

## Jocelyn A. Sessa

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**Current:** Assistant Curator of Invertebrate Paleontology, Academy of Natural Sciences, & Assistant Professor, Department of Biodiversity, Earth & Environmental Science of Drexel University.

**Past Positions:**

2016 to 2017 Senior Scientist in Paleontology & Education, American Museum of Natural History.

**Postdoctoral Fellowships:**

2012 to 2016 Departments of Paleontology & Education, American Museum of Natural History.

2010 to 2012 Department of Paleobiology, Smithsonian National Museum of Natural History.

2009 to 2010 Department of Earth Sciences, Syracuse University.

**Education:**

Ph.D., 2009 Department of Geosciences, Pennsylvania State University, University Park, PA.

M.S., 2003 Department of Geology, University of Cincinnati, Cincinnati, Ohio.

B.A., 2000 Department of Geological Sciences, State University of New York at Geneseo, Geneseo, NY. *Cum laude*, minor in Environmental Studies.

**Publications** (\* indicates student author; † indicates corresponding author):

Buczek, A.J.\*, Hendy, A., Hopkins, M. **Sessa, J.A.**† (*in press*) On the reconciliation of biostratigraphy and strontium isotope stratigraphy of three southern Californian Plio-Pleistocene formations. *Geological Society of America Bulletin* 132 ; doi.org/10.1130/B35488.1.

Oakes, R.O., **Sessa, J.A.** (*in press*) Determining how biotic and abiotic variables affect the shell condition and parameters of *Heliconoides inflatus* pteropods from a sediment trap in the Cariaco Basin. *Biogeosciences*.

Oakes, R.O., Hill Chase, M., Siddall, M.E., **Sessa, J.A.** (2020) Testing the impact of two key scan parameters on the quality and repeatability of measurements from CT scan data. *Palaeontologia Electronica* 23(1):a07; doi.org/10.26879/942.

Ferguson, K.\*, MacLeod, K.G.†, Landman, N.H., **Sessa, J.A.**† 2019. Evaluating growth and ecology in Baculitid and Scaphitid ammonites using stable isotope sclerochronology. *Palaios* 34:317-329; doi.org/10.2110/palo.2019.005.

O'Leary, M.A., Bouare, M.L., Claeson, K.M., Heilbronn, K., Hill, R.V., McCartney, J., **Sessa, J.A.**, Sissoko, F., Tapanila, L., Wheeler, E., Roberts, E.M. 2019. Stratigraphy and paleobiology of the Upper Cretaceous-Lower Paleogene Trans-Saharan Seaway in Mali. *Bulletin of the American Museum of Natural History* 436: 177p.

Ivany, L.C., Pietsch, C., Handley, J.C., Lockwood, R., Allmon, W.D., **Sessa, J.A.** 2018. Little lasting impact of the Paleocene-Eocene Thermal Maximum on shallow marine mollusk faunas. *Science Advances* 4:eaat5528; doi: 10.1126/sciadv.aat5528.

Jardine, P.E., Harrington, G.J., **Sessa, J.A.**, Dašková, J. 2018. Drivers and constraints on floral latitudinal diversification gradients. *Journal of Biogeography* 45:1408-1419; doi:10.1111/jbi.13216.

