

# ASHLEY M. BURKETT, PH.D.

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## Summary

- Interdisciplinary geologist specializing in micropaleontology with research interests in paleoceanography, biostratigraphy and climate change.
- Experienced in lab and field research.
  - Experienced on analytical equipment (e.g. MicroCT, LA-ICPMS and SEM) and in training and mentoring students in the lab and at sea.
  - Research on the geology, biogeochemistry and paleoecology of seafloor methane hydrate deposits
  - Active scientist on nine research expeditions (121 days at sea), 4 of which were international expeditions, using a variety of ocean sampling equipment from CTDs and seafloor coring devices to the deep-sea submersible *Alvin* and ROV *Jason II*.

## Professional Preparation

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|---|--------------------|
| • Assistant Professor of Geology, Oklahoma State University | Aug 2018- Present  |
| • Adjunct Professor of Geology, Lock Haven University       | Aug 2016- May 2018 |
| • Postdoctoral Researcher, Indiana State University         | Aug 2015- May 2016 |
| • Lecturer, Eastern Illinois University                     | Jan-May 2014       |

## Education

- Ph.D. Spatial & Earth Sciences. Indiana State University. May 2015. "The Ecology, Biogeochemistry and Phylogeny of Methane Seep and Non-seep Benthic Foraminifera from the Pacific Margin"
- M.S. Earth & Quaternary Systems. Indiana State University. May 2011. "Comparisons of distributions and isotopic geochemistry of benthic foraminifera from seep and non-seep environments, offshore of Costa Rica"
- B.S. Geology; Environmental Science; Minor in Biology. Muskingum University. May 2008.

## Funding

- *In Review*. Doctoral New Investigator. American Chemical Society. *Fossils, Microtomography, and Machine Learning: applying X-ray tomography for fossil detection, visualization, automated thin section identification, and fossil-based interpretations in petroleum industry investigations*. Submitted October 18th, 2019. Amount requested \$110,000
- *Funded*. W. Storrs Cole. Geological Society of America. *Foraminifera: from morphology to DNA. An assessment of morphologic variability within and between populations using MicroCT*. Submitted February 18th, 2019. Amount requested \$8,000.
- *Unsuccessful*. Outreach and Education Grant. Paleontological Society. *Diving into Marine Paleontology*. March 2nd, 2019. Amount Requested \$2,500.
- *Unsuccessful*. Arthur James Boucot Research Grant. Paleontological Society. *Shaking up phylogenetic trees: Utilizing molecular analysis and MicroCT to assess foraminiferal morphology*. February 1st, 2018. Amount Requested \$5,320.
- *Funded*. Transformative Teaching Methods Using Resin Printing to Foster Three-Dimensional Thinking in Geology. OSU Arts and Sciences Student Technology Fee Proposal. October 19, 2018. \$12,397.
- *Funded*. Costa Rican Benthic Foraminiferal Stable Isotopic Values: A look into the past by comparison with modern analogs. Integrated Ocean Drilling Program Post Cruise Award. January 2014. \$15,000.
- *Funded*. The ecology and trace element composition of deep-sea benthic foraminifera living on the Australian: Applications for assessments of biodiversity and responses to past and present climate change. Indiana Space Grant Consortium. Graduate Fellowship. February 2012. \$12,000.

## Publications \*undergraduate \*\*graduate students #corresponding author

- In Prep. **Burkett, A.M.**, \*Roark, Erin, Pratt, R.B. Morphologic evidence of reproduction in deep-sea benthic, *Cibicides wuellerstorfi*, visualized with MicroCT. *Micropaleontology*.
- In prep. **Burkett, A.M.**, Rathburn, A.E., \*\*Minor, D., \*Lang, D., \*Bedrava, S.M., Martin, J.B. Ishman, S. E., Perez, M.E., Seasonality of Antarctic benthic foraminifera. *Deep-Sea Research I: Oceanographic Research Papers*
- In Prep. \*\*Willingham, J., #**Burkett, A.M.**, Rathburn, A.E., Schmidt, S., De Deckker, P. The ecology of deep-sea benthic foraminifera living on the Australian Margin. *Journal of Foraminiferal Research*.

