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NEWSLETTER OF THE
PALEONTOLOGICAL
SOCIETY



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The 10th North American Paleontological Convention Post-Conference Report

By Michał Kowalewski and Troy Dexter
(Florida Museum of Natural History)

Despite an unwelcome spell of bad weather that paralyzed many airports, close to 500 paleontologists from 28 countries assembled in February on the University of Florida campus for the 10th North American Paleontological Convention. NAPC 2014 was hosted by the Florida Museum of Natural History (University of Florida) and organized under the auspices of the Association of North American Paleontological Societies. A considerable support was provided by diverse sponsors and exhibitors ensuring the financial viability of this event.

As the organizing hosts, we have been both thrilled and gratified by the widespread voluntary support of many paleontologists who contributed to the success of this meeting. Many of you volunteered to organize and convene topically diverse symposia and worked with us in a forgiving and accommodating manner. Many of you volunteered as judges of student presentations. And many of you persevered against the winter storm: unfazed by last-moment flight cancellations, you had braved icy and congested roads, often driving 15 hours or more just to attend the conference.

In the end, only 6.5% of registered participants were unable to attend the conference. Your widespread support and your dedication bode well for the future of our profession.

The 2014 NAPC demonstrates that paleontology remains a worldwide discipline with a vibrant research agenda, lofty educational goals, and well-articulated outreach. A total of 471 participants attended this year's NAPC, including ~15% of international guests. NAPC presentations (305 talks and 75 posters) covered all fields of paleontology, from cyanobacteria to whales and from Archean to Anthropocene. The strong presence of students (126) was particularly uplifting, as was the increasing participation of avocational paleontologists and K-12 educators.

To learn more about the content of the meeting, you can download the abstract volume free of charge at http://www.flmnh.ufl.edu/index.php/download_file/view/1679/.

As hosts, we have also been very fortunate to attract outstanding keynote speakers who delivered thought-provoking and insightful presentations. During the opening ceremony, Sandra J. Carlson, the outgoing President of the Paleontological Society, delivered an in-

10th NORTH AMERICAN PALEONTOLOGICAL CONVENTION



FLORIDA MUSEUM OF NATURAL HISTORY

10TH NAPC POST-CONFERENCE REPORT

spiring talk on the future of our discipline (“Where do we go from here?”). She was followed by Shanan E. Peters, the current coordinator of the Paleobiology Database, who talked about the thrilling future of paleontological databases (“Bringing paleontology’s ‘dark data’ to light”). During the closing ceremony, Kirk Johnson, the Director of the Smithsonian Institution, energized and challenged the audience with his talk on “The million kid march and other aspirations for paleontology”.

We are also thrilled to report the launching of the new student award program. The 2014 NAPC student competition, included both oral and poster award categories. A total of 123 students signed up for the competition and their posters and talks were evaluated by numerous judges. The Best Graduate Talk Award went to Emma Locatelli (Yale) for her presentation on the “Experimental taphonomy of foraminifera”. Honorable mentions went to Nicole Cannarozzi and Fabiany Herrera (both from University of Florida). The Best Graduate Poster Award was awarded to Victoria E. McCoy (Yale University) for her presentation on “Distribution of fossiliferous concretions at the Mazon Creek fossil site”. Honorable mentions went to Chelsea Jenkins (University of Georgia) and Sharon McMullen (University of Wisconsin-Madison). The best Undergraduate Presentation Award went to Aaron M. Martinez (College of William & Mary) for his presentation on “Time-averaging in Chesapeake Bay mollusks: estimates based on amino acid racemization of Holocene *mulinia*”. The honorable mentions went to Nicole Little (University of Cincinnati) and Elysia Howe (College of William & Mary).

It was a great privilege to host the 10th North American Paleontological and it is our sincere hope that those of you who

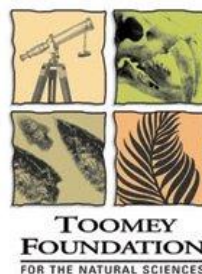
attended found the meeting rewarding and returned back home inspired and energized.

We are looking forward to future NAPC meetings!



