

PHILIP M. NOVACK-GOTTSHALL

DEPARTMENT OF GEOSCIENCES
UNIVERSITY OF WEST GEORGIA
CARROLLTON, GA 30118-3100
pnovackg@westga.edu

RESEARCH INTERESTS

Comparative paleoecology and ecology of animals and marine communities, body size evolution, ecological convergence, quantitative methods and null models in paleoecology and paleobiology, techniques of morphometrics, digital imaging and photomacrography

PROFESSIONAL EMPLOYMENT

- 2005 – present **Assistant Professor**, Department of Geosciences, University of West Georgia, Carrollton, GA
- 2004 – 2005 **Visiting Assistant Professor**, Department of Geosciences, University of West Georgia, Carrollton, GA

ACTIVE RESEARCH AFFILIATIONS

- 2006 – present **Participant / Data Contributor**, Paleobiology Database, National Center for Ecological Analysis and Synthesis, University of California, Santa Barbara, CA
- 2007 – 2008 **Working Group Participant** – National Evolutionary Synthesis Center, Durham, NC
- “Phanerozoic body size trends in time and space: Macroevolution and macroecology”

EDUCATION

- September 2004 **Ph.D., Biology, Program in Evolution, Ecology and Organismal Biology – Duke University, Durham, NC**
- Dissertation: Ecology and evolution of deep-subtidal, soft-substrate communities during the Cambrian through Devonian; Advisor: Dr. Daniel W. McShea
- June 1999 **M.S., Geology – University of Cincinnati, Cincinnati, OH**
- Thesis: Comparative geographic and environmental diversity dynamics of gastropods and bivalves during the Ordovician Radiation; Advisor: Dr. Arnold I. Miller
- May 1996 **B.S., Summa cum laude with Honors – Moravian College, Bethlehem, PA**
- Double major in Biology and Music Performance (Organ); minor in Chemistry

PUBLICATIONS

- Undergraduate students are in bold
- Novack-Gottshall, P.M. and **M.A. Lanier**. 2008. Scale-dependence of Cope’s rule during body-size evolution of Paleozoic brachiopods. *Proceedings of the National Academy of Sciences (U.S.A.)* 105: 5430-5434
- Novack-Gottshall, P.M. 2008. Ecosystem-wide body size trends in Cambrian-Devonian marine invertebrate lineages. *Paleobiology* 34: 210-228
- Novack-Gottshall, P.M. 2008. Using simple body size metrics to estimate fossil body volume: Empirical validation using diverse Paleozoic invertebrates. *Palaaios* 23: 163-173
- Novack-Gottshall, P.M. 2007. Using a theoretical ecospace to quantify the ecological diversity of Paleozoic and modern marine biotas. *Paleobiology* 33: 274-295
- Kosnik, M.A., D. Jablonski, R. Lockwood, and P.M. Novack-Gottshall. 2006. Quantifying molluscan body size in evolutionary and ecological analyses: Maximizing the return on data collection efforts. *Palaaios* 21: 588-597
- Novack-Gottshall, P.M. 2005. Book review of *The Great Ordovician Biodiversification Event*, B.D. Webby, F. Paris, M.L. Droser, and I.G. Percival, eds. *Palaaios* 20: 506-511

- Novack-Gottshall, P.M. and A.I. Miller. 2003. Comparative geographic and environmental diversity dynamics of gastropods and bivalves during the Ordovician Radiation. *Paleobiology* 29: 576-604
- Novack-Gottshall, P.M. and A.I. Miller. 2003. Taxonomic richness and abundance of Late Ordovician gastropods and bivalves in mollusc-rich strata of the Cincinnati Arch. *Palaios* 18: 559-571
- Alroy, J., C.R. Marshall, R.K. Bambach, K. Bezusko, M. Foote, F.T. Fürsich, T.A. Hansen, S.M. Holland, L.C. Ivany, D. Jablonski, D.K. Jacobs, D.C. Jones, M.A. Kosnik, S. Lidgard, S. Low, A.I. Miller, P.M. Novack-Gottshall, T.D. Olszewski, M.E. Patzkowsky, D.M. Raup, K. Roy, J.J. Sepkoski, Jr., M.G. Sommers, P.J. Wagner, and A. Webber. 2001. Effects of sampling standardization on estimates of Phanerozoic marine diversification. *Proceedings of the National Academy of Sciences (U.S.A.)* 98: 6261-6266
- Novack-Gottshall, P.M. 2000. Large-scale perspectives in community ecology (Book review of Maurer, 1997: *Untangling Ecological Complexity*). *Complexity* 6(1): 58-59

