

CENTER FOR BIOLOGICAL RESEARCH COLLECTIONS (CBRC)

Mission

The Center enhances collection-based research and education in biodiversity, zooarchaeology, paleontology, and related disciplines by facilitating digital research within the College of Arts and Sciences and by providing shared infrastructural and data management support for IU's biological research collections. The Center focuses on collections of biological specimens, including fossils and archaeological remains, that have shared taxonomic, geographic, and temporal metadata requirements. The Center also coordinates policy, develops digital infrastructure, provides shared resources, facilitates educational outreach, and serves as a collaborative research platform for IU's biological and paleontological specimen collections. It helps support data management and digitization for research grants that use IU's collections. The Center interfaces with partners to develop the specific digital infrastructure needed for biological collections and collaborates with other collections to develop shared infrastructure and best practices.

CBRC Management

The Center is run by a Director and Executive Committee consisting of the faculty and research scientists who oversee IU's Biological Collections.

- **Claudia C. Johnson**, Director, (Earth and Atmospheric Sciences);
- **P. David Polly**, IU Paleontology Collection, (Earth and Atmospheric Sciences);
- **Laura L. Scheiber**, William R. Adams Zooarchaeology Lab (Anthropology).

CBRC Employees

- **Dr. Jessica Miller-Camp (starts Nov 1)**, Project coordinator. Provides training in digitizing equipment and digital processing; provides support and training for the *Specify* collection database system; finds solutions for data management and digital research problems; works with IUB Libraries and UITS on development of digital repository.
- **Open**, Graduate RA manager of William R. Adams Zooarchaeology Collection. Manages hourly workers and volunteers, prioritizes and supervises curatorial tasks, trains students on digitizing equipment.

CBRC Priorities for 2018-19

- *IMAGO Digital Archive*. In collaboration with Libraries and UITS, develop permanent digital archive for scans, photographs, and other digital representations of biological objects. <http://imago.indiana.edu/>
- *Specify Digital Collection Management Database for IU collections*.
- *Training in Digital Research*.

- Two new external grant proposals for digitization of and research on IU collections.

External Grants

1. *National Science Foundation Research Grant. DBI-1702289. 2017-2019.* Digitization PEN: Paleoniches on the western Cincinnati arch, the Ordovician of Indiana. G. Motz (PI), C. Johnson, and P. D. Polly (co-PIs). (\$101,388).
2. *Institute of Museum and Library Services Grant MA-30-16-0458-16. 2016-2018.* ACCESSioning at Indiana University: promoting digital access and (re-)discovery of the IU Paleontology Collection. Gary Motz (PI), P. D. Polly, C. C. Johnson (co-PIs) (\$112,505).
3. *National Science Foundation Grant DBI-0 0846697. 2009-2013.* Infrastructure upgrade, curation and data basing of Indiana University Collections. L.L. Scheiber (PI), P.D. Polly, C. Johnson and E. Elswick (Co-PIs). (\$475,302).

Specimens digitized (to date)

IU Herbarium (photos):	153,751
IU Paleontology (photos):	2,918
IU Paleontology (3D scans):	60
IU Zooarchaeology (3D scans):	110

Publications (2017-18)

1. Kennedy, J. Ryan. 2017. The Fresh and the Salted: Chinese Migrant Fisheries Engagement and Trade in Nineteenth-Century North America. *Journal of Ethnobiology* 37(3):421-439.
2. Myers, Kelsey Noack. 2017. Indigenous Landscapes and Legacy Archaeology at Ouiatenon, Indiana. PhD Dissertation, Indiana University, Bloomington, Indiana.ming, Laramie.
3. Polly P.D. 2017. Morphometrics and evolution: the challenge of crossing rugged phenotypic landscapes with straight paths. *Vavilovskii Zhurnal Genetiki i Seleksii (=Vavilov Journal of Genetics and Breeding)*, **21**: 452-461
4. Polly, P. D. and G. J. Motz. 2017. Patterns and processes in morphospace: geometric morphometrics of three-dimensional objects. In: L. Tapanila and I. Rahman (eds.), *Virtual Paleontology. The Paleontological Society Papers* **22**: 71-99. Cambridge University Press, Cambridge, United Kingdom.
5. Polly, P. D. and O. B. Mock. 2018 (online 2017). Heritability: the link between development and the microevolution of molar tooth form. *Historical Biology*, **30**: 53-63.
6. Polly, P. D., J. Fuentes-Gonzales, A. M. Lawing, A. K. Bormet, and R. G. Dundas. 2017. Clade sorting has a greater effect than local adaptation on ecometric patterns in Carnivora. *Evolutionary Ecology Research*, **18**: 61-95.
7. Riley, Jenny. 2017. *Was Sloth The Ultimate Slow Food? An Archaeological Examination of Padre Nuestro Cavern, Dominican Republic*. PhD Dissertation, Indiana University, Bloomington, Indiana.
8. Scheiber, Laura L. 2017. *Bighorn Archaeology Summary Report of Investigations, Shoshone National Forest, Park and Fremont Counties, Wyoming, BHA2017-2*. Report to the Shoshone National Forest District Archaeologist.