- In Review. Burkett, A.M., Rathburn, A.E., Pratt, R.B., Holzmann. Insights into the Ecology of Epibenthic Calcareous Foraminifera from a Colonization Study at 4100m (Station M) in the NE Pacific Ocean. *Commemorative Volume of DSR-II in 2019/20*.
- In Review. Wanyi L., Rickaby, R.E.M., Hoogakker, B.A.A., Rathburn, A.E., **Burkett, A.M.**, Dickson, A.J., Martínez-Méndez, G., Hillenbrand, C.D., Zhou, X., Thomas, E., Lu, Z. I/Ca in epifaunal benthic foraminifera: a semi-quantitative proxy for bottom water oxygen used in a multi-proxy compilation for glacial ocean deoxygenation. *Earth and Planetary Science Letters*.
- 2018. Venturelli Ryan A., Rathburn Anthony E., **Burkett Ashley M.**, Ziebis Wiebke. Epifaunal Foraminifera in an Infaunal World: Insights Into the Influence of Heterogeneity on the Benthic Ecology of Oxygen-Poor, Deep-Sea Habitats. *Frontiers in Marine Science*.
- 2018. Rathburn, A. E., Willingham, J., Ziebis, W., Burkett, A. M., & Corliss, B. H. A New biological proxy for deep-sea paleo-oxygen: Pores of epifaunal benthic foraminifera. *Scientific reports*, 8(1), 9456.
- 2018. **Burkett, A.M.**, Rathburn, A.E., Pérez, M.E., Martin, J., Levin, L. A., Influences of thermal and fluid characteristics of methane and hydrothermal seeps on the stable oxygen isotopes of living benthic foraminifera. *Marine and Petroleum Geology*.
- 2016. **Burkett, A.M.**, Rathburn, A.E., Pérez, M.E., Martin, J., Levin, L.A. Colonization of over a thousand *Cibicidoides wuellerstorfi* (foraminifera; Schwager, 1866) on artificial substrates in seep and adjacent off-seep locations in dysoxic, deep-sea environments. *Deep-Sea Research I: Oceanographic Research Papers*, 117: 39-50.
- 2014. **Burkett, A.M.**, Rathburn, A.E., Pérez, M.E., Martin, J., Levin, L.A., Cha, H., Rouse, G.W. Phylogenetic placement of epibenthic foraminifera *Cibicidoides wuellerstorfi* (Schwager, 1886) from methane seeps and non-seeps habitats on the Pacific margin. *Geobiology*. DOI: 10.1111/gbi.12118
- 2014. Parsons-Hubbard, K., Hubbard, \*D., Tems, C., **Burkett, A.M.** "The Relationship Between Modern Mollusk Assemblages and Their Expression in Subsurface Sediment in a Carbonate Lagoon, St. Croix, US Virgin Islands." *Approaches to Understanding Fossil Organisms*. Springer Science & Business Media Dordrecht.
- 2013. Harris, R.N., Sakaguchi, A., Petronotis, K., Baxter, A.T., Berg, R., **Burkett, A.**, Charpentier, D., Choi, J., Diz Ferreiro, P., Hamahashi, M., Hashimoto, Y., Heydolph, K., Jovane, L., Kastner, M., Kurz, W., Kutterolf, S.O., Li, Y., Malinverno, A., Martin, K.M., Millan, C., Nascimento, D.B., Saito, S., Sandoval Gutierrez, M.I., Screaton, E.J., Smith-Duque, C.E., Solomon, E.A., Straub, S.M., Tanikawa, W., Torres, M.E., Uchimura, H., Vannucchi, P., Yamamoto, Y., Yan, Q., and Zhao, X. "Expedition 344 summary." *Proc. IODP/ Volume*. Vol. 344.
- 2013. Harris, R.N., Sakaguchi, A., Petronotis, K., Baxter, A.T., Berg, R., **Burkett, A.**, and others. "Input Site U1414." *Proc. IODP/ Volume*. Vol. 344.

