



## Jonathan Payne

Dorrell William Kirby Professor, Senior Associate Dean for Faculty Affairs, Senior Fellow at the Woods Institute for the Environment and Professor, by courtesy, of Biology  
Earth & Planetary Sciences

### Bio

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#### BIO

I received my B.A. in Geosciences from Williams College in 1997. After graduation, I spent two years working as a high school math and science teacher. I then returned to graduate school, earning my Ph.D. in Earth and Planetary Sciences from Harvard University in the spring of 2005. Following a post-doctoral fellowship at Penn State, I joined the faculty at Stanford University in the fall of 2005. My research addresses the relationship between environmental change and biological evolution in the fossil record, with a focus on mass extinction events and long-term trends in the ecological structure of marine ecosystems. I teach courses for undergraduates in historical geology and invertebrate paleobiology and courses for graduate students in carbonate sedimentology, geobiology, and paleobiology.

#### ACADEMIC APPOINTMENTS

- Professor, Earth & Planetary Sciences
- Senior Fellow, Stanford Woods Institute for the Environment
- Professor (By courtesy), Biology
- Member, Bio-X
- Affiliate, Stanford Woods Institute for the Environment

#### ADMINISTRATIVE APPOINTMENTS

- Dorrell William Kirby Professor of Geological Sciences, Stanford University, (2020- present)
- Senior Associate Dean for Faculty Affairs, School of Earth, Energy and Environmental Sciences, Stanford University, (2020- present)
- Professor of Biology (by courtesy), Stanford University, (2016- present)
- Professor of Geological Sciences, Stanford University, (2016-2020)
- Chair, Department of Geological Sciences, Stanford University, (2015-2019)
- Associate Chair, Dept. of Geological & Environmental Sciences, Stanford University, (2014-2015)
- Associate Professor of Biology (by courtesy), Stanford University, (2012-2016)
- Associate Professor of Geological and Environmental Sciences, Stanford University, (2012-2016)
- Assistant Professor of Biology (by courtesy), Stanford University, (2010-2012)
- Affiliated Faculty Member, Woods Institute for the Environment, Stanford University, (2009- present)
- Assistant Professor of Geological and Environmental Sciences, Stanford University, (2005-2012)
- Post-doctoral Fellow, Pennsylvania State University, (2005-2005)
- Research Assistant, Harvard University, (2002-2005)
- Teaching Assistant, Harvard University, (2000-2005)

- Science and Mathematics Teacher, The American School in Switzerland (TASIS), (1997-1999)

## **HONORS AND AWARDS**

- Fellow, Geological Society of America (2018)
- Stuart A. Northrop Distinguished Lecture, University of New Mexico (2017)
- Allan V. Cox Medal, Stanford University (2015)
- Charles Schuchert Award, Paleontological Society (2015)
- Fellow, Paleontological Society (2015)
- Stanford Fellow, Stanford University (2014-2016)
- VPUE Faculty Scholar, Stanford University (2013-2014)
- CAREER Award, NSF (2012)
- Frederick E. Terman Fellowship, Stanford University (2007-2009)
- Honorable mention for best paper, *Palaos* (2006)
- National Defense Science and Engineering Graduate Fellowship, US Department of Defense (1999 - 2002)

