

Colin D. Sumrall

Curriculum Vitae

Department of Earth and Planetary Sciences
The University of Tennessee
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1. Research Interests

My research interests are broadly aimed at understanding the evolutionary history of life on Earth using echinoderms as exemplars. Current projects include: (1) determining the nature, extent, and phylogenetic framework of the echinoderm radiation; (2) Understanding how geographic sampling bias affects the understanding of paleontological data; (3) determining effects of fossil data in phylogenetic reconstruction; (4) using ontogeny to understand origins and pathways of morphological change; and (5) understanding echinoderm morphologic disparity in three dimensional space and its phylogenetic application.

2. Education

Ph.D. (1996) University of Texas at Austin (Dr. James Sprinkle, *advisor*)
M.A. (1991) University of Texas at Austin (Dr. James Sprinkle, *advisor*)
B.S. (1989) Arizona State University, *magna cum laude* (Dr. Robert Lundin, *advisor*)

3. Professional Experience

Assistant Professor, Dept. of Earth and Planetary Sciences, University of Tennessee (2012-present)
Lecturer, Department of Earth and Planetary Sciences, University of Tennessee (2002-2012)
Curator and Department Head of Invertebrate Paleontology, Cincinnati Museum Center (1998-2002)
Visiting Assistant Professor, Department of Geoscience, University of Iowa (2000-2001)
Adjunct Assistant Professor, Department of Geology, University of Cincinnati (1999-2004)
Visiting Professor, Department of Geology, Tulane University (1997)
Instructor, Physical Science Department, Austin Community College, Riverside Campus (1994)
Research Assistant, Department of Geological Sciences, University of Texas at Austin (1994)
Teaching Assistant, Department of Geological Sciences, University of Texas at Austin (1990-1995)
Teaching Assistant, Geology Department, Arizona State University (1989)

4. Honors, Recognition, and Awards

Outstanding Teaching Award, UT Department of Earth and Planetary Sciences (2006, 2009, 2011, 2012)
Chancellor's Award for Excellence in Teaching, University of Tennessee (2008)
George Martin Hall Departmental Service Award, University of Tennessee (2007)
Young Scientist Travel Grant, Fifth European Conference on Echinoderms (1998)
Outstanding Student Technical Presentation, University of Texas at Austin (1996)
Outstanding Teaching Assistant, University of Texas at Austin (1996)
University Fellowships, University of Texas at Austin (1991, 1994, 1995)
Student Research Grant, Geological Society of America (1991)
American Mineralogists Undergraduate Award (1989)
R. S. Dietz Field Camp Scholarship (1989)

5. Competitive Research Funding (* denotes current funding)

- *(2016) National Science Foundation (\$416,000; [\$27,000 to Senior Personnel Sumrall], with co-P.Is. Larry McKay and Sally Horn); Engagement of Students and Faculty at Community Colleges to Enhance Recruitment to 4-Year Geoscience Programs.
- *(2015) National Science Foundation (DEB-1519658; \$24,892; P.I.) ROA supplemental funding award); Collaborative Research: Assembling the Echinoderm Tree of Life.
- (2013) National Science Foundation (DEB-1314236; \$20,744; P.I.) ROA supplemental funding award); Collaborative Research: Assembling the Echinoderm Tree of Life.
- (2012) National Science Foundation (DEB-1213530; \$25,175; P.I.) ROA supplemental funding award); Collaborative Research: Assembling the Echinoderm Tree of Life.
- *(2010) National Science Foundation (DEB-1036416; \$2,999,547 [\$181,724 to P.I. Sumrall]); Collaborative Research: Assembling the Echinoderm Tree of Life.
- (2008) National Science Foundation (EAR-0745918; \$137,697; [\$105,000 to Lead P.I. Sumrall] with co-I. Michael L. McKinney); Investigating the Role of Heterochrony in the Evolution of Edrioasteroids.
- (2006) National Science Foundation GK-12 Program (\$1,979,768; with P.I. Sally Horn [\$109,710 to Faculty Advisor Sumrall]); Enriching Earth Science in Rural Tennessee Middle Schools Through Research-based Activities on Climate and Environments History.
- (2000) National Geographic Society (\$20,000; P.I.); Diversification of Echinoderms: Evidence from Siberia.
- (1997) National Science Foundation (\$293,381; co-I, replacing Nigel Hughes); Invertebrate Paleontology Collections Transfer from the University of Cincinnati to the Cincinnati Museum Center.
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6. Extended Field Activities

- (2014) Upper Ordovician stratigraphy and paleontology in southwestern Sardinia, Italy
- (2013) Early Ordovician stratigraphy and paleontology in the Pre-Cordillera, Argentina
- (2011) Cambrian through Devonian stratigraphy and paleontology in central and northern Spain
- (2009) Silurian stratigraphy and paleontology in the Pre-Cordillera of Argentina
- (2002) Lower Cambrian strata of the Siberian platform, Olenek River, northern Siberia
- (1999-2000) Upper Ordovician obrution deposits and associated echinoderms in the Cincinnati Series
- (1991, 1993, 1994, 1997) Cambrian and Ordovician echinoderms and associated strata of the Great Basin
- (1991) Devonian to Pennsylvanian edrioasteroid localities throughout the North American Mid-continent
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7. Educational Activities

Course Instruction

- Evolution and the History of Life, Physical Geology, Historical Geology
- Principles of Paleontology, Paleobiology
- Introduction to Fossils, Invertebrate Paleontology
- Taphonomy in the Paleontologic Record
- Phylogeny Reconstruction Techniques
- Sedimentology/Stratigraphy, Sedimentary Depositional Processes
- Introduction to Field Methods, Field Camp
- Professional Presentations
- Age of the Dinosaurs
- Biosphaeric Change and the Fossil Record

K-12 Teacher Education

- Lecturer at the TENMAPS teacher workshops (2007-2009)
- Panelist for workshop on increasing the quality of teaching at the University of Tennessee (2008)
- Knox County Teacher In Service Day (2003-2004)

Community Outreach and Museum-related Activities:

- Activity Director, “Fossils,” Tennessee Science Olympiad (2005-2011)
- Activity Leader, “Fossils” and “Bones,” Morningstar Child Development Center (2007-2009)
- Activity Designer and Director, “Dinosaurs for Dinner,” UT Earth Science Day (2008-2009)
- Program Director, “Dinosaurs”, UT Kids U! middle school summer program (2008)
- Activity Designer and Director, “Climb Through Time,” UT Earth Science Day (2003-2007)
- Initiated competition to name an official fossil of Cincinnati (2001)
- Exhibit Design Committee, “Prized Possessions,” Cincinnati Museum Center (1999-2000)
- Activity Leader, “Members of the Museum,” bimonthly Tri-State paleo field trips (1998-2000)
- Design Leader, “Curator’s Corner” interactive instruction, Cinergy Children’s Museum (1998-1999)

8. Student Supervision and Mentoring

Primary Supervisor (current graduate students)

- Jennifer E. Bauer (Ph.D.) Phylogeny, paleobiogeography and internal morphology of blastoids echinoderms (in progress)
- Sarah L. Sheffield (Ph.D.) Phylogeny, biogeography and function of Ordovician and Silurian diploporitan cystoids (in progress)
- Ryan O. Roney (Ph.D.) Phylogeny of *Mecaster* and the South American Cretaceous record of echinoids (in progress)

Primary Supervisor (past graduate students)