**Publications continued** (\* indicates student author; for student work, ‡ indicates corresponding author):

- Self-Trail, J.M., Robinson, M.M., Bralower, T.J., **Sessa, J.A.**, Hajek, E.A., Kump, L.R., Trampush, S.M.\*, Willard, D.A., Edwards, L.E., Powars, D.A., Wandless, G.A. 2017. Coastal marine response to global climate change during the Paleocene Eocene Thermal Maximum, Salisbury Embayment. *Paleoceanography* 32:1-19; doi:10.1002/2017PA003096.
- Paynter, A.N.\*, Metzger, M.J., **Sessa, J.A.**, Siddall, M.E. 2017. Evidence of horizontal transmission of the cancer-associated *Steamer* retrotransposon among ecological cohort bivalve species. *Diseases of Aquatic Organisms* 124:165-168; doi: 10.3354/dao03113.
- Janssen, A.W., **Sessa, J.A.**, Thomas, E. 2016. Pteropoda (Mollusca, Gastropoda, Thecosomata) from the Paleocene-Eocene Thermal Maximum of the United States Atlantic Coastal Plain. *Palaeontologia Electronica*. 19.3.47A: 1-26; doi: 10.26879/689.
- Knoll, K.\*, Landman, N. H., Cochran, J. K., MacLeod, K. G., **Sessa, J.A.**‡ 2016. Microstructural preservation and the effects of diagenesis on the carbon and oxygen isotope composition of Late Cretaceous aragonitic mollusks from the Gulf Coastal Plain and the Western Interior Seaway. *American Journal of Science* 316:591–613. The issue cover image is from this article.
- Sessa, J.A.**, Larina, E.\*, Knoll, K.\*, Garb, M., Cochran, J.K., Huber, B.T., MacLeod, K.G., Landman, N.H. 2015. Ammonite habitat revealed via isotopic composition and comparisons with co-occurring benthic and planktonic organisms. *Proceedings of the National Academy of Sciences* 112:15562-15567. <http://www.pnas.org/content/112/51/15562.short>.
- Sluijs, A., van Rooij, L.\*, Harrington, G.J., Schouten, S., **Sessa, J.A.**, Levay, L.J., Reichert, G.J., Slomp, C.P. 2014. Warming, euxinia and sea level rise during the Paleocene-Eocene Thermal Maximum on the Gulf Coastal Plain: implications for ocean oxygenation and nutrient cycling. *Climate of the Past* 10:1421-1439.
- Sessa, J.A.**, Callapez, P.M., Dinis, P.A., Hendy, A.J.W. 2013. Paleoenvironmental and paleobiogeographical implications of a Middle Pleistocene mollusc assemblage from the marine terraces of Baía das Pipas, Angola. *Journal of Paleontology* 87:1016-1040.
- Sessa, J.A.**, Ivany, L.C., Schlossnagle, T.H.\*, Samson, S.D., Schellenberg, S.A. 2012. The fidelity of oxygen and strontium isotope values from shallow shelf settings: Implications for temperature and age reconstructions. *Palaeogeography, Palaeoclimatology, Palaeoecology* 342-343:27-39.
- Sessa, J.A.**, Bralower, T.J., Patzkowsky, M.E., Handley, J.C. Ivany, L.C. 2012. Environmental and biological controls on the diversity and ecology of Late Cretaceous through early Paleogene marine ecosystems in the U.S. Gulf Coastal Plain. *Paleobiology* 38: 218-239.
- Sessa, J.A.**, Patzkowsky, M.E., Bralower, T.J. 2009. Impact of lithification on the diversity, size distribution, and recovery dynamics of marine invertebrate assemblages. *Geology* 337:115-118.

**Publications continued:**

Alroy et al. 2008. Phanerozoic trends in the global diversity of marine invertebrates, *Science* 321: 97–100.

Gibbs, S.J., Bown, P.R., **Sessa, J.A.**, Bralower, T.J., Wilson, P.A. 2006. Nannoplankton origination and extinction across the PETM, *Science* 314:1770-1773.

**Recent Professional Commentary about JAS's Work:**

March, 2020 Oakes et al. (2020) was featured on *Palaeontologica Electronica's* blog.

November, 2015 IFLScience.com; Where in the ocean did iconic spiral ammonites live?

November, 2015 *Christian Science Monitor*; What were ammonites' lives like?

Sessa et al. (2015) was a PNAS commentary piece and a featured image on PNAS's "In the News".

**Funded Research:**

NSF EarthCube Data Capabilities Collaborative Proposal (1928362): Extending Ocean Drilling Pursuits [eODP]: Microfossils and Stratigraphy. Co-PI; \$369,506; total collaborative award \$944,743; Sept 2019-2022.

NSF DBI Digitization (1902275): Digitization PEN: Critical Central and South American additions to the EPICC TCN from the oldest Invertebrate Paleontology collection in the United States. Lead PI; \$123,997; Aug 15 2019-July 31 2021.

NSF EarthCube IA (1540902, 1821039): Enhancing Paleontological & Neontological Data Discovery API. I became lead PI 09/2016. Initial award: \$172,303; \$43,333 subaward & \$10,000 from EarthRates; total collaborative award: \$799,445. Aug 2015 to Jan 2020.