MANUSCRIPTS IN REVIEW

Bennington, J.B., W.A. DiMichele, C. Badgley, R.K. Bambach, P. Barrett, A.K. Behrensmeier, R. Bobe, R. Burnham, T. Daeschler, J. Van Dam, J. Eronen, D.H. Erwin, S. Finnegan, S. Holland, G. Hunt, D. Jablonski, S.T. Jackson, B. Jacobs, S.M. Kidwell, P. Koch, M. Kowalewski, C. Labandeira, C. Looy, S.K. Lyons, P.M. Novack-Gottshall, R. Potts, P. Roopnarine, C. Strömberg, H. Sues, P. Wagner, P. Wilf, and S. Wing. Submitted to *Palaios*. Paleontological powers of ten: Issues of scale in paleoecology

PRESENTATIONS (INCLUDING PUBLISHED, PEER-REVIEWED ABSTRACTS)

- Undergraduate students are in bold
- Cook, K.E., L.D. Dukes, P.D. Adams, K.A. Daniel, P.W. Hearn, B.A. Leisenring, E.O. Smith, J.B. Stogner, C.G. Wolfe,** and P.M. Novack-Gottshall. 2008. Paleocology and sedimentary petrology of the Cambrian Conasauga Formation (Coosa Valley, NW Georgia). Geological Society of America, Southeastern Regional Meeting, *GSA Abstracts with Programs* 40
- Novack-Gottshall, P.M. 2007. The origin of adaptive zones: Comparative ecological diversity (richness and disparity) of higher taxonomic categories. Geological Society of America Annual Meeting, *GSA Abstracts with Programs* 39: 91
- Novack-Gottshall, P.M. 2007. The evolution of body size: Insights from the fossil record. Daemen College Department of Natural Sciences Lecture Series (Invited speaker)
- Cooley, M.T.,** J.K. Bartley, and P. Novack-Gottshall. 2007. Preservation of predatory drill holes in Mississippian brachiopods. Georgia Academy of Science Annual Meeting
- Awarded top student presentation
- Lanier, M.A.** and P.M. Novack-Gottshall. 2007. Pump up the volume: Parallel body size increases in Cambrian-Devonian brachiopod lineages. Geological Society of America Southeastern Regional Annual Meeting, *GSA Abstracts with Programs* 39: 36
- Novack-Gottshall, P.M., J.K. Bartley, and J.A. Waters. 2007. Teaching evolution through an interdisciplinary core course at the University of West Georgia. Geological Society of America, Southeastern Regional Meeting (Invited symposium participant)
- Cooley, M.T.,** J.K. Bartley, and P. Novack-Gottshall. 2007. Preservation of predatory drill holes in Mississippian brachiopods. 2007 Sigma Xi Student Research Paper Competition, University of West Georgia
- Novack-Gottshall, P.M. 2007. Steps toward a quantitative comparative paleoecology: Ecological diversification of marine assemblages during the Cambrian through Devonian. Smithsonian Institution Department of Paleobiology Seminar Series (Invited speaker)
- Novack-Gottshall, P.M. 2007. Long-term ecological trends in Cambrian-Devonian marine assemblages, University of Cincinnati Colloquium Series (Invited speaker)