- J. William Atwood (Ph.D.) Ontogeny and phenotypic plasticity in the blastoids (*defended* 2012)
- René Shroat-Lewis (Ph.D.) Paleocology of edrioasteroid-dominated hard substrate communities (*defended* 2011)
- Troy Fadiga (Ph.D.) Phylogeny and functional morphology of Glyptocystitoid Rhombiferans (*not defended*)
- Ryan O. Roney (M.S.) Paleobiogeographical variation of *Mecaster batnensis* and *M.ourneli* (*defended* 2013)
- Troy Dexter (M.S.) Respiratory flow in Blastoidea (*defended* 2006)
- Kimberly Koverman (M.S.) Systematics of Blastoidomorph Echinoderms (*defended* 2003)

Primary Supervisor (current undergraduate students)

- Michael Lannom, Comparative faunal analysis of Upper Mississippian blastoids localities
- Logan Qualls, Three dimensional representation of the hydrospires of spiraculate blastoids
- Zak Dearmin, Three dimensional representation of the hydrospires of fissiculate blastoids

Primary Supervisor (current undergraduate students)

- Sean Blackwell (B.S.) Understanding shape variation in the Ordovician mitrate echinoderm *Enoploura* using outline morphometrics (*graduated* 2013)
- James Carrasco, Investigation of the ontogeny of the Mississippian blastoid *Pentremites* (*graduated* 2012)
- Paul Brooks, Investigation of the repeatability in calculating blastoid thecal volume (*graduated* 2012)
- Emily Napier, Investigating space utilization in the edrioasteroid *Neoisorophusella lanei* (*graduated* 2011)
- Julie Mathis, Investigation of echinoderm biogenetic sediment size distribution (*graduated* 2006)
- Kirsten Oswald, Investigation of discocystinid edrioasteroid feeding strategies (*graduated* 2005)
- Patricia Hall, Ontogenetic morphometrics in edrioasteroids (*graduated* 2004)
- Stephanie Drumheller, Paleocology of fossil snakes from the Gray Fossil Site (*graduated* 2004)

Committee Service

- Orlando Schwery (Ph.D.) Phylogenetic patterns of diversification of North American Ding beetles (*in progress*)
- Mackenzie Hodges (M.S.) Urban impact on the diversity of land snails of east Tennessee (*defended 2016*)
- Jason Muhlbauer (M.S.) Implication of facies driven sampling for detrital zircon provenance interpretation (*defended 2015*)
- Laura Pullum (M.S.) Survivirship of reintroduced freshwater muscels in East Tennessee (*defended 2014*)
- Grant Mincy (M.S.) Fresh water muscels as indicators of pollution (*defended 2013*)
- James Tomka (Ph.D.) Silurian echinoderm faunas from Indiana (*defended 2015*)
- Joy Buongiorno (M.S.) Formation and geochemistry of high Andean oncolites (*defended 2013*)
- Caroline Dietz (M.S.) Taxonomy and functional diversity of microbial symbionts in lucinid clams (*not defended*)
- William Garcia (Ph.D.) Systematics of a New Stem Tetrapod Locality in Northern Kentucky (*not defended*)
- Bradley Deline (Ph.D.) Environmental constraints on crinoid morphology (*defended 2009*)
- Whitney Koscis (Ph.D.) Assessing the tree-ring oxygen isotope hurricane proxy (*defended 2008*)
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9. Other Professional Activities

Symposia Organization

- Fossilized development, North American Paleontological Convention (2009; with Nigel Hughes)
- Phylogenetic perspectives on assembling the tree of life in deep time. Geological Society of America (2008; with Christopher A. Brochu and Talia Karim)
- Teaching Organic Evolution for K-16 Students and Pre-Service Teachers: Viewpoints, Techniques, and Approaches. Co-sponsored by National Association for Geoscience Teachers; Southeastern Section, Paleontological Society. (2007; with Michael A. Gibson)
- When Clocks Collide: Calibrating Lineage Divergences from Fossils and Molecules. North American Paleontological Convention (2001; with Christopher A. Brochu and Jessica M. Theodor)

Paleontological Society Committees

- Associate Editor, Journal of Paleontology (2007-*present*)
- International Research Program/Sepkoski Grants Committee (1999-*present*)
- Education and Outreach Committee (2000-2010)
- Paleontological Society Southeastern Section Chair (2005-2006)

SEPM Committees

- R. C. Moore Medalist Committee (2016-*present*)

Peer Review Service

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| • <i>Journal of Paleontology</i> | • <i>Evolution and Development</i> |
| • <i>Queensland Museum Memoirs</i> | • <i>Palaeontology</i> |
| • <i>Paleobios</i> | • <i>ACTA Palaeontologica Polonica</i> |
| • <i>Journal of the Marine Biological Association</i> | • National Science Foundation |
| • <i>Nature</i> | • <i>Palaeo-Palaeo-Palaeo</i> |
| • <i>AAP Memoir</i> | • <i>Paläontologische Zeitschrift</i> |

NSF Workshop and Panel Participation

- *Future Directions in Paleontology Workshop*, Washington D.C. (2006)
- *Decadal Vision for Taxonomy and Natural History Collections*, Gainesville, FL (2003)
- Doctoral Dissertation Improvement Grant (DDIG) advisory panel (2004)

Professional Meetings

- Meeting Chair, Geological Society of America Southeast Section (2018)
- Session chair, Geological Society of America, Annual Meeting (1998, 1999, 2004, 2010)
- Session chair, Evolution Meeting (2000)

Educational consulting

- Middle school geological science textbook review, Holt Rinehart & Winston Publishers (2003).
- Identification and organization of primitive echinoderm collection, Museum of Comparative Zoology, Harvard University

10. Professional Invited Lectures († denotes international presentation)

The Mistaken Extinction – How Dinosaurs Flew Through the End-Cretaceous Event

Department of Environmental Studies, University of North Carolina, Asheville (2016)

Universal Elemental Homology: the Key to Recovering the Echinoderm Tree-of Life

Department of Geology, University of Arkansas, Littlerock (2014)

† Facultad de Geología, Universidad Nacional de Córdoba (2013)

Early Paleozoic fossils: the Key to Recovering the Echinoderm Tree-of Life

University of Tennessee, Department of Ecology and Evolutionary Biology (2011)

University of Tennessee, Department of Earth and Planetary Sciences (2011)

Universal Elemental Homology- the Key to Understanding the Evolutionary History of Echinoderms

Department of Geological Sciences, University of Texas at Austin (2011)

When Five isn't Five – Understanding Aberrant Symmetry in Echinoderms

Department of Geological Sciences, University of Texas at Austin (2011)

Adventures in unraveling homology- the Key to Understanding the Evolutionary History of Echinoderms

† Facultad de Geología, Universidad Nacional de San Juan, Argentina (2009)

University of Tennessee (2009)

Department of Geoscience, University of Iowa (2009)

School of Earth Science, Ohio State University (2009)

Symmetry in Echinoderms – Bridging the Gap between Early Post-larval Ontogeny and the Fossil Record

Department of Geology, University of Georgia (2004)

Department of Geology, Virginia Tech (2003)

Earth History and Paleobiology Seminar Series, Harvard University (2001)

Department of Geology, University of Cincinnati (2001)

Department of Geoscience, University of Iowa (2000)

Phylogenetic Systematics – Exploring the new Paradigm with Echinoderms

Department of Geological Sciences, University of Tennessee, Haines-Morris Visiting Scholar (2000)

Department of Geology, Miami University (2000)

Department of Geology, Indiana University (1999)

Piecing Together the Phylogeny of Echinodermata

Department of Geology, University of Cincinnati (1998)

Echinoderm Evolution: What Have We Learned, and Where Do We Go From Here?