## **BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS**

- Co-Chair, Scientific Program Committee, Theme 14, Goldschmidt Geochemistry Conference (2017 - 2017)
- Invited Speaker, Penn State; UT Austin; University of New Mexico; Stanford; US Geological Survey (2017 - 2017)
- Invited Speaker, Stanford University; Colgate University (2016 - 2016)
- Invited Speaker, U of Chicago; Northwestern; U of Zurich; U of Padua; U Penn; Lehigh; UC Davis (2015 - 2015)
- Member, Breadth Governance Board, Stanford University (2014 - 2015)
- Co-chair, Theme Team for Goldschmidt 2014 - 'Evolution of the Earth's Environment' (2014 - 2014)
- Convener, Topical Session on Ecosystem Geobiology and Paleobiology, Geological Society of America Annual Meeting (2014 - 2014)
- Invited Speaker, University of Michigan; Yale University (2014 - 2014)
- Outside Chair for PhD Exam (EESS x3), Stanford University (2014 - 2014)
- Panelist, NASA Exobiology Program (2014 - 2014)
- Pre-major advisor - 4 students, Stanford University (2014 - 2014)
- Research mentor: 2 high school teachers; 4 undergraduate students; 17 high school students, Stanford University (2014 - 2014)
- Member, Teaching Task Force, Stanford University, School of Earth Sciences (2013 - 2014)
- Co-organizer, Paleontological Society short course at GSA Annual Meeting - 'Ecosystem Paleobiology and Geobiology' (2013 - 2013)
- Convener, Topical Session on End-Permian Mass Extinction, Joint GSA-GSC Meeting in Chengdu, China (2013 - 2013)
- Convener, Topical Session on the History of the Biological Pump, Goldschmidt Geochemistry Conference, Florence, Italy (2013 - 2013)
- Invited Speaker, University of Zurich; Syracuse University; Bodega Marine Lab, UC Davis (2013 - 2013)
- Lecture for Camp for Talented Youth Geology Class (Middle School Students), Stanford University (2013 - 2013)
- Lecture for SES Summer Program in Paleoclimate for K-12 teachers, Stanford University (2013 - 2013)
- Member, Theme Team for Goldschmidt 2013 - 'Evolution of the Earth's Environment' (2013 - 2013)
- Outside Chair for PhD Exam (Physics), Stanford University (2013 - 2013)
- Pre-major advisor - 4 students; Major advisor (GES) - 2 students, Stanford University (2013 - 2013)
- Research mentor: 2 high school teachers, Stanford Research Experience for Teachers Program; 20 high school students; 7 undergraduate students, Stanford University (2013 - 2013)
- Member, Society for the Study of Evolution (2012 - present)

- Chair, GES Undergraduate Curriculum Committee, Stanford University (2012 - 2014)
- Undergraduate Program Director, GES, Stanford University (2012 - 2014)
- Invited Speaker, Hopkins Marine Station, Stanford University; University of California at Berkeley; Agouron Institute Meeting: The Comings and Goings of Animal Life on Earth; Scripps Institute of Oceanography; Saudi Aramco (2012 - 2012)
- Lecture for Camp for Talented Youth Geology Class (Middle School Students), Stanford University (2012 - 2012)
- Lecture for SES VPUE and SURGE Summer Undergraduate Research Students, Stanford University (2012 - 2012)
- Major advisor (GES) - 2 students, Stanford University (2012 - 2012)
- Outside chair for PhD Exam - 5 exams (Biology x2, CEE, Chemistry, Physics), Stanford University (2012 - 2012)
- Research mentor: 2 high school teachers, Stanford Research Experience for Teachers Program; 10 high school students (7 presented posters at AGU December meeting); 5 undergraduate students (4 presented posters at AGU December meeting), Stanford University (2012 - 2012)
- Associate Editor, American Journal of Science (2011 - present)
- Member, American Chemical Society (2011 - present)
- Co-chair, Geobiology Search Committee, Stanford University (2011 - 2014)
- Convener, Topical session on Carbon Isotopes and the Geological Carbon Cycle at the European Geophysical Union Annual Meeting (2011 - 2011)
- Invited Speaker, Princeton University (2011 - 2011)
- Lecture for Camp for Talented Youth Geology Class (Middle School Students), Stanford University (2011 - 2011)
- Lecture for SES VPUE Summer Undergraduate Research Students, Stanford University (2011 - 2011)
- Outside chair for PhD Exam - 1 exam (EESS), Stanford University (2011 - 2011)
- Research mentor for 1 high school science teacher, Stanford Research Experience for Teachers Program, Stanford University (2011 - 2011)
- Research mentor for 5 high school students (all 5 presented posters at AGU December meeting in San Francisco); Research mentor for 3 undergraduate students (2 funded by VPUE, 1 funded by SURGE), Stanford University (2011 - 2011)
- Invited Speaker, University of California at Berkeley; University of Frankfurt; University of California at Santa Cruz; Field Museum of Natural History, Chicago, IL (2010 - 2010)
- Lecture for Camp for Talented Youth Geology Class (Middle School Students), Stanford University (2010 - 2010)
- Lecturer for SES Summer High School Interns and Undergraduate Research Students, Stanford University (2010 - 2010)
- Research mentor for 1 high school science teacher, Stanford Research Experience for Teachers Program, Stanford University (2010 - 2010)
- Research mentor for 12 high school students (10 presented posters at AGU December meeting in San Francisco), Stanford University (2010 - 2010)
- Member, Earth Sciences Council, Stanford University (2009 - present)
- Convener, Topical session on Geochemistry of Extinction and Radiation Events at Goldschmidt Conference (2009 - 2009)
- Invited Speaker, Stanford GES & Geophysics Joint Dept Seminar; San Jose State University; California Academy of Sciences; University of California at Santa Barbara; University of New Mexico (2009 - 2009)
- Lecturer, SES VPUE Summer Undergraduate Research Students and High School Interns, Stanford University (2009 - 2009)
- Outside chair for PhD Exam - 2 exams (Biology), Stanford University (2009 - 2009)
- Research mentor for 2 high school students (both presented posters at AGU December meeting in San Francisco), Stanford University (2009 - 2009)
- Member, SES Educational Outreach Committee, Stanford University (2008 - present)
- SES Librarian Search Committee, Stanford University (2008 - 2009)
- Invited Speaker, MIT; Stanford School of Earth Sciences Faculty Forum; Chevron-Texaco, San Ramon, CA; Harvard University; NASA Ames Research Center; UC Santa Cruz (2008 - 2008)
- Lecturer and mentor, SES VPUE Summer Undergraduate Research Students (2008 - 2008)
- Associate Editor, Newsletter on Stratigraphy (2007 - present)
- Member, American Geophysical Union (2007 - present)
- Member, University Human Skeletal Remains Oversight Committee, Stanford University (2007 - present)