AGU Celebrate 100 Large Project Support grant "Field experience for minority high school women" Co-PI; \$9,400; awarded February 2019.

EarthRates Workshop award "Bringing Micropaleontology to the Paleobiology Database." Co-PI; \$15,000, awarded Jan 2018.

Paleontological Society grant "Summer was made for adventure: paleontological and geological field experience for minority high school girls." Lead PI; \$2,500 awarded April 2018.

**Mentorship (bold indicates that I am the primary supervisor):**

2020-current Brittany Wilburn; I am a PhD committee member for Brittany, who is determining the suitability of dredge sediments and biochar for marsh restoration.

2019-current **Bryce Koester**; I supervise Bryce's graduate research on the effects of ocean acidification on the California Bight ecosystem.

2019-current **Kelly Rozanitis**; I supervise Kelly's senior undergraduate research on Cenozoic climatic evolution in Central and South America.

2017-current **Rosie Oakes**; postdoctoral fellow. Rosie and I are quantifying a historic baseline for ocean acidification using planktonic mollusks called pteropods.

2018-current Matthew McDonald; I am a PhD committee member for Mat, who is developing methodologies to date recent land-snail accumulations.

2016-current **Alexandra Buczek**, AMNH PhD candidate. I co-advise Alexandra's dissertation work on using mollusks to decipher Neogene climate change.

**Mentorship continued (bold indicates that I am the primary supervisor):**

- 2017-current Michelle Gannon; I am a PhD committee member Michelle, who is studying photosymbiosis in modern and fossil mollusks.
- 2018-2019 Nathaniel F. Shoobs, Drexel PhD student; I was a committee member.
- 2016-2019 Katherine Ferguson, University of Missouri Masters student. I was a committee member for Kate, who studied the ecology of ammonites by expanding on my 2015 PNAS paper, resulting in her as lead author on an article.
- 2016-2018 Ben Linzmeier, University of Wisconsin PhD student. Ben studied early ontogeny of scaphitid ammonites, expanding on my 2015 PNAS paper results.
- 2015- 2016 Ashley Pintar, SUNY Binghamton senior. I co-advised an REU-project on the ecology and phylogeny of a transmissible cancer in extant bivalves, resulting in an article where Ashley is the lead author.
- 2012-2016 **Katja Knoll**; Brooklyn College Masters student. Katja analyzed how shell micro-structure affects the preservation and isotopic composition of mollusk shells, resulting in her as lead author on one article and co-author on another.

**Invited Presentations:**

- 2020, Spring Temple University, Department of Earth and Environmental Science seminar series.
- 2019, Fall UC Santa Cruz, Paleocene Eocene Thermal Maximum Terrestrial & Coastal Climate Workshop.
- 2019, Summer Syracuse University Paleobiology seminar series.
- 2019, Spring College of the Atlantic, Seminar series on Climate Change.
- 2018, Spring Lafayette College, Department of Geology & Environmental Geosciences.
- 2018, Spring University of Pennsylvania, Department of Geology.
- 2017, Fall Academy of Natural Sciences Board Science subcommittee.
- 2017, Spring University of Wisconsin, Madison, Department of Geoscience.
- 2017, Spring University of Texas, Austin, Jackson School of Geosciences.
- 2016, Spring University of Toronto, Mississauga, Department of Chemical and Physical Sciences.
- 2016, Spring Pennsylvania State University, Department of Geosciences.
- 2015, Spring American Museum of Natural History, Richard Gilder Graduate School.
- 2013, Spring Brooklyn College, *Mass Extinction* graduate-level course.
- 2012, Winter Washington Paleontological Society.