Department of Geological Sciences, University of Missouri (1998)

Department of Geological Sciences, Tulane University (1997)

Getting to the Root of the Problem: Echinoderm Phylogeny Based on Early Paleozoic Fossil Taxa

11. Invited Lectures (Public Outreach Presentations)

The Origin of Birds

Tellico Village Bird Club (2016)
Darwin Day, University of Tennessee (2015)
Tennessee Science Forum (2015)
Tennessee Ornithological Union, Knoxville Chapter (2014)
Tennessee Valley Unitarian Universalist Church Forum (2008)
Rationalists of East Tennessee (2008)
Knoxville Gem and Mineral Society (2007)
O'Connor Senior Center (2007)

Beautiful and Bizarre Cincinnati Echinoderms

Cincinnati GeoFair (2011)

Science, Evolution, and the fossil record

Evolution and Science: A Church's View on the Science of Evolution, United Methodist Church (2010)

A New Understanding of the Evolutionary History of Edrioasteroids

Cincinnati Dry Dredgers (2009)

A New Edrioasteroid Fauna from the Ordovician of Morocco and the Internal Anatomy of Pyrgocystids

Kentucky Paleontological Society (2007)

When Five Isn't Five: Understanding Aberrant Echinoderms

Knoxville Gem and Mineral Society (2003)
Mid American Paleontological Society (2001)
Dry Dredgers Society of Amateur Geologists and Paleontologists (2001)

Glyptocystitoid Rhombiferans - New Information on Growth, Relationships and Their Last Stand in Iowa

Cedar Valley Rock Club (2001)
Kentucky Paleontological Society (2001)

The History of Echinoderms

Falls Fossil Festival, Falls of the Ohio State Park, Indiana (1999)

"Glyptocystites fultonensis," Cincinnati's Mystery Fossil Found

Dry Dredgers Society of Amateur Geologists and Paleontologists (1999)
The Langdon Club (1999)

Edrioasteroids after the Ordovician

Kentucky Paleontological Society (1999)
Dry Dredgers Society of Amateur Geologists and Paleontologists (1998)

Monsters of the Ordovician

Fossil Fest, Cincinnati Museum Center (1999)

A Survey of Echinoderm Diversity

Brukner Center Gem and Mineral Club (2000)
Kentucky Paleontological Society (1998)

Research and scholarly publications

	Google Scholar	Web of Science
Citations:	1034	644
h-index:	19	16
i10-index:	37	26

- data compiled 9-13-2016

Articles published in refereed journals

This list includes 59 papers published in 15 peer review journals including: *Systematic Biology*, IF = 14.387; *Systematic Palaeontology*, IF = 3.727; *Biology letters*, IF = 3.248; *Plos One*, IF = 3.234; *Palobiology*, IF = 2.658; *Geological Magazine*, IF = 2.482; *Palaeogeography, Palaeoclimatology, Palaeoecology*, IF = 2.339. Although many of my papers are published in the relatively low impact publication *Journal of Paleontology* (IF = 1.783), this is the standard international journal for systematic descriptions of taxa. † Indicates graduate student coauthor. Candidate's contribution is indicated for multiple authored papers.

1. **Sumrall, C.D.** 1992. *Spiraclavus nacoensis*, a new clavate agelacrinitid edrioasteroid from central Arizona. *Journal of Paleontology*, 66(1):90-98. (Collected the specimens and wrote the manuscript)
2. **Sumrall, C.D.** 1993. Thecal designs in isorophinid edrioasteroids. *Lethaia*, 26(4):289-302. (Collected the specimens and wrote the manuscript)
3. **Sumrall, C.D.** and J. Sprinkle. 1995. Plating and pectinirrhombs of the Ordovician rhombiferan *Plethoschisma*. *Journal of Paleontology*, 69(4):772-778. (Conceptualized the project and wrote much of the manuscript)
4. **Sumrall, C.D.** 1996. Late Paleozoic edrioasteroids (Echinodermata) from the North American midcontinent. *Journal of Paleontology*, 70(6):969-985. (Conceptualized the project and wrote much of the manuscript)
5. **Sumrall, C.D.** and A.L. Bowsher. 1996. *Giganticlavus*, a new genus of Pennsylvanian edrioasteroid from North America. *Journal of Paleontology*, 70(6):986-993. (Conceptualized the project and wrote much of the manuscript)
6. **Sumrall, C.D.**, J. Sprinkle, and T.E. Guensburg. 1997. Systematics and paleoecology of Late Cambrian echinoderms from the western United States. *Journal of Paleontology*, 71(6):1091-1109. (Collected much of the material, conceptualized the project and wrote much of the manuscript)
7. Lundin, R.F. and **C.D. Sumrall**. 1999. Ostracodes from the Naco Formation (Upper Carboniferous) at the Kohl Ranch locality, central Arizona. *Journal of Paleontology*, 73(3):454-460. (Collected much of the material, conceptualized the project and wrote much of the manuscript)
8. **Sumrall, C.D.** and J. Sprinkle. 1999. *Ponticulocarpus*, a new cornute-grade stylophoran from the Middle Cambrian Spence Shale of Utah. *Journal of Paleontology*, 73(5):886-891. (Wrote most of the manuscript)
9. **Sumrall, C.D.** 2000. The biological implications of an edrioasteroid attached to a pleurocystitid rhombiferan. *Journal of Paleontology*, 74(1):67-71. DOI: 10.1666/0022-