- GES TA Training Coordinator, Stanford University (2007 - 2014)
- GES Long Range Planning Committee, Stanford University (2007 - 2010)
- GES Dept Seminar Coordinator, Stanford University (2007 - 2009)
- Convener, Topical Session on Extinction Selectivity at GSA Annual Meeting (2007 - 2007)
- Invited Speaker, California Academy of Sciences; Guizhou Geological Survey, Guiyang, China; University of California at Berkeley; University of California at Davis; Williams College (2007 - 2007)
- Lecturer and mentor, SES Summer High School Interns (2007 - 2007)
- Outside chair for PhD Exam - 4 exams (Biological Sciences), Stanford University (2007 - 2007)
- Associate Editor, Palaeontologia Electronica (2006 - present)
- Member, Earth Systems Committee of the Whole, Stanford University (2006 - present)
- Member, GES Undergraduate Curriculum Committee, Stanford University (2006 - 2012)
- Judge, SES Annual Research Review (2006 - 2008)
- Invited Speaker, San Jose State University; Chevron-Texaco, San Ramon, CA; University of Chicago; Northwestern University (2006 - 2006)
- Lecture for SES Summer High School Interns, Stanford University (2006 - 2006)
- Lecture for SES VPUE Summer Undergraduate Research Students, Stanford University (2006 - 2006)
- Member, American Association for the Advancement of Science (2005 - present)
- Proposal Reviewer, NSF (Sedimentary Geology and Paleobiology; Geobiology and Low Temperature Geochemistry; Antarctic Earth Sciences) , NASA Astrobiology, Petroleum Research Fund of the American Chemical Society, Swiss National Science Foundation, Austrian Science Fund, National Geographic Society, Lewis and Clark Foundation, Paleontological Society (Student Grants), US Civilian Research and Development Foundation (2005 - present)
- Invited Speaker, Peninsula Geological Society, Stanford, CA; Middle East Technical University, Ankara, Turkey; Pennsylvania State University; Stanford University; University of Connecticut; University of Michigan (2005 - 2005)
- Manuscript Reviewer, Science, PNAS, Geology, Earth and Planetary Science Letters, Geobiology, Paleobiology, Environmental Science, American Journal of Science, Journal of Paleontology, Global and Planetary Change, Geochimica et Cosmochimica Acta, Geological Society of America Bulletin, Palaeoworld, New Mexico Museum of Natural History Bulletin, Palaios, Palaeogeography Palaeoclimatology Palaeoecology, Sedimentology, Lithos, Acta Palaeontologica Polonica, Journal of Zoological Systematics and Evolutionary Research, Gondwana Research, Nature Geoscience (2004 - present)
- Invited Speaker, University of Kyushu, Japan; Universidad Nacional Autonoma de Mexico, Hermosillo (2004 - 2004)
- Member, American Association of Petroleum Geologists (2003 - present)
- Member, Society for Sedimentary Geology (2003 - present)
- Invited Speaker, University of Kansas (2003 - 2003)
- Invited Speaker, Guizhou Bureau of Geology and Mineral Resources, China (2002 - 2002)
- Member, Paleontological Society (2000 - present)
- Member, Geological Society of America (2000 - present)
- Member, Sigma Xi (1997 - present)