Photos courtesy of the Florida Museum of Natural History

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SOCIETY FOR THE PRESERVA-
TION OF NATURAL HISTORY
COLLECTIONS

PALEONTOLOGICAL SOCIETY ENTERS PARTNERSHIP WITH CAMBRIDGE UNIVERSITY PRESS

The Paleontological Society is pleased to announce the beginning of a five-year partnership with Cambridge University Press for the publication of our journals, beginning January 1, 2015. This decision was the result of a detailed and careful review of the current status of the Society and its journals prompted by recognition of the rapidly changing landscape of 21st-century scientific publishing. This partnership will be of immediate and long-term value to the Society and its members, with great potential for growth and development, while allowing us to remain firmly committed to our mission of advancing the science of paleontology.

An ad hoc PS Publications Committee (names below) was appointed early in 2013 to evaluate a variety of existing publication models, to recommend a best model for the Society's future publishing needs, and to make recommendations to Council of possible actions. Town hall meetings were held at the 2013 GSA in Denver and at the 2014 NAPC in Gainesville to keep the membership informed of the process and to obtain their input. All members were invited by e-mail and by announcement on the PS webpage to submit comments and opinions about their priorities for the journals.

The Committee recommended in October 2013 that the current "self publication" model be replaced by a partnership with an experienced and successful commercial or academic publisher. Such a partnership would allow the PS to take advantage of recent advances in the publishing industry, including existing and emerging publishing technologies as well as global marketing and distribution.

Interest from the scientific publishing industry for the opportunity to publish the Society's journals was strong. We received eight detailed proposals, which provided the Society with multiple, viable options (any member wishing to learn details about the proposals or the process itself is welcome to contact President Carlson). In all publishing models considered by the committee, from continuing self-publishing to various degrees of corporate partnership, the issues most important to the committee included retention of full ownership of the journals by the Society, continued editorial control, continued highest standards of peer review, highest quality of final products, and accessibility and affordability to readers. The final three candidates were chosen after extensive review and discussion by the committee and Council, and were interviewed by members of the PS Publications Committee, journal editors, and Executive Committee. Their unanimous recommendation was that a

contract be signed with Cambridge University Press (<http://www.cambridge.org/>; a not-for-profit organization – the world's oldest publishing house, founded in 1584). Following a formal discussion by the full PS Council, this recommendation was adopted by unanimous vote on March 31, 2014.

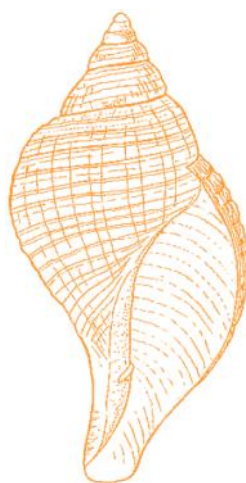
The advantages to our members and authors of this contract include: highly competitive Open Access pricing; the end of page charges; a much more user-friendly online manuscript submission process; vastly increased reach of papers, nearly doubling the number of libraries worldwide where our journals will be accessible, as well as improved media coverage; and discounts on Cambridge University Press publications. The contract has substantial financial benefits to the society, with strong income guarantees, especially as a global marketing plan will increase our visibility and membership. Paleontological Society journals, including Special Publications, and their editors will benefit from state-of-the-art technology and support for journal development, including stipends. Under the new publishing arrangement, the Paleontological Society will continue its relationships with BioOne, Geoscience World, and JSTOR.

Further details about our publishing partnership with Cambridge University Press will be announced soon through the Paleontological Society website (<http://www.paleosoc.org/>) and journal websites (<http://www.journalofpaleontology.org/>) and (<http://www.paleosoc.org/paleobio.htm>)

www.journalofpaleontology.org/) and (<http://www.paleosoc.org/paleobio.htm>)

The Paleontological Society Council is eager to begin this exciting new phase of our publishing activities!