- 3360(2000)074<0067:TBIOAE>2.0.CO;2 (Conceptualized the project and wrote much of the manuscript)
10. †**Sumrall, C.D.**, J. Garbisch, and J.P. Pope. 2000. The systematics of postibullinid edrioasteroids. *Journal of Paleontology*, 74(1):72-83. DOI: 10.1666/0022-3360(2000)074<0072:TZOPE>2.0.CO;2 (Conceptualized the project and wrote the manuscript)
 11. †**Sumrall, C.D.** and D.T. Carlson. 2000. Suture modification by pectinirhomb growth in *Lepadocystis decorus*, a new species of callocystitid glyptocystitid rhombiferan (Echinodermata) from Illinois. *Journal of Paleontology*, 74(3):487-491. DOI: 10.1666/0022-3360(2000)074<0487:SMBPGI>2.0.CO;2 (Conceptualized the project and wrote the manuscript)
 12. **Sumrall, C.D.** 2001. Paleoecology of two new edrioasteroids from a Mississippian hardground in Kentucky. *Journal of Paleontology*, 75(1):136-146. DOI: 10.1666/0022-3360(2001)075<0136:PATOTN>2.0.CO;2 (Conceptualized the project and wrote the manuscript)
 13. Brochu, C.A., H.N. Bryant, J.M. Theodor, M.A. O'Leary, J. Adrain, and **C.D. Sumrall**. 2001. Modern phylogenetics in paleontology: Comments on Vermeij. *Paleobiology*, 27(1):174-176. DOI: 10.1666/0094-8373(2001)027<0174:MPIPCO>2.0.CO;2 (Wrote some of the discussion and edited the manuscript)
 14. Brochu, C.A., and **C.D. Sumrall**. 2001. Phylogenetic nomenclature and paleontology. *Journal of Paleontology*, 75(4):754-757. DOI: 10.1666/0022-3360(2001)075<0754:PNAP>2.0.CO;2 (Wrote half of the manuscript)
 15. **Sumrall, C.D.**, J. Sprinkle, and T.E. Guensburg. 2001. Comparison of flattened blastozoan Echinoderms: insights from the new Early Ordovician eocrinoid *Haimacystis rozhnovi*. *Journal of Paleontology*, 75(5):985-992. DOI: 10.1666/0022-3360(2001)075<0985:COFBEI>2.0.CO;2 (Collected much of the material, conceptualized the project and wrote most of the manuscript)
 16. **Sumrall, C.D.**, C.A. Brochu, and J.W. Merck Jr. 2001. Global lability, regional resolution, and majority rule consensus bias. In A.B. Smith and L.E. Park (eds.), Beyond phylogenetic reconstruction: Tree-based approaches to paleontological questions. Special issue of *Paleobiology*, 27(2):254-261. DOI: 10.1666/0094-8373(2001)027<0254:GLRRAM>2.0.CO;2 (Conceptualized and wrote much of the manuscript)
 17. **Sumrall, C.D.** 2002. A new species of *Anartiocystis* (Callocystitida, Glyptocystida) from the Brassfield Formation of central Kentucky. *Journal of Paleontology*, 76(5):918-920. DOI: 10.1666/0022-3360(2002)076<0918:ANSOAC>2.0.CO;2 (Conceptualized the project and wrote the manuscript)
 18. **Sumrall, C.D.** and G.A. Schumacher. 2002. *Cheirocystis fultonensis*, a new glyptocystitid rhombiferan from the Upper Ordovician of the Cincinnati Arch. *Journal of Paleontology*, 76(5):843-851. DOI: 10.1666/0022-3360(2002)076<0843:CFANGR>2.0.CO;2 (Collected the material, wrote most of the manuscript, and generated most of the figures)
 19. **Sumrall, C.D.** and C.E. Brett. 2002. A revision of *Novacystis hawkesi*, (Lower Silurian: Glyptocystitida, Echinodermata) and the phylogeny of early callocystitids. *Journal of Paleontology*, 76(4):733-740. DOI: 10.1666/0022-3360(2002)076<0733:ARONHP>2.0.CO;2 (Wrote most of the manuscript, and generated most of the figures)
 20. †Cornell, S., C.E. Brett, and **C.D. Sumrall**. 2003. Paleoecology and taphonomy of an edrioasteroid-dominated hardground association from tentaculitid limestones in the Early Devonian of New York: a Paleozoic rocky peritidal community. *PALAIOS*, 18:212-224. DOI: 10.1669/0883-1351(2003)018<0212:PATOAE>2.0.CO;2 (Provided conceptual framework for the fossils in this study, generated some of the figures, and edited the manuscript)

20. **Sumrall, C.D.** and C.A. Brochu. 2003. Resolution, sampling, higher taxa and assumptions in stratocladistic analysis – comments on Bodenbender and Fisher. *Journal of Paleontology*, 77(1):189-194. DOI: 10.1666/0022-3360(2003)077<0189:RSHTAA>2.0.CO;2 (Provided conceptual framework for the project, and assisted in the writing, and data analysis)
21. **Sumrall, C.D.** and R.L. Parsley. 2003. Morphology and biomechanical implications of isolated discocystinid plates (Edrioasteroidea, Echinodermata) from the Carboniferous of North America. *Palaeontology*, 46(1):113-138. DOI: 10.1111/1475-4983.00290 (Collected the material used in the study, generated the figures, and wrote the manuscript)
22. Broadhead, T.W. and **C.D. Sumrall**. 2003. Heterochrony and paedomorphic development of *Sprinkleocystis ektopios*, new genus and species (Rhombifera, Glyptocystida) from the Middle Ordovician (Carodoc) of Tennessee. *Journal of Paleontology*, 77(1):113-120. DOI: 10.1666/0022-3360(2003)077<0113:HAPMOS>2.0.CO;2 (Assisted in the writing, editing, and generated the figures for the manuscript)
23. Brochu, C.A., **C.D. Sumrall**, and J.M. Theodor. 2004. When clocks (and communities) collide: Estimating divergence time from molecules and the fossil record. *Journal of Paleontology* 78(1):1-6. DOI: 10.1666/0022-3360(2004)078<0001:WCACCE>2.0.CO;2 (Assisted in the writing, and editing of the manuscript)
24. †**Sumrall, C.D.** and F.J. Gahn. 2006. Morphological and systematic reinterpretation of two enigmatic edrioasteroids (Echinodermata) from Canada. *Canadian Journal of Earth Science*, 43:497-507. DOI: 10.1139/E05-114 (Conceptualized the research, generated some of the figures, and wrote much of the manuscript)
25. **Sumrall, C.D.**, J. Sprinkle, and R.M. Bonem. 2006. An edrioasteroid-dominated echinoderm assemblage from a Lower Pennsylvanian marine conglomerate in Oklahoma. *Journal of Paleontology*. 80(2):229-244. DOI: 10.1666/0022-3360(2006)080[0229:AEEAFA]2.0.CO;2 (Conceptualized the research, generated the figures, and wrote the manuscript)
26. †**Sumrall, C.D.**, C.E. Brett, and S. Cornell. 2006. The systematics and ontogeny of *Pyrgopostibulla belli*, a new edrioasteroid (Echinodermata) from the Lower Devonian of New York. *Journal of Paleontology*. 80(1):187-192. DOI: 10.1666/0022-3360(2006)080[0187:TSAOOP]2.0.CO;2 (Conceptualized the research, generated most of the figures, and wrote much of the manuscript)
27. Parsley, R.L. and **C.D. Sumrall**. 2007. New recumbent echinoderm genera from the Bois d'Arc Formation: Lower Devonian (Lochkovian) of Cole County, Oklahoma. *Journal of Paleontology*, 81:1486-1493. DOI: 10.1666/04-072.1 (Conceptualized the research, generated most of the figures, and wrote much of the manuscript)
28. Blake, D.B., T.E. Guensburg, J. Sprinkle and **C.D. Sumrall**. 2007. A new, phylogenetically significant Early Ordovician asteroid (Echinodermata). *Journal of Paleontology*, 81:1257-1265. (Collected the material, prepared the specimens in the lab, and edited the manuscript)
29. **Sumrall, C.D.** and G.A. Wray. 2007. Ontogeny in the fossil record: diversification of body plans and the evolution of “aberrant” symmetry in Paleozoic echinoderms. *Paleobiology*, 33(1):149-163. DOI: 10.1666/06053.1 (Conceptualized the research, generated most of the figures, and wrote much of the manuscript)
30. Sprinkle, J. and **C.D. Sumrall**. 2008. New parablattoid taxa from North America. *The University of Kansas Paleontological Contributions*, 16:1-14. (Collected the material, prepared the specimens in the lab, and wrote and edited much of the manuscript)