## **PROGRAM AFFILIATIONS**

- Center for East Asian Studies

## **PROFESSIONAL EDUCATION**

- Ph.D., Harvard University , Earth and Planetary Sciences (2005)
- A.M., Harvard University , Earth and Planetary Sciences (2002)
- B.A., Williams College , Geosciences (1997)

## **LINKS**

- Paleobiology Group: <https://paleobiology.stanford.edu>

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

#### Research

My research group studies the relationship between environmental change and biological evolution in the fossil record. The primary focus of my research group is on understanding the causes of mass extinctions and the processes that control subsequent recovery of biodiversity and global ecosystems. We are working to constrain the causes of the end-Permian and end-Triassic mass extinctions using high-resolution sedimentary, geochemical, and paleontological records developed from carbonate platform sediments in China, Italy, Turkey, and Japan. We are also using global data on fossil occurrence patterns and body sizes to study longer-term connections between environmental change and biological evolution, with a focus on extinction selectivity and body size evolution.

#### Teaching

I teach courses for undergraduates in historical geology and invertebrate paleobiology and courses for graduate students in carbonate sedimentology, geobiology, and paleobiology.

## Teaching

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### COURSES

#### 2024-25

- The Sixth Extinction (and the Other Five): BIO 169, BIO 237, EARTHSYS 127A, EARTHSYS 227A, EPS 137, EPS 237 (Aut)

#### 2023-24

- Macroevolution: BIO 136, BIO 236, EPS 136, EPS 236 (Spr)

#### 2022-23

- Geology of Oman Field Trip: GEOLSCI 293A (Aut)
- The Sixth Extinction (and the Other Five): BIO 169, BIO 237, EARTHSYS 127A, EARTHSYS 227A, GEOLSCI 137, GEOLSCI 237 (Spr)

#### 2021-22

- Macroevolution: BIO 136, BIO 236, GEOLSCI 136, GEOLSCI 236 (Win)
- Sedimentology and Rock Physics of Carbonates: GEOLSCI 254, GEOPHYS 254 (Win)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Valerie Martin

#### Postdoctoral Faculty Sponsor

Mohamad Bazzi, Pulkit Singh

#### Doctoral (Program)

Jood Al Aswad, Kemi Ashing-Giwa, Eliane Petersohn

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biology (School of Humanities and Sciences) (Phd Program)

## Publications

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### PUBLICATIONS

- **Impact of warming on aquatic body sizes explained by metabolic scaling from microbes to macrofauna.** *Proceedings of the National Academy of Sciences of the United States of America*  
Deutsch, C., Penn, J. L., Verberk, W. C., Inomura, K., Endress, M., Payne, J. L.  
2022; 119 (28): e2201345119
- **Ecologically diverse clades dominate the oceans via extinction resistance.** *Science (New York, N.Y.)*  
Knobe, M. L., Bush, A. M., Frishkoff, L. O., Heim, N. A., Payne, J. L.  
2020; 367 (6481): 1035–38
- **Energetic tradeoffs control the size distribution of aquatic mammals** *Proceedings of the National Academy of Sciences of the United States of America*  
Gearty, W., McClain, C. R., Payne, J. L.  
2018; 4194–99
- **Temperature-dependent hypoxia explains biogeography and severity of end-Permian marine mass extinction.** *Science (New York, N.Y.)*  
Penn, J. L., Deutsch, C., Payne, J. L., Sperling, E. A.  
2018; 362 (6419)
- **Body size downgrading of mammals over the late Quaternary.** *Science (New York, N.Y.)*  
Smith, F. A., Elliott Smith, R. E., Lyons, S. K., Payne, J. L.  
2018; 360 (6386): 310–13
- **A model for the decrease in amplitude of carbon isotope excursions across the Phanerozoic** *American Journal of Science*  
Bachan, A., Lau, K. V., Saltzman, M. R., Thomas, E., Kump, L. R., Payne, J. L.  
2017; 317: 641-676
- **Navigating uncertainty in maximum body size in marine metazoans.** *Ecology and evolution*  
McClain, C. R., Webb, T. J., Heim, N. A., Knobe, M. L., Monarrez, P. M., Payne, J. L.  
2024; 14 (6): e11506
- **Phanerozoic co-evolution of O<sub>2</sub>-CO<sub>2</sub> and ocean habitability.** *National science review*  
Lu, Z., Rickaby, R. E., Payne, J. L., Prow, A. N.  
2024; 11 (6): nwae099
- **Carbonate factory response through the MECO (Middle Eocene Climate Optimum) event: Insight from the Apulia Carbonate Platform, Gargano Promontory, Italy** *SEDIMENTARY GEOLOGY*  
Morabito, C., Papazzoni, C. A., Lehrmann, D. J., Payne, J. L., Al-Ramadan, K., Morsilli, M.  
2024; 461
- **Reduced strength and increased variability of extinction selectivity during mass extinctions.** *Royal Society open science*  
Monarrez, P. M., Heim, N. A., Payne, J. L.  
2023; 10 (9): 230795
- **Prolonged and gradual recovery of metazoan-algal reefs following the end-Permian mass extinction** *GEOLOGY*  
Kelley, B. M., Yu, M., Lehrmann, D. J., Altiner, D., Payne, J. L.  
2023
- **Linking host plants to damage types in the fossil record of insect herbivory** *PALEOBIOLOGY*  
Schachat, S. R., Payne, J. L., Boyce, C.  
2023; 49 (2): 232-258
- **Macroevolutionary patterns in vertebrate clades over the last 200 million years: the interaction among body size, metabolism and environment**  
Smith, F. A., Lyons, S. K., Heim, N., Payne, J. L.  
OXFORD UNIV PRESS INC.2023: S294
- **Macroevolutionary patterns in vertebrate clades over the last 200 million years: the interaction among body size, metabolism and environment**  
Smith, F. A., Lyons, K., Heim, N., Payne, J.