9. Scheiber, Laura L. 2017. *Caldwell Creek Project 2013-2015, Interim Report: Shoshone National Forest, Fremont County, Wyoming, BHA2017-1*. Report to the Shoshone National Forest District Archaeologist.
10. Scheiber, Laura L. and Amanda Burt. 2017. Archaeology and Social Geography of Sunlight Basin, Wyoming. *University of Wyoming National Park Service Research Center Annual Report* 37(12):85-96. University of Wyo
11. Schnitzler, J., C. Theis, P. D. Polly, and J. T. Eronen. 2017. Fossils matter - understanding modes and rates of trait evolution in Musteloidea (Carnivora). *Evolutionary Ecology Research*, **18**: 187-200.
12. Seltmann, K., Lafia, S., Paul, D., James, S., Bloom, D., Rios, N., Ellis, S., Farrell, U., Utrup, J., Yost, M., Davis, E., Emery, R., Motz, G.J., Kimmig, J., Shirey, V., Sandall, E., Park, D., Tyrell, C., Collins, M., Thackurdeen, S., O'Leary, V., Prestridge, H., Evelyn, C., Larson, P., and Nyburg, B., 2018. Georeferencing for Research Use (GRU): An innovative geospatial training paradigm for biocollections researchers and data providers. *Research Ideas and Outcomes*.

Presentations (2017-18)

1. Buchanan, Meghan E., and Mary Wernette. Early Mississippian Faunal Practices at Angel Mounds: Results from the Analysis of Feature 37. Paper presented at the 61st Annual Midwest Archaeological Conference, Indianapolis, Indiana, October, 2017.
2. Burt, Amanda A. Animals Understood: Ethnohistoric Investigations into Indigenous Peoples and the Perceived Powers of the Natural World. Invited participant in "At the Crossroads of Plains American Indian Culture, History, and Language: Exploring Contributions of Raymond J. DeMallie and Douglas R. Parks in Anthropological and Archaeological Discourse." Presented at the Plains Anthropological Conference, Bismarck, North Dakota, October 2017.
3. Burt, Amanda A. Friend or Foe: A Statistical Approach to Analyzing Dental Microwear Data of Domestic Dogs and Wild Canids. Presented at the 75th annual meeting of the Plains Anthropological Society, Bismarck, North Dakota, October 2017.
4. Burt, Amanda A. Hard Fare: Investigating Dog Teeth to Interpret the Value of a Dog among Northwestern Plains and Rocky Mountains. Invited participant in "Beyond Domestication: Investigations into the Human-Canine Connection." Presented at the 82nd annual meeting of the Society for American Archaeology, Vancouver, British Columbia, March 2017.
5. Burt, Amanda A. Need to Feed? Applying DMTA to Examine Ancient Canine Feeding Practices. Presented at the Indiana University Anthropology Graduate Student Association Symposium, Bloomington, Indiana, February 2017.
6. Christian, Sam and Laura L. Scheiber. "Wyoming Wildfire Reveals 'Massive' Shoshone Camp, Thousands of Artifacts": Results of Bighorn Archaeology's 2017 Work in the Caldwell Creek Drainage, Fremont County, Wyoming. Invited participant in "Into the West(ern Plains): Results of the 2017 Bighorn Archaeology Field School, Park and Fremont Counties, Wyoming." Presented at the Plains Anthropological Conference, Bismarck, North Dakota, October 2017.
7. Cory, Mackenzie J. Creating Childhood: Comparing an Idealized Childhood of High Plains Oral History with Early European Reports. Invited participant in "At the Crossroads of Plains American Indian Culture, History, and Language: Exploring Contributions of Raymond J. DeMallie and Douglas R.