31. **Sumrall, C.D.**, C.E. Brett and M.L. McKinney. 2009. A new agelacrinitid edrioasteroid attached to hardground clasts from the McKenzie Member of the Mifflintown Member (Silurian) of Pennsylvanian, *Journal of Paleontology*, 83(5):794-803. DOI: 10.1666/08-096.1 (Conceptualized the research, generated most of the figures, and wrote much of the manuscript)
32. †**Sumrall, C.D.**, C.E. Brett, T.A. Dexter and A. Bartholomew. 2009. An enigmatic blastozoan fauna from central Kentucky, *Journal of Paleontology*, 83(5):739-749. DOI: 10.1666/08-104.1 (Collected and prepared some of the material, conceptualized the research, generated most of the figures, and wrote much of the manuscript)
33. †Dexter, T.A., **C.D. Sumrall**, M.L. McKinney. 2009. Allometric strategies for increasing respiratory surface area in Mississippian blastoid *Pentremites*. *Lethaia*, 42:127-137. DOI: 10.1111/j.1502-3931.2008.00110.x (Supervised the student researcher, generated one of the figures, and edited the manuscript)
34. †**Sumrall, C.D.**, J. Sprinkle, S. Pruss, and S. Finnegan. 2009. *Cardiocystella*, a new cornuted stylophoran from the Upper Cambrian Whipple Cave Formation, eastern Nevada, USA. *Journal of Paleontology*, 83:307-312. DOI: 10.1666/08-114.1 (Conceptualized the research, generated most of the figures, and wrote much of the manuscript)
35. **Sumrall, C.D.** and B. Deline. 2009. A new species of the dual-mouthed paracrinoid *Bistomiacystis* and a redescription of the edrioasteroid *Edrioaster priscus* from the Middle Ordovician Curdsville Member of the Lexington Limestone. *Journal of Paleontology*, 83:135-139. DOI: 10.1666/08-075R.1 (Conceptualized the research, generated most of the figures, and wrote much of the manuscript)
36. **Sumrall, C.D.** 2009. First definite record of Permian edrioasteroids: *Neoisorophusella maslennikovi* n. sp. from the Kungurian of northeast Russia. *Journal of Paleontology*, 83(6):990-993. DOI: 10.1666/09-063.1
37. Brochu, C.A., J.R. Wagner, S. Jouve, **C.D. Sumrall**, and L.D. Densmore. 2009. A correction corrected: consensus over the meaning of Crocodylia and why it matters, *Systematic Biology*, 58:537-543. DOI: 10.1093/sysbio/syp053 (Assisted with the conceptual framework for the project, and edited the manuscript)
38. **Sumrall, C.D.** 2010. The systematics of a new Maysvillian (Upper Ordovician) edrioasteroid pavement from northern Kentucky. *Journal of Paleontology*, 84(5):783-794. DOI: 10.1666/09-178.1
39. Zhao Yu., **C.D. Sumrall**, R.L. Parsley, J. Peng. 2010. *Kailidiscus*, a new plesiomorphic edrioasteroid from the basal middle Cambrian Kaili Biota of Guizhou Province, China. *Journal of Paleontology*, 84 (4):668-680. DOI: 10.1666/09-159.1 (Generated the conceptual framework for the project, made the figures, and wrote the manuscript)
40. †Shroat-Lewis, R.A., M.L. McKinney, C.E. Brett, D.L Meyer, and **C.D. Sumrall**. 2011. Paleoecologic assessment of an edrioasteroid (Echinodermata) encrusted hardground from the Upper Ordovician (Maysvillian) Bellevue Formation, Maysville, Kentucky. *PALAIOS*, 26:470-483. DOI: 10.2110/palo.2010.p10-141r (Supervised the student researcher, collected some of the material, and edited the manuscript)
41. McKinney, M.L. and **Sumrall, C.D.** 2011. Ambulacral growth allometry in edrioasteroids: Functional surface-volume change in ontogeny and phylogeny. *Lethaia*, 44:102-108. DOI: 10.1111/j.1502-3931.2010.00229.x (Provided material, generated some of the figures, and assisted writing and editing the manuscript)

42. **Sumrall, C.D.** and S. Zamora. 2011. Ordovician edrioasteroids from Morocco: Faunal exchanges across the Rheic Ocean. *Journal of Systematic Palaeontology*, 9:425-454. DOI: 10.1080/14772019.2010.499137. (Generated the conceptual framework for the project, made the figures, and wrote much of the manuscript)
43. Lefebvre B., K. Derstler, and **C.D. Sumrall**. 2012. A reinterpretation of the solute *Plasiacystis mobilis* (Echinodermata) from the Middle Ordovician of Bohemia. *Zoosymposia* 7:287-306. (Identified some of the material, and provided conceptual framework for the research)
44. **Sumrall, C.D.** and J.A. Waters. 2012. Universal Elemental Homology in Glyptocystitoids, Hemicosmitoids, Coronoids and Blastoids: Steps Toward Echinoderm Phylogenetic Reconstruction in Derived Blastozoa. *Journal of Paleontology*, 86:956-972. (Generated the conceptual framework for the project, made figures, and wrote much of the manuscript)
45. †Atwood, J.W. and **Sumrall, C.D.** 2012. Morphometric Investigation of the *Pentremites* Fauna from the Glen Dean Formation, Kentucky, *Journal of Paleontology*, 86(5):813-828. (Supervised the student researcher, collected some of the material, and edited the manuscript)
46. **Sumrall, C.D.**, J. Sprinkle, T.E. Guensburg and B.F. Dattilo. 2012. Early Ordovician mitrates and a solute (Echinodermata) from western Utah, central and southern Nevada and west Texas. *Journal of Paleontology*, 86(4):595-604. (Collected and analyzed material, generated figures, and wrote the manuscript)
47. Parsley, R.L., S.V. Rozhnov and **C.D. Sumrall**. 2012. A reinterpretation of the solute *Maenillia* (Echinodermata) from the Middle Ordovician of Russia. *Journal of Paleontology*. 86(3):462-469. (Analyzed the dataset, made figures, and assisted in writing the manuscript)
48. †**Sumrall, C.D.**, S. Heredia, C.M. Rodríguez and A.I. Mestre. 2012. The first report of South American edrioasteroids and the paleoecology and ontogeny of rhenopyrgid echinoderms. *Acta Palaeontologica Polonica*. doi:10.4202/app.2011.0120. (Collected material, analyzed the dataset, made figures, and wrote the manuscript)
49. Kammer, T.W., **C.D. Sumrall**, W.I. Ausich, B. Deline, and S. Zamora. 2013. Oral region homologies in Paleozoic crinoids and other plesiomorphic pentaradial echinoderms. *PLOS ONE*, 8(11):1-16. (Generated the conceptual framework for the project, made figures, and wrote much of the manuscript)
50. Zamora, S., **C.D. Sumrall**, and D. Vizcaïno. 2013. Morphology and ontogeny of the Cambrian edrioasteroid (Echinodermata) *Cambraster cannati* Miquel from western Gondwana. *Acta Palaeontologica Polonica*. 58:545-559. DOI:10.4202/app.2011.0152. (Generated the conceptual framework for the project, and wrote much of the manuscript)
51. †Shroat-Lewis, R.A., **C.D. Sumrall**, M.L. McKinney, and D.L. Meyer. 2014. A paleoecological comparison of two edrioasteroid (echinodermata)-encrusted pavements from the Upper Ordovician Corryville Formation of Florence, Kentucky and the Miamitown Shale of Sharonville, Ohio. *Palios*, 29:154-169. (Supervised the student researcher, collected some of the material, and edited the manuscript)
52. **Sumrall, C.D.** and J. Sprinkle. 2015. Unusual ambulacral branching pattern in the new Ordovician giant edrioasteroid *Bizarroglobus*. *Journal of Paleontology*, 89: 353-359. (Collected and analyzed material, generated figures, and wrote the manuscript)
53. Sprinkle, J. and **C.D. Sumrall**. 2015. New edrioasterine and astrocystitid (Echinodermata: Edrioasteroidea) from the Ninemile Shale (Lower Ordovician), central Nevada. *Journal of*