OXFORD UNIV PRESS INC.2023: S293-S294

- **Hierarchical multi-label taxonomic classification of carbonate skeletal grains with deep learning** *SEDIMENTARY GEOLOGY*  
Ho, M., Idgunji, S., Payne, J. L., Koeshidayatullah, A.  
2023; 443
- **Illusion of flight? Absence, evidence and the age of winged insects** *BIOLOGICAL JOURNAL OF THE LINNEAN SOCIETY*  
Schachat, S. R., Goldstein, P. Z., Desalle, R., Bobo, D. M., Boyce, C., Payne, J. L., Labandeira, C. C.  
2022
- **Marine Ooid Sizes Record Phanerozoic Seawater Carbonate Chemistry** *GEOPHYSICAL RESEARCH LETTERS*  
Trower, E. J., Smith, B. P., Koeshidayatullah, A., Payne, J. L.  
2022; 49 (22)
- **Reduction in animal abundance and oxygen availability during and after the end-Triassic mass extinction.** *Geobiology*  
Singh, P., Lu, W., Lu, Z., Jost, A. B., Lau, K., Bachan, A., van de Schootbrugge, B., Payne, J. L.  
2022
- **GUADALUPIAN CARBON ISOTOPE STRATIGRAPHY INDICATES EXTENDED INTERVAL OF CARBON CYCLE STABILITY** *AMERICAN JOURNAL OF SCIENCE*  
Arefifard, S., Payne, J. L., Rizzi, M.  
2022; 322 (9): 1019-1046
- **Breathless through Time: Oxygen and Animals across Earth's History** *BIOLOGICAL BULLETIN*  
Sperling, E. A., Boag, T. H., Duncan, M. I., Endriga, C. R., Marquez, J., Mills, D. B., Monarrez, P. M., Sclafani, J. A., Stockey, R. G., Payne, J. L.  
2022
- **Unraveling overprinted formation mechanisms of massive dolostone in the Lower Triassic sequence of an isolated carbonate platform in Nanpanjiang Basin, south China** *SEDIMENTARY GEOLOGY*  
Li, X., Lehrmann, D. J., Luczaj, J., Kelley, B. M., Cantrell, D. L., Yu, M., Ferrill, N., Payne, J. L.  
2022; 440
- **Quantitative evaluation of the roles of ocean chemistry and climate on ooid size across the Phanerozoic: Global versus local controls** *SEDIMENTOLOGY*  
Koeshidayatullah, A., Trower, E. J., Li, X., Mukerji, T., Lehrmann, D. J., Morsilli, M., Al-Ramadan, K., Payne, J. L.  
2022
- **Generating and testing hypotheses about the fossil record of insect herbivory with a theoretical ecospace** *REVIEW OF PALAEOBOTANY AND PALYNOLOGY*  
Schachat, S. R., Payne, J. L., Boyce, C., Labandeira, C. C.  
2022; 297
- **Duration and Intensity of End-Permian Marine Anoxia** *GEOCHEMISTRY GEOPHYSICS GEOSYSTEMS*  
Pimentel-Galvan, M., Lau, K. V., Maher, K., Mukerji, T., Lehrmann, D. J., Altiner, D., Payne, J. L.  
2022; 23 (1)
- **First record of shark microremains from the Lower Khartam Member, Khuff Formation: an Upper Permian origin of the genus *Lissodus*, or a new placement of the Permo/Triassic boundary in Saudi Arabia?** *STRATIGRAPHY*  
Babiker, J., Kaminski, M. A., Humphrey, J. D., Al-Ramadan, K., Payne, J. L., Alqubalee, A.  
2022; 19 (3): 179-186
- **Triassic Foraminifera from the Great Bank of Guizhou, Nanpanjiang Basin, south China: taxonomic account, biostratigraphy, and implications for recovery from end-Permian mass extinction** *JOURNAL OF PALEONTOLOGY*  
Altiner, D., Payne, J. L., Lehrmann, D. J., Ozkan-Altiner, S., Kelley, B. M., Summers, M. M., Yu, M.  
2021; 95: 1-53
- **A global ecological signal of extinction risk in terrestrial vertebrates.** *Conservation biology : the journal of the Society for Conservation Biology*  
Munstermann, M. J., Heim, N. A., McCauley, D. J., Payne, J. L., Upham, N. S., Wang, S. C., Knope, M. L.  
2021
- **Ecological Filtering and Exaptation in the Evolution of Marine Snakes** *AMERICAN NATURALIST*  
Gearty, W., Carrillo, E., Payne, J. L.