- Novack-Gottshall, P.M. 2006. Distinguishing among the four open hypotheses for long-term trends in ecospace diversification: A null model approach. Geological Society of America Annual Meeting, *GSA Abstracts with Programs* 38: 86
- Novack-Gottshall, P.M. 2005. Assemblage-wide, body-size trends in Cambrian-Devonian marine biotas: What do we leave out by emphasizing individual lineages? Geological Society of America Annual Meeting, *GSA Abstracts with Programs* 37: 14
- Novack-Gottshall, P.M. 2005. Size matters: The significance of body size in paleoecology, University of West Georgia Seminar Series (Invited speaker)
- Novack-Gottshall, P.M. 2005. Why we must strive to quantify ecological disparity: Comparative paleoecology of Cambrian through Devonian marine assemblages, University of Georgia Geology Journal Club (Invited speaker)
- Novack-Gottshall, P.M. 2004. Ecological disparity of deep-subtidal, soft-substrate assemblages during the Cambrian through Devonian. Geological Society of America Annual Meeting, *GSA Abstracts with Programs* 36: 457
- Novack-Gottshall, P.M. and D.W. McShea. 2003. Quantifying ecological disparity: comparative paleoecology of Ordovician and Recent marine assemblages. Geological Society of America Annual Meeting, *GSA Abstracts with Programs* 35: 589
- Novack-Gottshall, P. M. 2002. Taxonomic diversity of deep subtidal, soft-substrate "communities" during the Cambrian through Devonian. Geological Society of America Annual Meeting, *GSA Abstracts with Programs* 34: 463
- Wagner, P.J. and P.M. Novack-Gottshall. 2000. Environmental versus morphologic diversification across early gastropod phylogeny. Historical Patterns of Biodiversity: A Memorial Symposium in Honor of J. John Sepkoski, Jr. A. Watson Armour III Symposium 2000, Field Museum of Natural History
- Novack-Gottshall, P. M. and A. I. Miller. 1999. Scale-independent paleoenvironmental differences among gastropods and bivalves during the Ordovician radiation. Geological Society of America Annual Meeting, *GSA Abstracts with Programs* 31: 172
- Novack-Gottshall, P.M. and A.I. Miller. 1998. Comparative diversification dynamics of gastropods and bivalves during the Ordovician Radiation. Geological Society of America Annual Meeting, *GSA Abstracts with Programs* 30: 285
- Gottshall, P.M. 1996. Shell growth parameters, phylogenetic patterns, and the evolution of the Paleozoic gastropod Family Euomphalidae. North American Paleontological Convention, National Museum of Natural History, Smithsonian Institution, *Abstracts of Papers* 8: 151
- Gottshall, P.M. 1996. A morphometric analysis of the Paleozoic Gastropod Family Euomphalidae. Pennsylvania Academy of Science Annual Meeting, *Journal of the Pennsylvania Academy of Science* 69: 146

TEACHING EXPERIENCE

- W designates a Writing Across the Curriculum course, L designates a lab is included
- Geology 7584/7594 –*Selected Topics in Paleobiology*, Graduate-level course, Earth Science Education, University of West Georgia
- Geology 5082 –*Geological Problems in Paleobiology*, Graduate-level research mentoring, University of West Georgia
- Biology 4985W – *Special Topics in Biology: Paleontology*, University of West Georgia
- Geology 4501 – *Seminar: Macroevolution and Biodiversity Through Time*, University of West Georgia
- Geology 4103W – *Dinosaurs!*, University of West Georgia
- Geology 4082 – *Paleobiology Research* (Supervised independent research), University of West Georgia
- Geology 4024WL – *Invertebrate Paleontology* (with lab), University of West Georgia
- Interdisciplinary (XIDS) 2002 – *Darwinian Evolution* (co-taught with Dr. Julie Bartley), University of West Georgia

Geology 1122 – *Introductory Geosciences II: Historical Geology*, University of West Georgia (Spring 2005)

Geology 1122L – *Introductory Geosciences II: Historical Geology Lab*, University of West Georgia (Spring 2005)

Geology 1121 – *Introductory Geosciences I: Physical Geology*, University of West Georgia

- Oversee Honors student projects

Geology 1121L – *Introductory Geosciences I: Physical Geology Lab*, University of West Georgia

Biology/Earth and Oceanic Sciences (Cross-listed) 145L – *Fossils and Their Applications*, Duke University

Head teaching assistant, lab design, and pedagogy development for twelve lab sections:

Biology 026L – *Organismal Evolution*, Duke University (2004)

Teaching/lab assistant (1997-2004):