- Paleontology*, 89: 346-352. (Collected and analyzed material, generated figures, and wrote the manuscript)
54. **Sumrall, C.D.** and S. Zamora. 2015. A columnal-bearing eocrinoid from the Cambrian Burgess Shale (British Columbia, Canada). *Journal of Paleontology*, 89:366-368. (Analyzed material, generated figures, and wrote the manuscript)
 55. Zamora, S., **C.D. Sumrall**, and J. Sprinkle. 2015. A new long-stemmed Eocrinoid from the Furongian Point Peak Shale Member of the Wilberns Formation (Texas). *Journal of Paleontology*, 89:189-193. (Analyzed material, and helped write the manuscript)
 56. Rahman, I.A., J.A. Waters, **C.D. Sumrall**, and A. Astolfo. 2015. Early post-metamorphic, Carboniferous blastoid reveals the evolution and development of the digestive system in echinoderms, *Biology letters*, 11:20150776. (Helped to conceptualize the project and wrote part of the manuscript)
 57. †Mike, J., **C.D. Sumrall**, V. Maroulas, and F. Schwartz. 2016. Non-landmark classification in paleobiology: computational geometry as a tool for species discrimination. *Paleobiology*. (Scanned specimens and provided paleontological perspective for the manuscript)
 58. Lefebvre B., A.N. Allaire, T.E. Guensburg, A.W. Hunter, K. Kouraïss, E. Nardin, F. Noailles, B. Pittet, S. Zamora, **C.D. Sumrall**. 2016. Palaeoecological aspects of the diversification of echinoderms in the Lower Ordovician of central Anti-Atlas, Morocco. *Palaeogeography, Palaeoclimatology, Palaeoecology*. (Provided data, analyzed material, and helped write the manuscript)
 59. Zamora, S., **CD. Sumrall**, X. Zhu, and B. Lefebvre. 2016. A new stemmed echinoderm from the Furongian of China and the origin of Glyptocystitida (Blastozoa, Echinodermata). *Geological Magazine*. (Analyzed material, prepared phylogenetic analysis, and helped write the manuscript)

Contributions to edited volumes

This list includes 6 papers published in three peer review edited volumes and monograph series. Peer reviewed edited volumes are a common component of the systematic paleontological literature and are often heavily cited though not compiled by Web of Science (i.e. Sumrall 1997, 66 citations; Zamora et al., 2013, 36 citations – data from Google Scholar 7-13-2016). † Indicates graduate student coauthor.

1. **Sumrall, C.D.** 1997. The role of fossils in the phylogenetic reconstruction of Echinodermata, p. 267-288. In J. A. Waters and C. G. Maples (eds.) *Paleontological Society Papers Volume 3, Geobiology of Echinoderms*. The Paleontological Society, Pittsburgh. (Conceptualized the project and wrote the manuscript)
2. **Sumrall, C.D.** and C.A. Brochu. 2008. Viewing paleobiology through the lens of phylogeny. p. 165-183. In P. H. Kelley R. K. Bambach (eds.) *From Evolution to Geobiology: Research Questions Driving Paleontology at the Start of a New Century*. Paleontological Society Papers 14, The Paleontological Society, Pittsburgh. (Wrote the manuscript, and generated figures)
3. Brochu, C.A. and **C.D. Sumrall**. 2008. Phylogenetics and the integration of paleontology within the life sciences. p. 185-204. In P. H. Kelley R. K. Bambach (eds.) *From Evolution to Geobiology: Research Questions Driving Paleontology at the Start of a New Century*. Paleontological Society Papers 14, The Paleontological Society, Pittsburgh. (Provided some figures, assisted writing and editing the manuscript)

4. **Sumrall, C.D.** 2008. The origin of Lovén's Law in glyptocystitoid rhombiferans and its bearing on the plate homology and the heterochronic evolution of the hemicosmitid peristomal border. p. 228-241. *In* Ausich, W.I. and Webster, G.D. (eds.) *Echinoderm Paleobiology*. University of Indiana Press. (Conceptualized the project and wrote the manuscript)
5. Zamora, S., B. Lefebvre, J.J. Álvaro, S. Clausen, O. Elicki, O. Fatka, P. Jell, A. Kouchinsky, J. Lin, E. Nardin, R.L. Parsley, S.V. Rozhnov, J. Sprinkle, **C.D. Sumrall**, D. Vizcaïno, and A.B. Smith. 2013. Cambrian Echinoderm Palaeobiogeography, p. 151-164. *In* D.A.T. Harper and T. Servais (eds.) *Early Palaeozoic Biogeography and Palaeobiogeography*. Geological Society of London, *Memoirs*, 38. (Helped compile the dataset used in this study, provided some images, and edit the manuscript)
6. †Lefebvre, B., **C.D. Sumrall**, R.A. Shroat-Lewis, M. Reich, G.D. Webster, A.W. Hunter, E. Nardin, S.V. Rozhnov, T. E. Guensburg, A. Touzeau, F. Noailles and J. Sprinkle. 2013. Palaeobiogeography of Ordovician Echinoderms, p. 165-190. *In* D.A.T. Harper and T. Servais (eds.) *Early Palaeozoic Biogeography and Palaeobiogeography*. Geological Society of London, *Memoirs*, 38. (Helped compile the dataset used in this study, provided test for one section, provided some images, and edit the manuscript)

C.2.e Papers published in refereed conference proceedings

This list includes eight papers published in peer reviewed proceedings volumes. Peer reviewed proceedings volumes are a common component of the systematic paleontological literature and are often cited though not compiled by Web of Science (i.e. Sumrall 2010, 18 citations; Sumrall and Sprinkle 1998, 15 citations – data from Google Scholar 5-25-16). † Indicates graduate student coauthor, †† indicates undergraduate student coauthor.

1. **Sumrall, C.D.** and J. Sprinkle. 1998. Phylogenetic analysis of living Echinodermata based on primitive fossil taxa. p. 81-87. *In* R. Mooi and M. Tilford (eds.) *Echinoderms-San Francisco*. Balkema, Rotterdam.
2. **Sumrall, C.D.** and J. Sprinkle. 1999. Early ontogeny of the glyptocystitid rhombiferan *Lepadocystis moorei*. p. 409-414. *In* M.D.C. Carnevali and F. Bonasoro (eds.) *Echinoderm Research 1998*. A.A. Balkema, Rotterdam.
3. **Sumrall, C.D.** 2010. A model for elemental homology for the peristome and ambulacra in blastozoan echinoderms. p. 269-276. *In* Harris, L.G., S.A. Böttger, C.W. Walker, and M.P. Lesser. (eds.) *Echinoderms: Durham*, CRC Press, London.
4. †Sheffield, S.L. and **C.D. Sumrall**. 2015. A new interpretation of the oral plating patterns of the *Holocystites* Fauna (Diploporita: Echinodermata). p. 159-162. *In* S. Zamora and I. Rábano (eds.) *Progress in Echinoderm Paleobiology*. Cuadernos del Museo Geominero, 19. Instituto Geológico y Minero de España, Madrid. (Supervised student researcher, assisted in figure generation, and edited the manuscript)
5. †**Sumrall, C.D.**, B. Deline, J. Colmenar, S.L. Sheffield, and S. Zamora. 2015. New data on Late Ordovician (Katian) echinoderms from Sardinia, Italy. p. 175-180. *In* S. Zamora and I. Rábano (eds.) *Progress in Echinoderm Paleobiology*. Cuadernos del Museo Geominero, 19. Instituto Geológico y Minero de España, Madrid. (Assisted in the collection of material, supervised student researcher, generated most of the figures and wrote most of the manuscript)
6. ††Waters, J.A., **C.D. Sumrall**, L.E. White, and B.K. Nguyen. 2015. Advancing phylogenetic inference in the Blastoidea (Echinodermata): Virtual 3D reconstructions of the internal anatomy.

