or browse the entire image collection. You can also leave interactive comments on your own or other researchers' entries. Such comments might include 1) noting that a feature is diagnostic for a particular taxon, 2) commenting that a feature is rare or absent in most specimens, 3) updating taxonomic information to reflect new developments in botanical classification, etc.



Image Type: Photo
Image Credit: Self
Analyst: Jade d'Alpoim Guedes
Botanical Part: Seed

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INTELLECTUAL PROPERTY

We acknowledge that reference collections take considerable time and effort to construct. Paleobot.org takes a number of measures to ensure that the authors of these images are given proper citation and acknowledgment for their work.

In order to ensure that images placed on our website cannot be used in publications without the authors credit our website employs a software which will automatically embed copyright information (© [author's full name] [date], www.paleobot.org) on all downloaded images.



Contributors of images to the website can also gain exposure through our contributors page. Contributors to the website are required to create a personal profile in order to be able to submit images to the website.

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COLLABORATION

Collaboration

The costs and time associated with developing and maintaining an archaeobotanical research website have been deterrents to archaeobotanists wishing to upload reference collection material. Paleobot.org provides a forum where individuals can upload these images in a time efficient manner. We invite fellow researchers to submit their photographs and data to Paleobot.org and to participate in our uniquely collaborative archaeobotanical web-database.

Our Goal

The goal of Paleobot.org is to bring together a large academic community of archaeobotanists to share data, information, and expertise for the common purpose of improving the identification of archaeobotanical specimens. Our goal is not to duplicate the function of a herbarium, reference collection seeds, or slides. Rather, we hope that the images uploaded to the website can be used to assist researchers with preliminary identification, which can then be confirmed with use of herbaria, literature, or assistance of a specialist. It is not a replacement for herbaria or plant taxonomists, but a way to use them more effectively.