Geology 162 – *Evolution of Life*, University of Cincinnati

Biology 151L – *Principles of Animal Physiology*, Duke University

Biology 121 – *Evolution of Animal Form*, Duke University

Geology 111 – *Introductory Geology Laboratory*, University of Cincinnati

Biology 110L – *Ecology*, Duke University

Geology 104/105 – *Environmental Geology*, University of Cincinnati

Biology 047 – *Biology of Dinosaurs*, Duke University

Biology 026L – *Organismal Evolution*, Duke University

Biology 025L – *Science of Life*, Duke University

RESEARCH EXPERIENCE

- 2007 – 2009 **Working Group Participant** – National Evolutionary Synthesis Center, Durham, NC
- “Phanerozoic body size trends in time and space: Macroevolution and macroecology”
 - Funded two-year working group includes 16 macroecologists and paleobiologists
- 2007 – 2008 **Workshop Participant** – Evolution of Terrestrial Ecosystems, National Museum of Natural History, Smithsonian Institution
- “Paleontological powers of ten: Issues of scale in paleobiology”
- 2007 **Working Group Participant** – Denver Museum of Nature and Science
- “Sino-US collaborative research on critical transitions in the history of life”
 - NSF/National Natural Science Foundation of China funded working group includes 12 Chinese and 12 US participants
 - Convened by S.A. Bowring, D.H. Erwin, K.R. Johnson, Z.-X. Luo, and G.P. Wilson
- 2006 – present **Data Contributor**, Paleobiology Database, National Center for Ecological Analysis and Synthesis, University of California, Santa Barbara, CA
- 2006 – present **Research Mentor** – University of West Georgia
- Supervised undergraduate research in paleoecology and paleobiology:
 - *Body size trends in Lower and Middle Paleozoic brachiopods*
 - *Digital imaging of plant fossils using polarizing photography*
 - *SEM of predatory borings in Mississippian brachiopods* (co-advisor)
- 2005 – present **Principal Investigator** - Digital Imaging, Morphometrics, and Photomacrography Lab (DIMPL)
- Research lab with digital camera, SLR and macro lenses, copy stand with lighting and illuminators, scanner, computers, and morphometrics, statistics, and graphics programs
 - Supervision of undergraduate and interdepartmental research projects:
 - *Data entry of Paleozoic fossil collections to Paleobiology Database*
 - *Development of technical protocols for digital imaging of fossils*

- *Biomechanics and allometric growth in Cretaceous oyster Exogyra*
 - *Automated geometric matching of footprint tread patterns in forensics*
 - *Digital imaging of carbonate residue in undisclosed Iraqi soils*
- 2004 – present **Research Mentor** – University of West Georgia
- Supervision of GEOL 4024 undergraduate class research projects:
 - *Paleontology and sedimentary petrology of the Cambrian Conasauga Formation (GA)*
 - *Systematics and paleoecology of the Mississippian Bangor Limestone (AL and GA)*
 - *Community ecological consequences of the Late Ordovician mass extinction*
- 2002 – 2004 **Research Assistant** – NASA-SETI and NSF
- Trends in brain size evolution in cetaceans (D.W. McShea, Duke University; L. Marino, Emory University; M.D. Uhen, Cranbrook Institute of Science)
- 1999 – 2002 **Research Assistant** – Paleobiology Database
- Data entry of Paleozoic fossil occurrences (A.I. Miller, University of Cincinnati; C. Marshall, Harvard University)
- 1999 **Research Assistant** – University of Cincinnati
- Ordovician fossil occurrences of the Mediterranean Province (A.I. Miller)
- 1996 – 1997 **Research Assistant** – University of Cincinnati
- Ordovician fossil occurrences of South America (A.I. Miller)
- 1996 **Natural History SEEDS (Special Experiences)** – National Museum of Natural History, Smithsonian Institution
- Geology and systematics of the late Paleozoic gastropod genus *Amphiscapha* (D.H. Erwin)
- 1995 **Honors Program Research** – Moravian College
- Morphometric-based phylogenetic analysis of Paleozoic/Mesozoic gastropod Family Euomphalidae (F.T. Kuserk)
- 1995 **Natural History Research Training Program** – National Museum of Natural History, Smithsonian Institution
- Systematics, cladistics and morphometrics of the late Paleozoic gastropod genus *Amphiscapha* (D.H. Erwin)