p. 193-199. In S. Zamora and I. Rábano (eds.) Progress in Echinoderm Paleobiology. Cuadernos del Museo Geominero, 19. Instituto Geológico y Minero de España, Madrid. (Helped to conceptualize the project and edited the manuscript)

7. †Bauer, J.E. **C.D. Sumrall** and J.A. Waters. 2015. Classifying blastoids through hydrosphere morphology. p. 33-36. In S. Zamora and I. Rábano (eds.) Progress in Echinoderm Paleobiology. Cuadernos del Museo Geominero, 19. Instituto Geológico y Minero de España, Madrid. (Supervised student researcher, and edited the manuscript)
8. **Sumrall, C.D.** 2015. Understanding the oral area of derived stemmed echinoderms. p. 169-174. In S. Zamora and I. Rábano (eds.) Progress in Echinoderm Paleobiology. Cuadernos del Museo Geominero, 19. Instituto Geológico y Minero de España, Madrid.

C.2.f Papers or extended abstracts published in conference proceedings

1. †**Sumrall, C.D.**, S. Herdia, C.M. Rodríguez, and A. Mestre. 2008. The first report of edrioasteroid echinoderms from South America. XVII Congreso Geológico Argentino.
2. **Sumrall, C.D.**, and Samuel Zamora. 2008. Cruzando el océano Rheico: Las faunas de edrioasteroideos del Ordovícico de Marruecos. Congreso de la Sociedad Española de Paleontología.

C.2.j Papers published in popular press

1. **Sumrall, C.D.** 2003. Morphology Shape and Phylogeny (book review). *PALAIOS*, 18(3):297-298.
2. **Sumrall, C.D.** 2005. Rhombifera. McGraw-Hill Encyclopedia, R-529.

C.2.k Manuscripts submitted for publication

† Indicates graduate student coauthor, †† indicates undergraduate student coauthor.

- *1. **Sumrall, C.D.** In Press. Chapter definitions for *Pan-Echinodermata*, *Echinodermata*, *Edrioasterida*, *Isorophida*, *Isorophina*, *Agelacrinitidae*, *Lepidodiscidae*, and *Discocystinae*. p. XXX-XXX. In K. de Queiroz, J. Gauthier, and P. Cantino (eds.) *Companion Volume to the PhyloCode*. (This peer-reviewed edited volume is the official document that replaces the 250 year-old Linnaean Classification of life with the PhyloCode tree based classification. I was asked to provide these short chapters by the PhyloCode Governing Committee)
- * 2. Zamora, S. and **C.D. Sumrall**. In Press. First report of coronates (Echinodermata) from Africa. In Hunter, A. (ed.) The Upper Ordovician Echinoderm Fauna from the Anti-Atlas Mountains of Morocco, *Special Papers in Palaeontology*.
- * 3. **Sumrall, C.D.** and S. Zamora. In Press. New data on edrioasteroids from the Upper Ordovician of the Anti-Atlas (Morocco). In Hunter, A. (ed.) The Upper Ordovician Echinoderm Fauna from the Anti-Atlas Mountains of Morocco, *Special Papers in Palaeontology*.
- * 4. Zamora, S. and **C.D. Sumrall**. In Press. *Hexedriocystis*, an aberrant eocrinoid convergent with edrioasteroids from the Upper Ordovician of Morocco. In Hunter, A. (ed.) The Upper Ordovician Echinoderm Fauna from the Anti-Atlas Mountains of Morocco, *Special Papers in Palaeontology*.

5. **Sumrall, C.D.** In revision. New insights concerning homology of the oral area and ambulacral system in echinoderms. In, S. Zamora (ed.) *Progress in Echinoderm Paleontology*, Special issue of *Journal of Paleontology*.
 6. †Sheffield, S.A. and **C.D. Sumrall**. In revision. Generic revision of the *Holocystites* Fauna of North America (Diploporita: Echinodermata) based on universal elemental homology. In, S. Zamora (ed.) *Progress in Echinoderm Paleontology*, Special issue of *Journal of Paleontology*.
 7. †Bauer, J.E., **C.D. Sumrall**, and J.A. Waters. In revision. Hydrospire morphology and its implications for blastoid phylogenetic inference. In, S. Zamora (ed.) *Progress in Echinoderm Paleontology*, Special issue of *Journal of Paleontology*.
 8. ††Waters, J.A., L.E. White, **C.D. Sumrall**, and B.K. Nguyen. In revision. A new model of respiration in blastoid (Echinodermata) hydrospires based CFD simulations of virtual 3D models. In, S. Zamora (ed.) *Progress in Echinoderm Paleontology*, Special issue of *Journal of Paleontology*.
- * These papers were accepted for publication three years ago but the publication has been beset by delays.

Edited Volume

1. Brochu, C.A., **C.D. Sumrall**, and J.M. Theodor (eds.). 2004. When Clocks Collide: Calibrating Lineage Divergences from Fossils and Molecules. Special issue of *Journal of Paleontology*. January, 2004

Other Publications

1. **Sumrall, C.D.** 1998. Fossils of Ohio (Book Review). *Geotimes*, 43(11):51.
2. Storrs, G.W. and **C.D. Sumrall**. 1999. Museum file 30: The geological collections at Cincinnati Museum Center, Ohio. *Geology Today*, 15(3):117-120.
3. **Sumrall, C.D.**, C.E. Brett, P.T. Work, and D.L. Meyer. 1999. Taphonomy and paleoecology of an edrioasteroid encrusted hardground in the lower Bellevue Formation at Maysville, Kentucky. p. 123-131. In T.J. Algeo and C.E. Brett (eds.) *Sequence, Cycle & Event Stratigraphy of Upper Ordovician & Silurian Strata of the Cincinnati Arch Region*. Field Trip Guidebook in conjunction with the 1999 Field Conference of the Great Lakes Section SEPM-SSG and the Kentucky Society of Professional Geologists. (Republished as Kentucky Geological Survey Guidebook 1, Series XII, 2001).
4. **Sumrall, C.D.**, P.T. Work, D.L. Meyer, G.W. Storrs, and E. Merritt. 2000. Notice of transfer of The University of Cincinnati paleontological collections to Cincinnati Museum Center. *Journal of Paleontology*, 74(6):1198.

Extended Abstracts

1. **Sumrall, C.D.**, S. Herdia, C.M. Rodríguez, and A. Mestre. 2008. The first report of edrioasteroid echinoderms from South America. XVII Congreso Geológico Argentino.
2. **Sumrall, C.D.**, and Samuel Zamora. 2008. Cruzando el océano Rheico: Las faunas de edrioasteroideos del Ordovícico de Marruecos. Congreso de la Sociedad Española de Paleontología.

Invited Presented Papers (*denotes plenary lecture, †denotes international talk)

This list includes nine presented papers in which the applicant was invited to give a paper by session organizers for symposia, theme sessions or as the plenary lecturer.