- 2013. Harris, R.N., Sakaguchi, A., Petronotis, K., Baxter, A.T., Berg, R., **Burkett, A.**, and others. "Input Site U1381." *Proc. IODP/ Volume*. Vol. 344. 2013.
- 2013. Harris, R.N., Sakaguchi, A., Petronotis, K., Baxter, A.T., Berg, R., **Burkett, A.**, and others. "Frontal prism Site U1412." *Proc. IODP/ Volume*. Vol. 344.

### Students Mentored in Research

- DeAndre Prince, *Undergraduate*. Fossilization of dinosaurs at Black Mesa: Insights into recrystallization and diagenesis associated with "Fancy Mud". August 2019-present
- Josh Anadu, *Undergraduate*. August 2019-present
- Christina Hulett, *Undergraduate*. January 2018-present
- Erin Roark, *Undergraduate*. MicroCT analysis of *Cibicidoides wuellerstorfi*: insights into ontogeny and population variation. August 2018-present
- Dakota Hoover, *Undergraduate*. August 2018-present
- Eric Anderson, *Masters*. Analysis of foraminiferal ecology across an oxygen, grain size and TOC gradient off the coast of San Diego, CA. August 2018-present
- Trenity Ford, *Masters*. Trace elemental comparisons between seep and non-seep benthic foraminifera. August 2018-present
- Adam Orcutt, *Undergraduate*. Foraminiferal Reconstructions of U1413 From IODP EXP 344 Offshore Costa Rica. March 2017- May 2018
- Christopher Lane, *Undergraduate*. The Effect of CellTracker Green on Euglena From Sites of Acid Mine Drainage Near Terre Haute, In. 2016
- Matt Bly, *Undergraduate*. Preliminary Ecology Investigations of Benthic Foraminiferal Calcite Offshore Costa Rica. 2015-2016
- Matt Bly, *Undergraduate*. Foraminiferal protoplasm degradation experiments at active and inactive locations of Hydrate Ridge, OR. 2013
- James Hardy, *Undergraduate*. Vertical Distribution Patterns of live (Stained) Benthic Foraminifera Associated with Methane Seeps and Non-Seep Habitats at Hydrate Ridge. 2012
- Nick Spendel, *Undergraduate*. Foraminiferal colonization and protoplasm degradation experiments at active and inactive locations of Hydrate Ridge, OR. 2011

### Teaching Experience

- Storia of Dinosauria. 30 Students. Oklahoma State University Spring 202
- Graduate Course Paleontology of Depositional Sequences. 90SU Fall 2019
- Paleontology. 6 Students. Oklahoma State University Spring 2019

- Physical Geology I Lecturer. 60-80 Students. Lock Haven University. Fall 2016 - Spring 2018
- Earth Science Lecturer. 11 Students. Indiana State University. Spring 2016
- Introduction to Environmental Science Lecturer. 29 Students. Indiana State University Spring 2016
- Earth Science Lecturer. 19 Students. Indiana State University Fall 2015
- Introduction to Environmental Science. Lecture, two sections of 65 Students and 4 laboratories of 30-33 Students. Eastern Illinois University. Spring 2014
- Historical Geology Lecture. 11 Students. Indiana State University Fall 2013

### Laboratory and Selected Field Experiences with Students

- Physical Geology I. Lock Haven University. 10-28 Students Fall 2016 - Present
- Introduction to Environmental Science Laboratory Instructor. 30 Students. 2014-2015
- Historical Geology Laboratory. 30 Students. Indiana State University Spring 2011 & Fall 2013
- Introduction to Environmental Science Laboratory. 30 Students. Indiana State University Spring 2010
- Structural Geology Field Trip to Arches National Park. Indiana State University. Spring 2015
- ENVI110 Lab Field Trip to the Wabashiki- Vigo County Riverscape Wetland Reserve for soil and water sampling. Indiana State University. Fall & Spring 2010-2015
- Historical Geology. Madison Indiana Fossil Field Trip. Indiana State University Spring 2009-2015
- Introduction to Geology Field Trip to reinforce basic concepts learned in lecture. Eastern Illinois University. Spring 2014

