

**Robert S. Harbert**

American Museum of Natural History  
Sackler Institute of Comparative Genomics (540)354-8104  
Central Park West & 79<sup>th</sup> St., rharbert@amnh.org  
New York, NY 10024 rsh249@cornell.edu

**Current Position**

**Gerstner Scholar in Bioinformatics and Computational Biology** July 2016 - present  
Sackler Institute for Comparative Genomics  
American Museum of Natural History

**Education**

***Ph.D. Plant Biology, concentration in Systematics.***

*Cornell University, School of Integrated Plant Science, Section of Plant Biology, Ithaca, NY*  
Advisor: Dr. Kevin C. Nixon 2011- June 2016.

***B.S. Biology***

*Roanoke College, Department of Biology, Salem, VA* 2007-2011  
Advisor: Dr. Leonard Pysh

**Current Research Areas**

Reconstructing climate from plant fossil data. Pollen and macrofossils at least going back to the Eocene can usually be identified to modern clades and therefore are useful within the CRACLE (Harbert and Nixon, 2015) framework for paleoclimate estimation. Development of associated informatics methods and alternative probability frameworks are ongoing.

Using results from paleoclimate/paleobotanical studies to better understand the response of vegetation to changes in the earth's climate system. Looking for analogs to modern climate change especially in Late Quaternary deglacial fossil records. Current work using the USGS Packrat Midden Microfossil Database (<http://geochange.er.usgs.gov/midden/>) is generating robust quantification of the Late Pleistocene - Holocene climate and associated changes in the vegetation of the American west.

Sequencing ancient DNA from packrat middens and other mammal fecal deposits for the profiling of fossil plant communities. Massively parallel sequencing by synthesis technologies are well suited for sequencing DNA from samples with highly degraded molecules. Fossil DNA from the Pleistocene is now suitable for analysis and the information from such analyses should be able to identify organisms from the DNA left in these deposits, even from trace amounts of material. A complementary approach using traditional morphological analyses as well as aDNA identification is likely to yield a more robust characterization of paleovegetation. aDNA from plants in midden deposits could be extremely useful in developing time-lapse phytogeographic characterizations of specific plant taxa through the Last Glacial Maximum. To achieve these goals I have become a member of the Packrat Midden Fossil working group hosted by Julio Betancourt of the USGS.

**Publications and Presentations**

Martinez, C., T.Y.S. Choo, D. Allevato, K. Nixon, W. Crepet, **R. Harbert**, C. Daghljan. 2016. *Rariglanda jerseyensis* a new ericalean fossil flower from the Late Cretaceous of New Jersey. *Botany* 94:

747–758 [dx.doi.org/10.1139/cjb-2016-0062](https://doi.org/10.1139/cjb-2016-0062)

- Harbert, R.S.**, and K.C. Nixon. 2016. Applications of a novel model (CRACLE) for the estimation of >30,000 years of paleoclimate using packrat (*Neotoma* spp.) midden plant macrofossils from the American Southwest. 33Rd Northeast-Midcontinent Paleobotanical Colloquium, Cornell University, Ithaca, NY May 13-15, 2016.
- Harbert, R.S.**, and K.C. Nixon. 2015. Climate reconstruction analysis using coexistence likelihood estimation (CRACLE): A method for the estimation of climate using vegetation. *American Journal of Botany*, doi:10.3732/ajb.1400500
- Harbert, R.S.**, A.H.D. Brown, and J. Doyle. 2014. Climate Niche Modeling in the Perennial *Glycine* (Leguminosae) Allopolyploid Complex. *American Journal of Botany* 101(4):710-721.
- Harbert, R.S.**, and J. Doyle. Climate niche, invasiveness, and allopolyploidy: The case of perennial *Glycine* (Leguminosae). Presentation, Botany 2013, New Orleans, LA
- Pysh, L., N. Alexander, L. Swatzyna, and **R. Harbert**. 2012. Four alleles of AtCESA3 form an allelic series with respect to root phenotype in *Arabidopsis thaliana*. *Physiologia Plantarum* 144:369-381.
- Harbert, R.S.** Growth and Nutrient Accumulation Responses to Phosphorus Deficiency in Cellulose Synthase Mutants of *Arabidopsis thaliana*. Poster presentation, 2011 Meeting of the American Society of Plant Biologists, Minneapolis, MN
- Harbert, R.S.** Root architecture responses to phosphorus in cellulose synthase mutants of *Arabidopsis thaliana*. Poster presentation, 2010 Meeting of the American Society of Plant Biologists, Montreal, ON, Canada