Sandra J. Carlson, President; Steven M. Holland, President-Elect; Philip D. Gingerich, Past-President; Mark A. Wilson, Secretary; Peter Harries, Treasurer; Peter Wilf, Councilor at Large (unrestricted); Margaret Fraiser at Large (under 40); Tom Olszewski, Program Coordinator; Margaret (Peg) Yacobucci, Education/Outreach Coordinator; Max Christie, Student Representative; Emma Locatelli, Student Representative; Steve J. Hageman, Co-editor, *Journal of Paleontology**; Brian R. Pratt, Co-editor, *Journal of Paleontology**; Bruce MacFadden, Co-editor *Paleobiology**; Douglas Jones, Co-editor *Paleobiology**; Jonathan Bloch, Co-editor *Paleobiology**; Michal Kowalewski, Co-editor *Paleobiology**; Sara Marcus, Editor *Special Publications**; Leif Tapanila, Communications Officer*; Roy Plotnick, Chair, ad hoc Publications Committee; Peter Wagner, ad hoc Publications Committee; Arnold Miller, ad hoc Publications Committee; *also member of the ad hoc Publications Committee



PS STUDENT RESEARCH GRANT AWARDEES 2014

Jeffrey Benca: Testing a Proposed Driver of the End-Permian Mass Extinction (PhD, UC Berkeley). Richard K. Bambach Award.

Peter Bishop: Cancellous Bone Architecture and the Evolution of Theropod Locomotion (PhD, Griffith). Robert J. Stanton & James R. Dodd Award.

Natalia Bykova: Geochemical window into taphonomy and paleoecology of Ediacaran organisms from the Khatyspyt Formation, Olenek Uplift, Siberia (PhD, Virginia Tech). Steven M. Stanley Award.

Victoria Chraïbi: Victoria Resilience of Diatom Communities in Yellowstone to Trophic Cascade Disturbance (PhD, U Nebraska-Lincoln). Ellis L. Yochelson Award.

Max Christie: The Morphological Selectivity of Extinction (PhD, Penn State). Richard K. Bambach Award.

Selina Cole: Exploring Dynamic Controls of Genus Longevity Using Diplobathrid Crinoids (PhD, Ohio State). N. Gary Lane Award.

Andrew Connolly: The Effects of the Parietal Foramen on Mosasaur Paleobiogeography (MSc, U Kansas). Kenneth E. & Annie Caster Award.

Katharine Criswell: Primitive conditions and convergence in the vertebral column, a defining trait of vertebrates (PhD, U Chicago). Kenneth E. & Annie Caster Award.

Kelly Cronin: Measuring lifespan bias in the fossil record using *Mercenaria mercenaria* and *Chione elevata* from seagrass beds in North Carolina (MSc, UNC Wilmington). N. Gary Lane Award.

Michael Donovan: First comparison of latest Cretaceous and early Paleocene insect damage in the Southern Hemisphere: evidence for a Patagonian biodiversity refugium after mass extinction? (PhD, Penn State). Ellis L. Yochelson Award.

Scott Evans: Paleoecology of the iconic Ediacaran genera *Dickinsonia* (MSc, UC Riverside). Harry B. Whittington Award.

James Golab: Ichnopedologic facies of the Upper Pennsylvanian Halgaito Formation, southeastern Utah: interpreting environments of deposition through organism behavior (PhD, U Kansas). Richard Osgood Award.

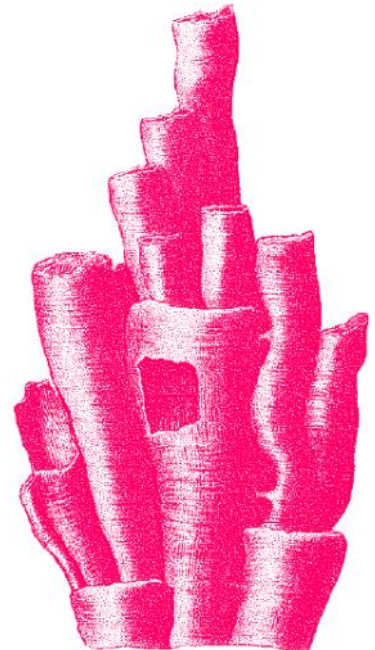
Eric Gorscak: Descriptive and comparative morphology of titanosaurian sauropods: Characterizing paleobiogeographical patterns of African Cretaceous terrestrial faunas (PhD, Ohio U). Kenneth E. & Annie Caster Award.