2021

- **Lepidoptera demonstrate the relevance of Murray's Law to circulatory systems with tidal flow.** *BMC biology*  
Schachat, S. R., Boyce, C. K., Payne, J. L., Lentink, D.  
2021; 19 (1): 204
- **The role of carbonate factories and sea water chemistry on basin-wide ramp to high-relief carbonate platform evolution: Triassic, Nanpanjiang Basin, South China** *DEPOSITIONAL RECORD*  
Lehrmann, D. J., Stepchinski, L. M., Wolf, H. E., Li, L., Li, X., Minzoni, M., Yu, M., Payne, J. L.  
2021
- **Proliferation of Chondrodonta as a proxy of environmental instability at the onset of OAE1a: Insights from shallow-water limestones of the Apulia Carbonate Platform** *SEDIMENTOLOGY*  
Del Viscio, G., Frijia, G., Posenato, R., Singh, P., Lehrmann, D. J., Payne, J. L., Al-Ramadan, K., Struck, U., Jochum, K. P., Morsilli, M.  
2021
- **Implications of giant ooids for the carbonate chemistry of Early Triassic seawater** *GEOLOGY*  
Li, X., Trower, E. J., Lehrmann, D. J., Minzoni, M., Kelley, B. M., Schaal, E. K., Altiner, D., Yu, M., Payne, J. L.  
2021; 49 (2): 156–61
- **Biotic and Abiotic Controls on the Phanerozoic History of Marine Animal Biodiversity** *ANNUAL REVIEW OF ECOLOGY, EVOLUTION, AND SYSTEMATICS, VOL 52, 2021*  
Bush, A. M., Payne, J. L., Futuyma, D. J.  
2021; 52: 269-289
- **Mass extinctions alter extinction and origination dynamics with respect to body size** *PROCEEDINGS OF THE ROYAL SOCIETY B*  
Monarrez, P. M., Heim, N. A., Payne, J. L.  
2021; 288: 1–8
- **Fully automated carbonate petrography using deep convolutional neural networks** *MARINE AND PETROLEUM GEOLOGY*  
Koeshidayatullah, A., Morsilli, M., Lehrmann, D. J., Al-Ramadan, K., Payne, J. L.  
2020; 122
- **A GENERAL MODEL FOR GROWTH TRAJECTORIES OF LINEAR CARBONATE PLATFORMS** *JOURNAL OF SEDIMENTARY RESEARCH*  
Goudemand, N., Singh, P., Payne, J. L.  
2020; 90 (9): 1139–55
- **Geochemical, biostratigraphic, and high-resolution geochronological constraints on the waning stage of Emeishan Large Igneous Province** *GEOLOGICAL SOCIETY OF AMERICA BULLETIN*  
Zhong, Y., Mundil, R., Chen, J., Yuan, D., Denyszyn, S. W., Jost, A. B., Payne, J. L., He, B., Shen, S., Xu, Y.  
2020; 132 (9-10): 1969–86
- **The evolution of complex life and the stabilization of the Earth system.** *Interface focus*  
Payne, J. L., Bachan, A., Heim, N. A., Hull, P. M., Knope, M. L.  
2020; 10 (4): 20190106
- **The evolution of complex life and the stabilization of the Earth system** *INTERFACE FOCUS*  
Payne, J. L., Bachan, A., Heim, N. A., Hull, P. M., Knope, M. L.  
2020; 10 (4)
- **Respiratory medium and circulatory anatomy constrain size evolution in marine macrofauna** *PALEOBIOLOGY*  
Heim, N. A., Bakshi, S. H., Buu, L., Chen, S., Heh, S., Jain, A., Noll, C., Patkar, A., Rizk, N., Sundararajan, S., Villante, I., Knope, M. L., Payne, et al  
2020; 46 (3): 288–303
- **End-Guadalupian extinction of larger fusulinids in central Iran and implications for the global biotic crisis** *PALAEOGEOGRAPHY PALAEOCLIMATOLOGY PALAEOECOLOGY*  
Arefifard, S., Payne, J. L.  
2020; 550
- **Controls on carbonate platform architecture and reef recovery across the Palaeozoic to Mesozoic transition: A high-resolution analysis of the Great Bank of Guizhou** *SEDIMENTOLOGY*