### **Outreach Activities**

PlantingScience Master Plant Science Team Mentor - FA 2016  
(See: <https://www.plantingscience.org/> for program details)

### **Awards and Honors**

Outstanding Teaching Assistant Award, 2014-2015, College of Agriculture and Life Sciences (CALS), Cornell University, Ithaca, NY 14850.  
Student Travel Award from the Ecological Section of the Botanical Society of America, 2013  
*Phi Beta Kappa* Honors Society, 2011  
Summer Undergraduate Research Fellowship, 2010. American Society of Plant Biologists.

### **Relevant professional websites and products**

GitHub — [github.com/rsh249](https://github.com/rsh249)  
Google Scholar — <https://scholar.google.com/citations?en&user=uhRJO5kAAAAJ>  
ResearchGate — [https://www.researchgate.net/profile/Rob\\_Harbert2](https://www.researchgate.net/profile/Rob_Harbert2)

### **Professional organizations**

The Botanical Society of America 2013 – present

### **Teaching Experience** *(In order from most recent)*

*Graduate Teaching Assistant* – BioG1445 Introduction to Comparative Physiology – Autotutorial, Cornell University, SP 2016. Instructor: Dr. Darlene Campbell.

*Graduate Teaching Assistant* – BioPL2300 Global Plant Biodiversity and Vegetation. FA2015 and J2016 (Field Section). Instructor: Dr. Kevin Nixon

*Graduate Instructor* – BioPL6410 Laboratory in Plant Molecular Biology, Cornell University, FA2015.

*Graduate Teaching Assistant* – BioG1445 Introduction to Comparative Physiology – Autotutorial, Cornell University, FA 2105. Instructor: Dr. Darlene Campbell.

*Graduate Teaching Assistant* - BioPL2420 Plant Function and Growth, Cornell University, SP2015. Instructor: Dr. Peter Davies.

*Graduate Teaching Assistant* – BioPL/Hort 2430 Cultivated Plant Taxonomy, Cornell University, FA 2014. Instructor: Dr. Melissa Luckow

*Graduate Teaching Assistant* - BioPL2490 Hollywood Biology: Science and Cinema, Cornell University, SP 2014. Instructor: Dr. Michael Scanlon

*Graduate Teaching Assistant* - BioPL2470 Economic Botany: Plants and People, Cornell University, FA 2013. Instructor: Dr. Melissa Luckow

*Graduate Teaching Assistant* - BioPL2420 Plant Function and Growth, Cornell University, SP 2013. Instructor: Dr. Peter Davies.

*Graduate Teaching Assistant* – BioPL2410 Introductory Plant Biodiversity and Evolution, Cornell University, FA 2012. Instructors: Dr. Karl Niklas, Dr. Tom Silva

*Undergraduate Teaching Assistant*: BIO280 Animal Biology, Roanoke College, SP 2011. Instructor: Dr. Darwin Jorgensen.

*Undergraduate Teaching Assistant*: BIO120 Introduction to Biology, Roanoke College, FA 2010. Instructor: Dr. Michael Wise.

*Undergraduate Teaching Assistant*: BIO125 Biodiversity, Roanoke College, SP 2010. Instructor: Dr. Rachel Collins

*Undergraduate Teaching Assistant*: BIO280 Animal Biology, Roanoke College, FA 2009. Instructor: Dr. Darwin Jorgensen.