**Instructor Experience:**

- 2018, Fall *Sedimentology and Stratigraphy*; Drexel. Undergraduate quarter-long course, 14 students. Lectures and labs are built around hand samples and activities.
- 2017, 2019 *Invertebrate Paleontology*; Drexel. Upper-level undergraduate and graduate quarter course, 13 (2017) and 10 (2019) students. Paleobiology and paleoecology activities.
- 2016, Fall *Earth Evolution and Earth Processes*; AMNH. Graduate-level semester-long course, 13 students. Process and cycle-based labs and lectures emphasizing linkages amongst the geosphere, hydrosphere, atmosphere, and biosphere.
- 2013-2016, Summer *Practicum*; AMNH. Graduate-level eight-week field and research course, 15-17 students. I created and conducted fieldtrips, field exercises, labs and lectures, and designed and supervised research projects for five masters students per year.
- 2013, Summer *Enrichment*; AMNH. Masters of education course, 20 students. Over two weeks, I led lectures and labs on sedimentary rocks and structures, fossils, and geologic time.

**Departmental-Institutional Service (last 5 years):**

- 2019-current Blue/Gold Fellowship Selection Committee (university-wide).
- 2018-current Member of the Academy of Natural Science's Research Charter Committee.
- 2017-current Co-leader of the geology Drexel Environmental Science Leadership Academy.
- 2017-2018 Member of the Academy of Natural Science's Space Initiative Committee.
- 2013, 2014, 2016 Member of the Admissions Committee for the AMNH MAT program.

**Service to the Professional Community (last 5 years):**

- 2019-2021 Member of the Paleontological Society Harrell L. Strimple Award Committee.
- June 2018-current Member of the Biodiversity Literacy in Undergraduate Education (BLUE) project, focused on developing core competencies and students who work with collections and collection-based data; key author on the group's BioScience Viewpoint article.
- May 2018 Co-leader of Earth Life Consortium, ePANDDA, & EarthRates Demo Derby, a workshop focused on training users to harness paleobiodiversity databases for research, teaching, & public engagement.
- Nov 2017-current Working group member of NSF-funded project, EarthRates, on the future of paleogeoscience; submitted a mid-scale infrastructure NSF RFI, a "white paper" to the NSF's Division of Earth Sciences, an LOI and full NSF proposals (2019 & 2020), & a 2019 DCL on Cyberinfrastructure.
- Sept 2017 Hosted an ePANDDA hackathon, where users beta-tested performance of the ePANDDA API connecting iDigBio with the Paleobiology Database, and used the API for research, outreach, and collections purposes.
- June 2017 Session moderator, Inaugural Digital Data in Biodiversity Research Conference.
- October 2017 Panelist, Paleontological Society's Mentors in Paleontology Careers Luncheon.
- March 2015 Co-leader of a Paleobiology Database hackathon, where tools for research, education, & outreach are created via the PBDB's API; ex. R code, web applications, data analysis tools, visualizations, links to other databases.
- 2012-current Member of the Executive Committee of the Paleobiology Database.
- 2013-2016 Secretary of the Executive Committee of the Paleobiology Database.  
Reviewer for the journals: *Geology*; *Proceedings of the National Academy of Sciences* (2x); *Proceedings of the Royal Society B: Biological Sciences*; *Proceedings of The Academy of Natural Sciences of Philadelphia*; *PLoS1*; *Palaeogeography*, *Palaeoclimatology*, *Palaeoecology*; *Palaios*, *Terra Nova* (2x), *Lethaia*.  
On site NASA-panel reviewer.  
Ad hoc NSF proposal reviewer.

**Outreach (last 5 years):**

- 2020, Spring Organizer of evening event for the ANS' Women in Natural Sciences (WINS) program; my team and I created 6 activities for 40 Philadelphia-area high school girls.
- 2020, Spring Presenter, Philadelphia Shell Club, avocational group.
- 2019, Fall Academy Toast to the Collections; I and my team created 6 interactive tables.
- 2018, Spring Academy Spring Forward donor event.
- 2018, Spring - current Presenter, Delaware Valley Paleontological Society, avocational group; attend their meetings to build relationships for volunteers and donors.
- 2017-19, Fall Members Night at the Academy, ~1,200 guests; displayed fossils from the Invertebrate Paleontology collection, including touchable specimens.