- Kelley, B. M., Lehrmann, D. J., Yu, M., Jost, A. B., Meyer, K. M., Lau, K., Altiner, D., Li, X., Minzoni, M., Schaal, E. K., Payne, J. L.  
2020
- **Giant sector-collapse structures (scalloped margins) of the Yangtze Platform and Great Bank of Guizhou, China: Implications for genesis of collapsed carbonate platform margin systems** *SEDIMENTOLOGY*  
Lehrmann, D. J., Minzoni, M., Enos, P., Kelleher, C., Stepchinski, L., Li, X., Payne, J. L., Yu, M.  
2020
  - **Idiographic and nomothetic approaches to heterogeneity are complementary: Response to comments on "Evaluating the influences of temperature, primary production, and evolutionary history on bivalve growth rates"** *PALEOBIOLOGY*  
Saulsbury, J., Moss, D. K., Ivany, L. C., Kowalewski, M., Lindberg, D. R., Gillooly, J. F., Heim, N. A., McClain, C. R., Payne, J. L., Roopnarine, P. D., Schoene, B. R., Goodwin, D., Finnegan, et al  
2020; 46 (2): 275–77
  - **Refined foraminiferal biostratigraphy of upper Wordian, Capitanian, and Wuchiapingian strata in Hambast Valley, Abadeh region (Iran), and paleobiogeographic implications** *GEOLOGICAL JOURNAL*  
Shahinfar, S., Yousefi Yeganeh, B., Arefifard, S., Vachard, D., Payne, J. L.  
2020
  - **A framework for the integrated analysis of the magnitude, selectivity, and biotic effects of extinction and origination** *PALEOBIOLOGY*  
Bush, A. M., Wang, S. C., Payne, J. L., Heim, N. A.  
2020; 46 (1): 1–22
  - **Body size, sampling completeness, and extinction risk in the marine fossil record** *PALEOBIOLOGY*  
Payne, J. L., Heim, N. A.  
2020; 46 (1): 23–40
  - **Physiological constraints on body size distributions in crocodyliformes.** *Evolution; international journal of organic evolution*  
Gearty, W. n., Payne, J. L.  
2020
  - **Approximate graph spectral decomposition with the Variational Quantum Eigensolver** *2020 SPIE Quantum Information Science, Sensing, and Computation XII*  
Payne, J., Srouji, M.  
2020
  - **Interactions between sediment production and transport in the geometry of carbonate platforms: Insights from forward modeling of the Great Bank of Guizhou (Early to Middle Triassic), south China** *Marine and Petroleum Geology*  
Li, X., Falivene, O., Minzoni, M., Lehrmann, D. J., Reijmer, J. J., Morsilli, M., Al-Ramadan, K. A., Yu, M., Payne, J. L.  
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