Lucas Joel: Refining Early Sauropod Dinosaur Evolutionary History (PhD, U Michigan, Ann Arbor). Steven Jay Gould Award.

Sandy Kawano: Modeling weight-bearing capabilities across the fish-tetrapod transition: computational and biomechanical approaches to understand the invasion of land (PhD, Clemson). Mid-America Paleontology Society Outstanding Student Research Award.

Caitlin Keating-Bitonti: Oxygen stress on benthic foraminifera: a modern case study of elemental I/Ca ratios (PhD, Stanford). N. Gary Lane Award.

Mathew Knauss: A material science and engineering assessment of enrollment in co-occurring Upper Ordovician trilobites *Flexicalymene meeki* and *Isotelus gigas* (PhD, UC Riverside). Allison R. "Pete" Palmer Award.



PS STUDENT RESEARCH GRANT AWARDEES, CONT.

Adriane Lam: Paleobiogeographic analyses of a regional and continental Late Ordovician faunal migration (MSc, Ohio U). Arthur J. Boucot Award.

Katharine Loughney: Using phytoliths to reconstruct paleoenvironments of the Miocene Barstow Formation, Mojave Desert, California (PhD, Michigan). Kenneth E. & Annie Caster Award.

Eric Lund: Function and Evolution of the Narial Region in Ceratopsian Dinosaurs (PhD, Ohio U). Rodney M. Feldmann Award.

Madeline Marshall: Variation in macrofossil abundance and preservation under upwelling conditions: case study in the Permian Phosphoria Fm. (PhD, U Chicago). G. Arthur Cooper Award.

Kelly Matsunaga: A whole-plant concept for an Early Devonian basal lycophyte: implications for taxonomy and morphological evolution (MSc, Humboldt State U). James M. & Thomas J. M. Schopf Award.

Jess Miller-Camp: Patterns in alligatorine evolution (PhD, U Iowa). Kenneth E. & Annie Caster Award.

David Moss: Phylogenetic relationships and the evolution of extreme longevity in bivalves (PhD, Syracuse U). Allison R. "Pete" Palmer Award.

Christine Nguyen: Taphonomic Variance in Exceptional Preservation from the Mazon Creek Lagerstätten (Ugrad, U Toronto Mississauga). Steven Jay Gould Award.

William Phalen: *Homotrema rubrum* distribution and abundance: A potential paleoceanographic proxy for past disturbance events (MSc, U Georgia). Ellis L. Yochelson Award.

Nirina Ratsimbaholison: Ontogenetic changes in the craniomandibular skeleton of theropod dinosaurs (PhD, U Antananarivo). Steven Jay Gould Award.

Catherine Sartin: Ontogeny in Ornithopoda (PhD, Johns Hopkins). Mid-America Paleontology Society Outstanding Student Research Award.

Tracy Thomson: Behavioral, paleoenvironmental, and taphonomic controls on tetrapod swim track preservation with implications for early triassic reptile paleoecology (MSc, UC Riverside). Rodney M. Feldmann Award.

Kaydee West: Near-time Paleoecological Archives of Gastropod Opercula: a Stable Isotopes Approach (Ugrad, U South Florida). Ellis L. Yochelson Award.



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The Society is pleased to announce that all members are eligible for substantial discounts on books published by many university presses, as well as the *Treatise on Invertebrate Paleontology* and publications of the Palaeontological Association. We are grateful to the publishers for their generosity!

Log into the Members-Only PS page (rock.geosociety.org/membership/paleo/) for discount codes. Note that these discounts are for Society members only. Please do not distribute!

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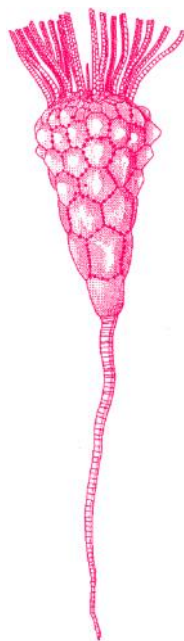
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Palaeontological Association: Discounted member rates on publications of the Palaeontological Association (www.palass.org).