GRANTS AWARDED

- 2007 – 2008 **Working Group Proposal** – National Evolutionary Synthesis Center, Durham, NC
- 2007 – 2008 **Student Research Assistant Grant** – University of West Georgia (\$2100)
- 2006 – 2007 **Student Research Assistant Grant** – University of West Georgia (\$1800)
- 2005 – 2006 **Student Research Assistant Grant** – University of West Georgia (\$2100)
- 2003 – 2004 **Graduate Student Research Grant** – Geological Society of America (\$1800)
- 2003 – 2004 **Graduate Research Grant-in-Aid** – Paleontological Society (\$500)
- 2001 – 2002 **Graduate Student Research Grant** – Geological Society of America (\$1600)
- 2001 – 2002 **Lerner-Gray Marine Research Fund** – American Museum of Natural History (\$1100)
- 1998 – 1999 **Graduate Student Research Grant** – Geological Society of America (\$15000)
- 1998 – 1999 **Graduate Research Grant-in-Aid** – Sigma Xi (\$700)
- 1998 – 1999 **Graduate Student Research Grant** – Paleontological Society (\$500)
- 1998 **University Graduate Scholarship** – University of Cincinnati (\$2400)
- 1995 – 1996 **Undergraduate Research Grant** – Pennsylvania Academy of Science (\$500)

AWARDS, FELLOWSHIPS, AND SCHOLARSHIPS

- 2004 – 2005 **Certificate for Outstanding Support of Disabled Students** – University of West Georgia

- 2004 **Walcott Postdoctoral Research Fellowship** – National Museum of Natural History, Department of Paleobiology (Declined)
- 2001 **Outstanding Student Research Award** – Geological Society of America
- Recognized in top 5% of grant proposals for exceptional high merit in concept and presentation
- 2001 **Biology Grant-in-Aid Graduate Affairs Committee** – Biology Department, Duke University
- 1999 – 2004 **University Graduate Scholarship** – Duke University
- 1998 **University Research Council Summer Fellowship** – University of Cincinnati
- 1998 **Outstanding Student Research Award** – Geological Society of America
- Recognized in top 5% of grant proposals for exceptional high merit in concept and presentation
- 1996 – 1999 **University Graduate Scholarship** – University of Cincinnati
- 1996 **Charles A. Albrecht Memorial Award** – Moravian College
- Best male undergraduate record in scholarship and participation in college activities
- 1996 **βββ Award for Outstanding Studies and Highest GPA in Biology** – Moravian College
- 1996 **Edgar Shields Memorial Prize in Music** – Moravian College
- Progress and proficiency in music studies
- 1996 **Alumni Prize for Outstanding Achievement in Natural Sciences** – Moravian College
- 1995 **Outstanding Research Grant Proposal Award** – Pennsylvania Academy of Science
- 1995 – 1996 **Alumni Fellows Award** – Moravian College
- 1995 **SEEDS (Special Experiences) Award** – National Museum of Natural History, Smithsonian Institution
- 1993 – 1995 **John Henry Clewell Science Scholarship** – Moravian College
- 1992 – 1993 **John Amos Comenius Academic Scholarship** – Moravian College

MUSEUM RESEARCH

- 1995 – 2003 **National Museum of Natural History, Smithsonian Institution** – Paleozoic invertebrates
- 1998 – 1999 **Cincinnati Museum of Natural History** – Ordovician invertebrates
- 1996 **Peabody Museum, Yale University** – Paleozoic gastropods
- 1995 **American Museum of Natural History** – Paleozoic gastropods
- 1995 **Philadelphia Academy of Natural Sciences** – Paleozoic gastropods