**Abstracts** \*undergraduate \*\*graduate students I assisted in training, data analysis and presentation

- 2019. **Burkett, A.M.**, Rathburn, A.E., Holzmman, M. Shaking up Phylogenetic Trees: Utilizing Molecular Analysis and MicroCT to Assess Foraminiferal Morphology, *Annual Geological Society of America Meeting*. Phoenix, AZ.
- 2019. \*Roark, E., and **Burkett, A.M.** CLASSIFYING MEGALOSPHERIC AND MICROSPHERIC CIBICOIDES WUELLERSTORFI *Annual Geological Society of America Meeting*. Phoenix, AZ.

- 2019. \*\*Ford, T., **Burkett, A.M.**, \*Hulett, Christina and \*Roark, E. OVERKILL: A Board Game for Teaching Pleistocene Megafaunal Extinction and the Overkill Hypothesis. *Annual Geological Society of America Meeting*. Phoenix, AZ.
- 2018. **Burkett, A.M.**, Rathburn, A.E. Holzmann, M., Pawlowski, J., Smith Jr., K.L. Abundant Colonization of Calcareous Foraminifera, *Cibicidoides wuellerstorfi* and *Pyrgo*, at 4,000m (Station M) in the Pacific Ocean. *Annual Geological Society of America Meeting*. Indianapolis, IN.
- 2015. **Burkett, A. M.**, Rathburn, A.E., DeDeckker, P., Perez, E.M. Trace Elemental Geochemistry of Pacific Margin Seep and Non-seep Benthic Foraminifera. *American Geophysical Union Meeting*
- 2014. **Burkett, A.M.**, Rathburn, A.E., \*\*Venturelli, R.A., Perez, M.E., Levin, L.A., Spental, N. From ecology to geochemistry to DNA: New information about *Cibicidoides wuellerstorfi*. *American Geophysical Union Meeting*
- 2014. Rathburn, A.E, \*\*Willingham, J., Corliss, B.H., **Burkett, A.M.**, Ziebis, W., A New Approach to Reconstruct Ancient Bottom Water Oxygen Levels. *American Geophysical Union Meeting*
- 2013. **Burkett, A. M.**, Rathburn, A E, Perez, E M, Martin, J.B., Levin, L.A. Colonization of raised substrate by epibenthic foraminifera in seep and adjacent non-seep locations of Hydrate Ridge, OR. *Annual Geological Society of America Meeting*. Denver, CO.
- 2013. **Burkett, A.M.**, Rathburn, A.E., Pérez, M. E., Martin, J.B., Levin, L.A., Stable isotopic variability of *Cibicidoides wuellerstorfi* (elevated epibenthic foraminifera) from Costa Rican seeps. *11<sup>th</sup> International Conference on Paleoceanography*. Barcelona, Spain.
- 2013. **Burkett, A.M.**, Rathburn, A.E., Pérez, M. E., Martin, J.B., Levin, L.A., The stable isotopic composition of *Cibicidoides wuellerstorfi* (elevated epibenthic foraminifera) from methane seeps in the Pacific. *WiscSIMS Workshop- High Resolution Proxies of Paleoclimate*. Madison, WI.
- 2012. \*Hardy, James, **Burkett, A. M.**, Rathburn, A E, Perez, E M, Levin, L A, Orphan, V, Rouse, G. 2012.Vertical Distribution Patterns of live (Stained) Benthic Foraminifera Associated with Methane Seeps and Non-Seep Habitats at Hydrate Ridge. *Annual Geological Society of America Meeting*. Charlotte, NC.
- 2012. \*\*Willingham, J., Rathburn, A.E., **Burkett, A.M.**, \*Paddack, B.D., Perez, E.M., Schmidt, S., and DeDeckker, P., 2012. The Distribution of Deep-Sea Benthic Foraminifera Living Along the Southern Margin of Australia. *Annual Geological Society of America Meeting*. Charlotte, NC.
- 2012. \*Paddack, B.D., Rathburn, A.E., Ziebis, W., **Burkett, A.M.**, Perez, E.M., \*\*Willingham, J., and Bedrava, S. Living (stained) benthic foraminiferal assemblages along a depth transect off the coast of southern California. *Annual Geological Society of America Meeting*. Charlotte, NC.
- 2010. **Burkett, A. M.**, Rathburn, A.E, Perez, M.E., Levin, L.A., Rouse, G.W., Orphan, V.J., Martin, J.B., Wrightsman, B. 2010. Comparisons of vertical distribution patterns of benthic foraminifera at sites of active methane seepage and adjacent non-seep sites off Costa Rica. *FORAMS 2010 International Symposium on Foraminifera Abstracts with Program*. p.66.