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Interested in requesting funds for your conference session or fieldtrip?

Organizers of Paleontological Society sponsored events can request funds from the Society to support students attending fieldtrips and speakers (who would not normally attend) of conference sessions. Contact Program Coordinator Tom Olszewski (tomo@geo.tamu.edu) for details.

OPINION: RESPONSE TO FUTURE OF PALEONTOLOGY

Why paleontology is important to education and scientific literacy in America

By Marc Behrendt (Ohio University)

Last February, the Paleontological Society asked the question, "Where are we now, and where are we going? What can the Paleontological Society do to better serve paleontology and paleontologists? What are your greatest concerns for paleontology?" and how can the Paleo Society respond? As a science curriculum and instruction educator, biologist, professional fossil preparator, and avocational paleontologist, my responses to the questions focus on our society's science literacy.

It is my opinion that paleontology is becoming a forgotten science because fossils are no longer a source of interest to children and young adults. Due to many reasons ranging from insurance costs to the government closing off much land from fossil collecting, today's youth under 21 years old are growing up without any experience discovering or collecting fossils. All one needs to do is observe the average fossil or paleontology club. There are very few children among the membership. The Paleontological Society wants to know where we are going. I believe we are going out of existence, because there is a diminishing foundation of paleontological interest in society. Nobody – children, young adults, or older adults – is going to care about something that they know nothing about or feel any relevance towards. Nabhan and Trimble(1994) asked, "Why should a child even care about a condor when he's never seen a wren?" (p. 92). Why would society or academia care about paleontology, when fossils spark no interest or excitement, or generate relevance in their lives?

Fossils are the gateway to science interest. They were often one of the initial sources of intense science interest that children developed. Yet formal education continually failed to utilize this opportune portal to develop student interest in science. Due to mandated standards focusing on literacy and math, science is rarely taught before Grade 3, a time when children are most curious about the world around them. (Burnsed, 2011; Dorph, Goldstein, Lee, Lepori, Schneider, & Venkatesan, 2007; Stainburn, 2011). Research

has shown that a child's interest in science decreases as he or she progresses through school (Burnsed, 2011; Fries-Gaither & Lightle, 2011; National Research Council, 2009; Osborne, Simon, & Collins, 2003; Wall Street Journal Digital Network, 2/16/2012;). Having little foundational knowledge and little interest in fossils, children and adults are easily swayed by the fancy talking wordmeisters who fill that knowledge-void with fantastical, fictional evidence that is very difficult to remove once in place.



The Paleontological Society should examine the foundational knowledge of children and adults today. How can paleontological experiences and knowledge be disseminated without the support of the education system? How can paleontology be portrayed as significant, relevant, and interesting? I propose that the answer is through informal learning and experiential learning, which begins as soon as the children are able to walk in a field and find fossil shells, bones, or pretty rocks.

The Paleontological Society needs to find ways to introduce today's youth and young adults to the excitement and interest in fossils. The Paleontological Society needs to motivate local, state, and federal officials, quarries, and private landowners to open their lands to fossil collecting. It can be done. There are laws protecting landowners from lawsuits if their land is being used for recreational purposes such as hunting and fishing. These laws can be revised to include fossil collecting activities. The Paleontological Society should encourage paleontology professionals to support casual and avocational fossil collecting. Paleontology is the portal to the public's interest in fossils – excitement and interest in fossils can and does lead to interest in science. That door will soon slam shut if fossils in the field are protected and are illegal to pick up and possess.

References:

Burnsed, B. (2011). Combating Students' Disinterest in the Sciences. *US News and World Report*. Retrieved from <http://www.usnews.com/education/best-colleges/articles/2011/05/23/combating-students-disinterest-in-the-sciences>

OPINION, CONT.

Dorph, R., Goldstein, D., Lee, S., Lepori, K., Schneider, S., Venkatesan, S. (2007). The status of science education in the Bay Area: Research brief. Lawrence Hall of Science, University of California, Berkeley; California.

Fries-Gaither, J., & Lightle, K. (2011). Penguins and polar bears integrates science and literacy. *Science*, 331(6016), 413.