- *†**Sumrall, C.D.** 2015. Universal elemental homology and the understanding of the echinoderm mouth frame. Progress in Echinoderm Paleobiology Meeting, Zaragoza, Spain.
- Sumrall, C.D. 2014. Echinoderm phylogeny – the path forward. Topical session: Echinoderm Paleobiology: Phylogenetics, Morphology, and Evolutionary Paleocology. Geological Society of America, Abstracts with Program, 47:23-1.
- Sumrall, C.D.** and C. A. Brochu. 2008. Looking at Paleobiology Through the Lens of Phylogeny
Paleontological Society Centennial Short Course - From Evolution to Geobiology: Research Questions Driving Paleontology at the Start of a New Century.
- Sumrall, C.D.** and R.L. Parsley. 2008. New data on the morphology of plesiomorphic isorophid edrioasteroids. Topical session: Phylogenetic perspectives on assembling the tree of life in deep time
Geological Society of America, Abstracts with Program, 41.
- Sumrall, C.D.** 2007. Teaching Evolution in Earth and Planetary Sciences - Tailoring focus to class objectives. Topical session: Teaching Organic Evolution for K-16 Students and Pre-Service Teachers: Viewpoints, Techniques, and Approaches. Co-sponsored by National Association for Geoscience Teachers; Southeastern Section, Paleontological Society. *Geological Society of America, Abstracts with Program*, 40:1-11.
- Sumrall, C.D.** 2005. The origin of Lovén’s Law in glyptocystitoid rhombiferans and its bearing on the hemicosmitid peristomal border. Topical Session: Echinoderm paleobiology. *Geological Society of America, Abstracts with Program*, 38:25-13.
- Sumrall, C.D.** 2001. Gaps in the early echinoderm record - implications for understanding echinoderm diversity through time. Symposium: When Clocks Collide: Calibrating Lineage Divergences from Fossils and Molecules. *North American Paleontological Convention 2001, Abstracts of Papers. PaleoBios*, 21:A-123.
- Brochu, C.A. and **C.D. Sumrall** and J.M. Theodor. 2001. Phylogenetic revision and fossil divergence estimates: when is a conflict not a conflict? Symposium: When Clocks Collide: Calibrating Lineage Divergences from Fossils and Molecules. *North American Paleontological Convention 2001, Abstracts of Papers. PaleoBios*, 21:A-35.
- Brochu, C.A., **C.D. Sumrall**, and J.W. Merck, Jr. 1999. Majority rule consensus and bootstrap bias - Global lability and regional resolution. Symposium: beyond the tree – using phylogenies to learn from the fossil record. *Geological Society of America, Abstracts with Programs*, 31(7):A-138.

International Presented Papers (†denotes graduate student talks, ††denoted undergraduate student talks)

This list includes 19 presented papers in which the applicant was author on presentations at international meetings and conferences.

- †Sheffield, S.L. and **C.D. Sumrall**. 2015. A new interpretation of the oral plating patterns of the *Holocystites* Fauna (Diploporita: Echinodermata). Progress in Echinoderm Paleobiology Meeting, Zaragoza, Spain.
- †**Sumrall, C.D.**, B. Deline, J. Colmenar, S.L. Sheffield, and S. Zamora. 2015. New data on Late Ordovician (Katian) echinoderms from Sardinia, Italy. Progress in Echinoderm Paleobiology Meeting, Zaragoza, Spain.
- ††Waters, J.A., **C.D. Sumrall**, L.E. White, and B.K. Nguyen. 2015. Advancing phylogenetic inference in the Blastoidea (Echinodermata): Virtual 3D reconstructions of the internal anatomy. Progress in Echinoderm Paleobiology Meeting, Zaragoza, Spain.

- †Bauer, J.E. **C.D. Sumrall** and J.A. Waters. 2015. Classifying blastoids through hydrospire morphology. Progress in Echinoderm Paleobiology Meeting, Zaragoza, Spain.
- Rahman, I.A., J.A. Waters and **C.D. Sumrall**. 2014. Soft-tissue preservation in a juvenile blastoid echinoderm. 4th International Palaeontological Congress, p. 602.
- †Roney, R.O. and **C.D. Sumrall**. 2014. Newly described Peruvian echinoids: Improvements in the fossil record and insights on paleobiogeographical patterns and affinities. 4th International Palaeontological Congress, p 607.
- †Sheffield, S.L. and **C.D. Sumrall**. 2014. A re-interpretation of the ambulacral system of *Eumorphocystis* and its bearing on the evolution of early crinoids. 4th International Palaeontological Congress, p. 617.
- Sumrall, C.D.**, M.G. Carrera and E. Vaccari. 2014. New data on the Early Ordovician stemmed echinoderm fauna from Argentina. 4th International Palaeontological Congress, p. 624.
- Rahman, I.A., J.A. Waters and **C.D. Sumrall**. 2014. Synchrotron tomography reveals the digestive system of a Carboniferous blastoid echinoderm. European Echinoderm Colloquium.
- Kammer, T.W., W.I. Ausich, **C.D. Sumrall** and B. Deline. 2012. Inferring crinoid origins based on oral region homologies in pelmatozoans [abstract]. *14th International Echinoderm Conference 2012 Brussels Belgium Conference Booklet*:51.
- Ausich, W.I., T.W. Kammer, B. Deline, and **C.D. Sumrall**. 2012. Constructional morphology of the crinoid oral region [abstract]. *14th International Echinoderm Conference 2012 Brussels, Belgium Conference Booklet*:21-22.
- Sumrall C.D.**, and S. Zamora. 2011. ¿Sobre animales vivos o muertos? Edrioasteroideos como epibiontes, *XXVII Jornadas Sociedad Española de Paleontología*.
- Noailles, F., B. Lefebvre, T.E. Guensburg, A.W. Hunter, E. Nardin, **C.D. Sumrall**, and S. Zamora. 2010. New echinoderm-Lagerstätten from the Lower Ordovician of central Anti-Atlas (Zagora area, Morocco): a Gondwanan perspective of the Great Ordovician Biodiversification Event. *European Echinoderm Conference, Göttingen*.
- †Atwood, W., **C.D. Sumrall** and M.L. McKinney. 2010. Discriminating blastoid species using 3D morphometrics. *International Paleontological Congress 3*:75.
- †Shroat-Lewis, R.A., **C.D. Sumrall**, M.L. McKinney, C.E. Brett and D.L. Meyer. 2010. Paleocological assessment of an Ordovician edrioasteroid encrusted obrution surface from the upper Ordovician (Maysvillian) Bellevue Formation, Maysville Kentucky. *International Paleontological Congress 3*:354.
- Sumrall, C.D.**, and J.A. Waters. 2010. *Troosticrinus*, coronoids and the origin of blastoids in light of universal elemental homology. *International Paleontological Congress 3*:369.
- Sumrall, C.D.**, and M.L. McKinney. 2010. Heterochronic evolution of isorophid edrioasteroid ambulacra in the context of surface-volume constraints. *International Paleontological Congress 3*:369.
- †Lefebvre, B., T.E. Guensburg, A.W. Hunter, E. Nardin, M. Reich, S.V. Rozhnov, R.A. Shroat-Lewis, J. Sprinkle, and **C.D. Sumrall**. 2009. Palaeobiogeography of Ordovician echinoderms IGCP 503, Early Palaeozoic Biogeography and Palaeogeography, Copenhagen.
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