- 2008. Parsons-Hubbard, K. **Burkett, A M**, Chamlee, S, Klinmann, M, Tems, C, Hubbard, D. Evolution of a Holocene Reef-Lagoon System: St. Croix, U.S. Virgin Islands. *Joint Meeting of the Geological Society of America, Soil Science Society of America, American Society of Agronomy, Crop Science Society of America, Gulf Coast Association of Geological Societies with the Gulf Coast Section of SEPM.*
- 2008. **Burkett, A.M.** Taphonomy of mollusk species found in lagoonal cores of Smuggler's Cove, USVI. *21st Annual Keck . Symposium.* 162-165.

### **Selected Presentations**

- Burkett, A. M. Comparisons of Benthic Foraminifera from Methane Seep and Non-seep Environments of the Pacific Margin. *Invited Speaker.* University of Wisconsin, Stephens Point. April 22<sup>nd</sup> 2015
- Burkett, A. M. Geochemistry of Benthic Foraminifera from Pacific Methane Seeps. *Spring Seminar Series. Indiana State University.* April 9<sup>th</sup> 2015
- Burkett, A. M. Earth's previous tenants. *Earth day Mini Talk presentation.* Eastern Illinois University. April 22<sup>nd</sup> 2014
- Burkett, A. M. Exploring Oases in the Deep-Sea with ALVIN and JASON. *Sapphire Coast Marine Discovery Centre.* Eden, Australia. May 31<sup>st</sup> 2013

### **Shipboard Experience**

- Southern California seafloor sampling. *RV Oceanus* July 2019
- Southern California seafloor sampling. *RV Sally Ride* July 2018
- IODP Leg 344. CRISP 2. Costa Rica Seismogenesis Project. Sailed as micropaleontologist specializing in benthic foraminifera. October- December 2012
- SS2011-T04 Southern Australia. Sailed as the scientist in charge of multicore operations. November 2011
- AT18-10 Hydrate Ridge II. Involved in sample and experiment recovery using the ROV *Jason II*. September 2011
- NH1108 San Diego. Sailed as a scientist in charge of site selection and multicore operations for the night shift. During this cruise I oversaw the training and mentoring of students new to ocean sampling operations. July 2011
- SS2011-T01 Tasman Sea. Sailed as an American scientist demonstrating multicore techniques to ANU scientists with their newly acquired Oceans Instrument Multicore. May 2011
- AT15-68 Hydrate Ridge. Involved in sample recovery and experiment deployment using the deep-sea submersible *Alvin*. July 2010

- AT 15-54. CROCKS II. Involved in sample experiment recovery using the deep-sea submersible *Alvin*. January 2010
- GEOFORM 2009. Involved in seafloor mapping and sample recovery with dredging. September 2009
- The University of San Diego Student Research Expedition. Introduced to ocean sampling including CTDs, multicoreing, plankton tows, etc. August 2009