Nabhan, G.P., & Trimble, S. (1994). *The geography of childhood: Why children need wild places*. Boston: Beacon Press.

Osborne, J., Simon, S., & Collins, S. (2003). Attitudes towards science: A review of the literature and its implications. *International Journal of Science Education*, 25(9), 1049-1079.

National Research Council (2009). *Learning science in informal environments: People, places, and pursuits*. Washington, DC: The National Academies Press.

Stainburn, S. (2011). How can we reform science education? *The Hechinger Institute on Education and the Media*. Teachers College, Columbia University. Found at http://hechingerreport.org/content/how-can-we-reform-science-education_4587/

Wall Street Journal Digital Network. (2-16-2012). *America Losing Ground in Science and Engineering*. Retrieved from <http://live.wsj.com/video/america-losing-ground-in-science-and-engineering/9E1F0416-7657-4F09-B727-03FE6F96D34F.html#!9E1F0416-7657-4F09-B727-03FE6F96D34F>

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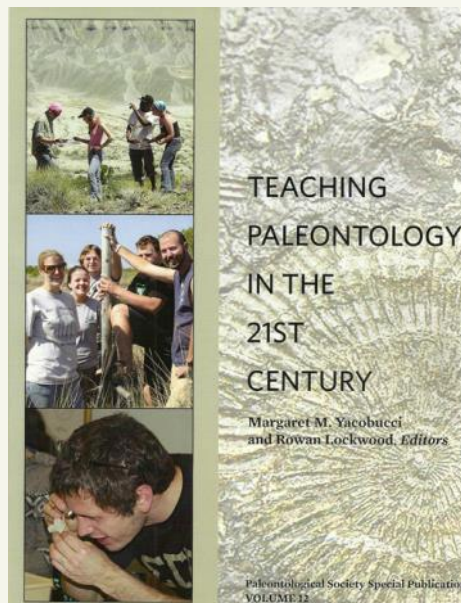
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Teaching Paleontology in the 21st Century

Now available as the new Paleontological Society Special Publication #12, edited by Margaret Yacobucci and Rowan Lockwood. This 256-page volume includes chapters dedicated to teaching undergraduate paleontology courses with an eye for new pedagogic methods, high-quality teaching activities, and the current research into what works best in the classroom. 256 pp. Available for \$25 at www.museumoftheearth.org/publications/pubdetails.php?pubID=5750. And check out the on-line supplementary content at: <http://serc.carleton.edu/NAGTWorkshops/paleo/>



DISTINGUISHED LECTURER/EDUCATOR PROGRAM

Did you know that the PS sponsors distinguished lecturers to visit your department? Pass this message along to the person coordinating your department seminars and suggest that they invite a paleontologist in for the upcoming semester!

The Society will cover up to \$400 towards travel for a speaker to visit your department !

The Paleontological Society is proud to support the [Distinguished Lecturer Program](#), with the goal of bringing outstanding scientists to colleges, universities, and public events to speak about cutting-edge paleontological research, evolution, and the nature of science. The long history of life on our planet offers countless opportunities to explore the mechanisms and fascinating consequences of evolution, extinction, and ecosystem change. The response of the world's biota to global climate change has become an important issue today, and paleontologists can provide an important perspective on this from research in the deep-time record. Through this program, we hope to increase the visibility of paleontological research and to communicate its unique insights to the community at large.

We support three lecturers each year on rotating, two-year terms. Speakers have agreed to make themselves available on an expenses-only basis; no honorarium is required. **The Society provides up to \$400 toward speaker travel.** The host institution is expected to cover on-site expenses, including meals and lodging.

Travel support is currently available on a first-come, first served basis, but this process may be amended if demand is high. See www.paleosoc.org/speakerseries.html for more details.

Here is information on this year's speakers. To request a speaker, contact that individual directly.