**Outreach (last 5 years) continued:**

- 2013-2017 *Shark teeth form & function*; activity for NYC-area middle & high schoolers, investigating the relationship between form & function by linking tooth shape with diet of modern & fossil sharks; I visited 11 schools & ~1,300 students.
- 2017, Spring Leader of tour and discussion of evolving roles of paleontology and museums for City College MFA students in Digital and Interdisciplinary Art Practice.
- 2016-2017 Lead discussion groups at NYC high schools on careers within the geosciences.
- 2016, Fall Presenter at AMNH's Family Party "Mission: Expedition", a hands-on event for ~1,000 guests where I showcased fossils I collected from Romania.
- 2015, Spring Presenter at the Student Science Summit, which provides career mentorship to high school students interested in the STEM fields.

**Selected conference presentations and non-peer reviewed work (\* indicates student author):**

- Fraas, A.J., LeVay, L.J., Sessa, J.A., Peters, S.E. 2020. Extending Ocean Drilling Pursuits [eODP]: Making Scientific Ocean Drilling Data Accessible Through Searchable Databases. EarthCube Annual Meeting, San Diego CA.
- Ellwood, E.R. **Sessa, J.A.**, et al. 2020. Viewpoint: Biodiversity Science and the 21st Century Workforce. *BioScience*, v. 70 p. 119–121, doi.org/10.1093/biosci/biz147.
- Fraas, A.J., LeVay, L.J., Sessa, J.A., Peters, S.E. 2020. Extending Ocean Drilling Pursuits [eODP]: making scientific ocean drilling data accessible through searchable databases. EGU annual meeting; Vienna, Austria.
- Oakes, R.O., Davis, C.V., Sessa, J.A. 2019. Stable isotopes of *Heliconoides inflatus* pteropod shells record near-surface conditions in the Cariaco Basin. Ocean Sciences Meeting; San Francisco.
- Oakes, R.O., Davis, C.V., Sessa, J.A. 2019. Pteropods as oceanographic proxies: testing the impact of dissolution on stable isotopes and comparing modern and core-top samples. American Geophysical Union (AGU) annual meeting; San Francisco.
- LeVay, L.J., Fraas, A.J., Sessa, J.A., Peters, S.E. 2019. Extending Ocean Drilling Pursuits [eODP]: making scientific ocean drilling data accessible through searchable databases. AGU annual meeting; San Francisco.
- Estes-Smargiassi, K., Wiley, A.J.\*, Wright, E.A.\*, Rodriguez Mergenthal, M., Sessa J.A. 2019. Engaging a diverse student population to revitalize an invertebrate paleobiology museum collection. GSA Abstracts v. 51.
- Estes-Smargiassi, K., Sessa, J.A. 2019. Breathing new life into the Invertebrate Paleontology collection of the Academy of Natural Sciences. GSA Abstracts v. 51.
- Buczek, A.J.\*, Hendy, A., Hopkins, M., Sessa, J.A. 2019. Constraining the age of Californian Plio-Pleistocene formations using strontium isotope stratigraphy. North American Paleontological Convention. June 23-27 2019. Riverside, CA.
- Estes-Smargiassi, K., Sessa, J.A., Rodriguez Mergenthal, M. 2019. Allow us to reintroduce ourselves: Revitalizing the Invertebrate Paleontology collection at The Academy of Natural Sciences, poster at 11th North American Paleontological Convention. June 23-27 2019. Riverside, CA.
- Park Boush L.E., Williams, J.W., Bowen, G., Goring, S., Lenhart, K., Noren, A.J., Peters, S.E., Sessa, J.A., Stigall, A.L., Uhen, M. 2018. Big Data in Paleontology—Creating a Roadmap for Building a Data Synthesis Center for the Paleogeosciences. GSA Abstracts v. 50.
- Sessa J.A., Ferguson, K., Landman, N.H., and Macleod, K.G. 2018. Using isotopic composition to determine growth and ecology in baculite and scaphite ammonites. GSA Abstracts v. 50.
- Ivany, L.C. Sessa J.A., Judd, E., Grossman, E., Affek, H., Douglas, P. 2018. Winter temperatures drive climate change in the Paleogene subtropics. Goldschmidt abstracts.