## Professional Development

- OSU Faculty Reads. *How Humans Learn: The Science and Stories Behind Effective College Teaching*. Spring 2019
- UNLOS OOI Coastal Arrays Workshop January 5-7 2016
- Pedagogy and Technology in the Modern Paleontology Classroom Short Course October 2018
- New Tenure-track and Career-track Faculty Professional Development: ITLE Oklahoma State University August 2018
- WiscSIMS High Resolution Proxies of Paleoclimate June 2013
- IODP Short Course on Shipboard Sedimentology. October 1-4, 2012
- PADI Open Water Scuba Certified 2006-Present

## Selected Outreach Events

- Reidinger, N., Burkett, A.M., Marine Geology Camp with the Wondertorium. July 24-36th, 2019.
- Rocks! Will Rogers 4th grade. April 23rd, 2019.
- Edible Sedimentary Rocks. Will Rogers Elementary. 2nd Grade. October 2018
- Geology Rocks! The Arboretum at The Pennsylvania State University. June 2017
- Igneous Rocks. The Childcare Center at Hort Woods, Penn State University. March 2017
- Let's Talk about the Ocean! Talk and live fish viewing and invertebrate touch tank. Vigo County Head Start for children age 3-5. 2015
- ScieGirls panelist at the Terre Haute Children's Museum event. 2015
- Assisting in the curating of a Mammoth Fossils donated to the Terre Haute Children's Museum. July-present.
- Science Camp at the Terre Haute Children's Museum. Talk Title: Diving Deep to Explore the Ocean. July 29th 2015
- Science Camp at Indiana State University. Ocean related topics. July 22nd 2015, 2014, 2013.
- DeVaney Elementary Kindergarten presentation: Oceans and Ocean Creatures. May 27th 2015
- North-Central Section Undergraduate Research Grant reviewer. April 15th 2015, 2014
- Riverine Evolution: Hand-on Activities with Stream Tables. College Challenge Program at Indiana State University. Advanced placement courses for Rockville High School Students. March 9th 2015
- Science Fair Judge. Woodrow Wilson Middle School. February 18. 2015; St. Patrick Elementary. February 2011.

- Stream Table and Wave Erosion Laboratory. College Challenge Program at Indiana State University. Advanced placement courses for Turkey Run High School Students. November 10th 2014.

## Service

- Media and Branding Committee. Chair. OSU 2018-present
- Student Enrichment Committee. OSU 2018-present
- Space Committee. OSU 2018-present
- Student Exam Committee. OSU 2018-present
- Undergraduate Curriculum Committee. OSU 2018-present
- North-Central Geological Society of America Section. 2016-present  
Undergraduate Research Grant Coordinator.

## Affiliations/Memberships

- Paleontological Society 2018-present
- Association for Women Geoscientists 2014-present
- Association of Professional Geologists 2013-present
- American Geophysical Union 2012-present
- Cushman Foundation for Foraminiferal Research 2009-present
- Geological Society of America 2008-present

## References

- Dr. Sue Goldstein. University of Georgia [sgoldst@gly.uga.edu](mailto:sgoldst@gly.uga.edu) 706-542-2397
- Dr. Anthony Rathburn. CSU Bakersfield [arathburn@csu.edu](mailto:arathburn@csu.edu) 661-654-3281
- Dr. Elena Perez. Natural History Museum in London. [E.Perez@nhm.ac.uk](mailto:E.Perez@nhm.ac.uk)
- Dr. Paula Diz Ferreiro. University of Vigo. [pauladiz@vigo.es](mailto:pauladiz@vigo.es)
- Dr. Diane Burns. Eastern Illinois University. [dmburns@eiu.edu](mailto:dmburns@eiu.edu) 217-581-2626
- Dr. Jennifer Latimer. Indiana State University. [Jen.Latimer@indstate.edu](mailto:Jen.Latimer@indstate.edu). 812-237-2254