PROFESSIONAL FIELDTRIPS

- 2007 **Paleontology and Stratigraphy of the Cretaceous/Tertiary boundary in the Denver Basin** – NSF/NNSF China Collaborative Research Workshop Fieldtrip
- 2004 **Paleozoics, Northwest Georgia: Structure, seismicity, geomorphology, hydrology, and economic geology** – Georgia Geological Society 39th Annual Fieldtrip
- 1997 **Metamorphism and mineralization of the western Blue Ridge of Tennessee and North Carolina** – University of Cincinnati Geology Department Annual Fieldtrip
- 1996 **Geology of the eastern Midcontinent** – University of Cincinnati Geology Department Annual Fieldtrip
- 1996 **Carbonate ramps and reefs: Paleozoic stratigraphy and paleontology of western Maryland** – North American Paleontological Convention Fieldtrip

SERVICE, OUTREACH, AND DEVELOPMENT

- 2005 – present **Professional Liaison** – Birmingham Paleontological Society
- 2005 – present **Departmental Service** – Academic advisement, Departmental representative for Preview Day, Open House, and Graduation, University of West Georgia

- 2000 – present **Peer Review** – *Paleobiology, Palaios, Proceedings of the National Academy of Sciences, Journal of Geology, Southeastern Geology, Sedimentary Record, Complexity*
- 2008 **Curriculum consultant** – *Fossils*, Carrollton Elementary School, Carrollton, GA
- 2007 **Five-Year Departmental External Review Committee (Strengths Subcommittee)** – University of West Georgia
- 2007 **Curriculum consultant** – *Georgia Performance Standards Earth Science Elementary Education*, specimen-based study of fossils and minerals, University of West Georgia
- 2007 **Panelist** – *UWG 1101: Freshman Experiences*, University of West Georgia
- 2007 **Curriculum consultant** – *Dinosaurs & Fossils*, Carrollton Elementary School, Carrollton, GA
- 2006 **Field trip field leader** – *Paleontology of Georgia*, Wright State University fieldtrip
- 2006 **Session co-chair** – *Macroecology and Fossil Abundance*, Geological Society of America Annual Meeting
- 2006 **Panelist** – *Research Paradigms: A Diversity of Research Approaches*, Annual Graduate Education Colloquium, Doctor of Education (Ed.D) in School Improvement Program, College of Education, University of West Georgia
- 2006 **Earth and Environmental Science Secondary Education Curriculum Committee** – University of West Georgia
- 2006 **Textbook consultant** – Content review and Georgia standards assessment of secondary education chapters, “Rocks & Fossils” and “Evolution,” Holt, Rinehart, & Winston Publishers
- 2006 **Guest speaker** – Yeager Middle School, Douglasville, GA (*Introduction to fossils, Telling time with fossils*, earth science classes)
- 2005 – 2007 **Dean’s Faculty Advisory Committee** – University of West Georgia
- 2005 **Session co-chair** – *Energetics, Environment, and Evolution*, Geological Society of America Annual Meeting
- 2005 **Textbook consultant** – Content review in physical and historical geology, Pearson Education/Prentice Hall Publishers
- 2003 **Instruction in College Teaching** – The Graduate School, Duke University
- 2003 **Session co-chair** – *Macroecology, Sampling Issues, and Preservation Bias*, Geological Society of America Annual Meeting
- 2000 – 2001 **Assistant in Grant Preparation** – Howard Hughes Medical Institute and Beckman Foundation grants for undergraduate research, Office of Undergraduate Research, Duke University
- 1999 **Mentor Training Workshop** – Biology Department, Duke University
- 1994 – 1996 **Tutor in Sciences and Calculus** – Office of Academic Assistance, Moravian College
- 1994 **Teaching Assistant** – Upward-Bound summer program, Harcum Junior College, Bryn Mayr, PA
- 1994 **Education Intern** – Inquiry-based learning initiative, Education Department, Academy of Natural Sciences, Philadelphia
- 1993 – 1995 **Student Advisor** – Office of Student Services, Moravian College, Pennsylvania

SOCIETY MEMBERSHIPS

American Society of Naturalists (ASN)
 Ecological Society of America (ESA)
 Georgia Geological Society (GGS)
 Geological Society of America (GSA)

National Center for Science Education (NCSE)
 Paleontological Society (PS)
 Society for Sedimentary Geology (SEPM)
 Society for the Study of Evolution (SSE)

PERSONAL REFERENCES

Available on request