**Selected conference presentations and non-peer reviewed work (\* indicates student author)  
continued:**

- Oakes, R.L., Bralower, T.J., Sessa, J.A. 2018. Establishing a baseline of the annual variability of pteropod shell thickness in the Cariaco Basin. American Geophysical Union (AGU) annual meeting; Washington DC; Understanding Changing Ocean Biogeochemistry session.
- Hendy, A.J., Walker, L.J., Krimmel, E.R., Sessa, J.A. 2018. Bringing Back the Buzzing of the Bees: Enhancing the Discovery of Fossil Insect Collections with the ePANDDA API. SPNHC-TDWG annual meeting; Biodiversity Information Science and Standards 2: e26496.
- Sessa, J.A., Butts, S., Karim, T.S., Nelson, G., Norris, C.A., Serratos, D.J., Smith, D., Uhen, M.D. 2018. The ePANDDA project: linking the Paleobiology Database, iDigBio, and iDigPaleo for biological and paleontological research, collections management, and outreach. SPNHC-TDWG annual meeting; Biodiversity Information Science and Standards 2: e26644.
- Sessa, J.A., Butts, S., Karim, T.S., Nelson, G., Norris, C.A., Serratos, D.J., Smith, D., Uhen, M.D. 2018. The ePANDDA project: linking the Paleobiology Database, iDigBio, and iDigPaleo for biological and paleontological research, collections management, and outreach. iDigBio Digital Data annual meeting, UC Berkeley; New tools for data discovery and analysis session.
- Sessa, J.A., Butts, S., Karim, T.S., Nelson, G., Norris, C.A., Serratos, D.J., Smith, D., Uhen, M.D. 2018. The ePANDDA project: enhancing paleontological and neontological data discovery API. EarthCube Allhands meeting Alexandria VA; Science Engagement & Outreach session.
- Sessa, J.A., Butts, S., Karim, T.S., Nelson, G., Norris, C.A., Serratos, D.J., Smith, D., Uhen, M.D. 2017. The ePANDDA project: Linking the Paleobiology Database, iDigBio, and iDigPaleo for biological and paleontological research, collections management, and outreach. GSA Abstracts v. 49.
- Buczek, A.J.\*, Hendy, A., Hopkins, M., Sessa, J.A. 2017. Does Grain Size Matter?: Variable bivalve shell microstructure preservation in the fine-grained and coarse-grained members of the Careaga Sandstone (Pliocene, Santa Maria, CA). GSA Abstracts v. 49.
- Linzmeier, B.J.\*, Landman, N.H., Sessa, J.A., Peters, S.E., Orland, I.J., Kitajima, K., Kozdon, R., Valley, J.W. 2017. Using in situ geochemistry to investigate the depth habitats of ammonites. GSA Abstracts v. 49.
- Sessa, J.A., Bralower, T.J., Janssen, A.W., Robison, M.M., Thomas, E., Self-Trail, J.M. 2017. The Paleocene-Eocene Thermal Maximum (PETM) mollusk fauna of the Atlantic Coastal Plain, USA. Climatic and Biotic Events of the Paleogene conference.
- De Baets, K., Hoffman, R., Sessa, J. A. & Klug, C. 2016. Fossil Focus: Ammonoids. *Palaeontology Online*, v. 6, p. 1-15. [www.palaeontologyonline.com/articles/2016/fossil-focus-ammonoids](http://www.palaeontologyonline.com/articles/2016/fossil-focus-ammonoids).
- Ivany, L.C., Sessa, J.A., Affek, H., Grossman, E.L., Douglas, P. 2017. Winter temperatures drive climate cooling in the Paleogene subtropics. Climatic and Biotic Events of the Paleogene conference.
- Linzmeier, B.J.\*, Landman, N.H., Sessa, J.A., Peters, S.E., Orland, I., Kitajima, K., Kozdon, R., Valley, J.W. 2017. Using in situ geochemistry to investigate the depth habitat of ammonites. High-resolution proxies of paleoclimate conference.
- Butts, S., Karim, T., Nelson, G., Norris, C., Uhen, M., Sessa, J., Smith, D. 2017. ePANDDA: enhancing Paleontological and Neontological Data Discovery API. Inaugural Digital Data in Biodiversity Research Conference.
- Winchester, J.M., Boyer, D.M., O'Leary M.A., Sessa, J.A. 2017. The importance and challenges of database integration: MorphoBank, MorphoSource, and the Paleobiology Database. Inaugural Digital Data in Biodiversity Research Conference.