- Parks in Anthropological and Archaeological Discourse.” Presented at the Plains Anthropological Conference, Bismarck, North Dakota, October 2017.
8. Cory, Mackenzie J. Embracing Pedagogy: Why the Archaeological Field School Matters in Today’s University System. Invited participant in “Into the West(ern Plains): Results of the 2017 Bighorn Archaeology Field School, Park and Fremont Counties, Wyoming.” Presented at the Plains Anthropological Conference, Bismarck, North Dakota, October 2017.
 9. Cory, Mackenzie J. Skin Lodges and Stone Circles: Re-examining Finnigan’s Models of Domestic Taphonomy. Presented at the Indiana University Anthropology Graduate Student Association Symposium, Bloomington, Indiana, February 2017.
 10. Fuentes-Gonzales, J., P.D. Polly, and E. Martins. A Bayesian phylogenetic ANCOVA: Dealing with uncertainty in the study of carnivoran limb coevolution. Evolution Annual Meeting, Montpellier, France.
 11. Hasenmueller, N.R., Hasenmueller, W.A., Motz, G.J., and Daniels, M.I.S. The Indiana Geologic Names Information System – A Stratigraphic Database. Presented at the Indiana Academy of Science annual meeting, Indianapolis, Indiana, March 2017.
 12. Hawley, Kirsten M. and Laura L. Scheiber. Photogrammetric Documentation of Site Features in the Bighorn Basin. Invited participant in “Into the West(ern Plains): Results of the 2017 Bighorn Archaeology Field School, Park and Fremont Counties, Wyoming.” Presented at the Plains Anthropological Conference, Bismarck, North Dakota, October 2017.
 13. Hellert, SM. Understanding the Causes of Phenotypic Integration Patterns in the Evolution of Flightless Birds. Presented at the Society of Vertebrate Paleontology Annual Meeting, Calgary, Alberta, October, 2017.
 14. Laherty, J. and Motz, G.J. Imago: Building a Biocollections Repository for Digital Preservation and Scientific Reproducibility. Presented at the Inaugural Digital Data in Biodiversity Research Conference. Ann Arbor, Michigan, June 2017.
 15. Laherty, J. and Motz, G.J. Responding to the Invisible Infrastructure: Research Libraries as Preservation Partners in the Curation of Physical Specimen Biocollections Data. Presented at the Society for the Preservation of Natural History Collections Meeting, Denver, Colorado, June 2017.
 16. Motz, G., C. Johnson, and P. D. Polly. Geological Society of America, Seattle, WA, Digital access(ion) of the Indiana University Paleontology Collection: leveraging resources from geoinformatics, distributed cyberinfrastructure, citizen science, and augmented reality. 22 October 2017
 17. Motz, G., W. Ng, K. Cook, J. Laherty, P. D. Polly, C. C. Johnson, J. K. Njau. Society for the Preservation of Natural History Collections Annual Meeting, Denver, Colorado, Starting from scratch: digitization of an entire collection ecosystem. 18 Jun3 2017.
 18. Polly, P. D. Department of Biological Sciences, Ohio University, “Functional traits, environments, and clades: at the interface of climate, ecology, and evolution”, 27 November 2017
 19. Polly, P. D. Belyaev Symposium, Russian Academy of Sciences, Novosibirsk, Russia. “Morphometrics and evolution: the challenge of crossing rugged phenotypic landscapes with straight paths”. 7 August 2017.
 20. Polly, P. D. Limb Symposium, Society of Vertebrate Paleontology Annual Meeting, Calgary, Alberta. “Macroecology of limbs: ecometrics, community assembly, and clade sorting in limb traits in Neogene Carnivora”. 23 August 2017.

21. Polly, P. D. Museum of Comparative Zoology, Harvard University. "Functional traits, environments, and clades: at the interface of climate, ecology, and evolution", 7 September 2017
22. Reese, A., K. Cook, P.D. Polly. IU Crossroads Symposium, Indiana University, Evaluating measurement error using fossil brachiopods and their 3D models. 31 March 2017.
23. Rhoda, D. and P. D. Polly. IU Crossroads Symposium, Indiana University, Phylogenetic supertree of fossil North American carnivores. 31 March 2017
24. Riley, Jenny. Results from a Bone Surface Modification Analysis of Sloth Bones from Padre Nuestro Cavern, Dominican Republic. Presented at the Society for American Archaeology annual meeting, Vancouver, British Columbia, March 2017.
25. Salomon, Madison, Josef Renton, Mackenzie J. Cory, and Peyton Lindley. There is No "I" in Archaeology: Bighorn Archaeology's Public Collaboration during the 2017 Field Season. Invited participant in "Into the West(ern Plains): Results of the 2017 Bighorn Archaeology Field School, Park and Fremont Counties, Wyoming." Presented at the Plains Anthropological Conference, Bismarck, North Dakota, October 2017.
26. Scheiber, Laura L. and Michael R. Peterson. Exploring Photogrammetry and Aerial Archaeology for Innovative Mapping and Surveying at Heart Mountain, Wyoming. Presented at the Society for American Archaeology Meeting, Vancouver, British Columbia, April 2017.
27. Scheiber, Laura L. Anthropology, History, and American Indian Studies at IU, Past and Present: Crossroads Discussion. Presented at the Indiana at the Crossroads of American Anthropology and History: Symposium in Honor Of Raymond J. DeMallie. Bloomington, Indiana, September 2017.
28. Van Alst, Emily C., Laura L. Scheiber, and Mackenzie J. Cory. Into the West(ern) Experience – They Ain't From These Parts: Using Fiction to Help Teach a Wyoming Archaeology Field School. Invited participant in "Into the West(ern Plains): Results of the 2017 Bighorn Archaeology Field School, Park and Fremont Counties, Wyoming." Presented
29. Van Alst, Emily C., Mackenzie J. Cory, Laura L. Scheiber. Surveying the Buffalo's Heart: Results of Bighorn Archaeology's 2017 Work on Heart Mountain. Invited participant in "Into the West(ern Plains): Results of the 2017 Bighorn Archaeology Field School, Park and Fremont Counties, Wyoming." Presented at the Plains Anthropological Conference, Bismarck, North Dakota, October 2017.