

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 openaccess online reference collection database (www.paleobot.org) for macrobotanical, microbotanical, and isotopic data to help to standardize and improve the identification of archaeobotanical remains.



Papers

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 over-

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	Macro Pollen	Phyto	Sta	rch Isot	ope
Records Unidentified	Welcome to Paleobot.org	Newest	Unident	ifieds	
Contributors	engaged in paleobotanical research.			Unknown	Jade
About Us	Our Goal			Record 10	d'Alpoim Guedes
FAQs Resources Publications	The goal of Paleobot.org is to bring together the archaeobotany community to share data, information, and expertise for the common purpose of improving the identification of archaeobotanical specimens. We provide a platform for researchers to upload and share reference collection images and to engage			Unknown Record 9	Lucie Mar
Citation Contact USERNAME: *	in collaborative identification of unknown archaeobotanical specimens. We also support the sharing of identification guides and informational videos on paleobotanical methods, and we encourage researchers to upload profiles that facilitate communication, networking, and collaboration.			Unknown Record 7	Leslie Bu:
Jade	How to use this website				r
PASSWORD: * ••••• Log in	Using the search bar at the top of the page, you can search or browse our collection of botanical images at any time. You can access our non-collection resources at any time by clicking the relevant resource displayed in the navigation bar at the left side of the page. If you choose to create a user profile, you will be able to upload your own images, leave comments on other submissions, and	Newest	Records	\$	
Create new account Request new password	bookmark images of interest. You will also be able to access our Papers section of the website, where members can upload and share PDF's of their unpublished work.	and the second s	0	Hordeum vulgare 2	Amanda Henry
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Paleobot org	This work is licensed under a Creative Commons Attribution 3.0 Unported License.	Phyto	Sta	rch Isot	ope

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Paleobot.org Establishing open-access online reference collections for archaeological research: macrobotanical, microbotanical, and isotopic data Jade d'Alpoim Guedes¹ and Christina Warinner²

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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. INSIDE WOOD

THE DIGITAL PLANT ATLAS

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.



INTELLECTUAL PROPERTY **IMAGE-BASED RESEARCH** We acknowledge that reference collections take considerable time and effort to con-Paleobot.org is structured to facilitate the kind of image-based research most struct. Paleobot.org takes a number of measures to ensure that the authors of these relevant for today's archaeobotanists. At the click of a button you can search images are given proper citation and acknowledgment for their work. for a particular taxon or browse the entire image collection. You can also leave interactive comments on your own or other researchers' entries. Such com-In order to ensure that images placed ments might include 1) noting that a feature is diagnostic for a particular taxon, on our website cannot be used in 2) commenting that a feature is rare or absent in most specimens, 3) updating publications without the authors taxonomic information to reflect new developments in botanical classification, credit our website employs a softetc.

Paleobot.org		Macro Pollen	Phyto Star	rch Isotope All Unidentified
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My account				
Log out	Ziziphus montana 1	Jade d'Alpoim Guedes	Sun, 01/01/1922	Rhamnaceae > Ziziphus > montana
	Ziziphus Yunnanensis 1	Jade d'Alpoim Guedes	Sun, 01/01/1922	Rhamnaceae > Ziziphus > Yunnanensis

Paleobot.org	Macro Pollen Phyto Starch Isotope Al				
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Contributors About Us FAQs	Submitted by Jade d'Alpoin Guedes on Sun, 08/22/2010 - 17:15 Common Name: Date Collected: Region: Gualou 栝楼 Wed, 06/01/2005 East Asia Location Collected: Collection Type: Cultural Period:				
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Citation Contact	Origin Details: From historic layers at the ritual center at the site of Jinsha, Chengdu City, Sichuan Province Species Native Homeland: Collector:				
Administer My account	East Asia Jade d'Alpoim Guedes Taxonomy Add Isotope Add Macro Add Phyto Add Pollen Add Starch				







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.



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.

ware which will automatically embed copyright information (© [author's full name] [date], www.paleobot.org) on all downloaded images.



COLLABORATION

Collaboration