Nick Pyenson (2013–2015),
Smithsonian Institution
(PyensonN@si.edu)

- The life and death of whales: new discoveries of world's largest animals
- Cetaceans in silico: 3D digitizing a fossil whale graveyard



in the Atacama of Chile

- The evolution of marine mammals and the many returns to seas

Patricia Kelley (2009–2014), UNC at Wilmington
(kelleyp@uncw.edu)

- *Teaching evolution with integrity and sensitivity*
- *Evolution and creation: conflicting or compatible?*
- *The arms race from a snail's perspective: evolution of the naticid gastropod predator - prey system*



Dena Smith (2013–2014), University of Colorado Boulder (Dena.Smith@colorado.edu)

- *Fossil Insects: Exceptional Preservation and Incredible Diversification*
- *Eocene Ecology: Insects, Plants and Climate Change*
- *Brown Bag/Conversation - Supporting Underrepresented Students and Faculty in the Sciences*



Want to purchase back issues of Society Special Publications?

Effective May 2009, Paleontological Research Institution in Ithaca, New York, assumed the role of publications sales agent for back issues in the PS Special Publications series. All previous publications are available for order (\$20 per volume plus shipping and handling) at the PRI Publications website. Starting with volume 16, volumes will be \$25.00 per copy. Order at www.museumoftheearth.org/publications/bookstore.php or contact Dr Paula M. Mikkelsen, PRI Director Publications (pmm37@cornell.edu or by phone 607-273-6623, ext 20).

GSA 2014 SESSIONS SPONSORED BY THE PALEONTOLOGICAL SOCIETY

Abstracts are due on July 29, 2014.

T108. Palynology in Geoarchaeological and Environmental Studies (Francine M.G. McCarthy)

This session will examine the application of pollen and non-pollen palynomorph analysis to archaeological and environmental issues—the latter including topics as varied as natural hazard prediction through anthropogenic impact assessment.

T129. Methane Seepage, Chemosynthetic Life Oases, and Carbonate Deposits (Benoit Beauchamp, Stephen E. Grasby)

This session focuses on advances in the study of modern and ancient carbonates associated with unique ecosystems fed by microbes utilizing methane bubbling out of Earth's interior onto a variety of marine environments.

T130. A Shifting Balance: Microbial versus Metazoan Influences on Ecology and Sedimentation in Space and Time (Kathleen A. Ritterbush, Katherine N. Marenco, Rowan C. Martindale)

This session will address the interplay between microbial and metazoan communities at different spatiotemporal scales and, in particular, their differing influences on sediment production, taphonomy, ecosystem engineering, and geochemical cycling in marine environments through time.

T131. Critical Earth-Life Transitions: The Marine Perspective (Christopher T. Reinhard, Noah Planavsky, Timothy W. Lyons, Gordon D. Love)

This session will seek to both highlight recent advances and provide broad context for the road forward in our understanding of major transitions in the coupling between ocean-atmosphere chemistry and an emerging/evolving marine biosphere.

T133. Critical Earth-Life Transitions: The Terrestrial Perspective (Nathan D. Sheldon, Noah Planavsky, Christopher T. Reinhard)

This session will highlight recent advances in our under-

standing of major transitions in the coupling between Earth-surface environments and an emerging/evolving terrestrial biosphere.

T135. New Developments in Microbialites (Frank A. Corsetti, Victoria A. Petryshyn, Yadira Ibarra)

Microbialite research is moving forward at a rapid pace, with the advent of new techniques and localities. We welcome submissions regarding any advances in the study of stromatolites, thrombolites, or other microbial structures.

T176. Microfossils in the Coastal Zone: Indicators of Coastal Change over Short- and Long-Term Timescales (Andrea D. Hawkes, Jessica Pilarczyk, Tina Dura)

We'll explore recent advances in microfossil research/applications to the coastal zone with studies employing microfossils as indicators of coastal change over various spatial and temporal scales, such as punctuated extreme events to long-term environmental change.

T192. High-Resolution Geochemical Proxies of Global Change: Progress, Problems, and Utility (Posters) (David P. Gillikin, David H. Goodwin, Alan D. Wanamaker Jr)

We seek papers presenting geochemical records of global change, including calibration/validation studies, in biologic or inorganic carbonates (e.g., mollusks, corals, speleothems) and highly resolved sediments. Geochemical studies highlighting recent progress, problems, or utility are welcome.

T195. Extreme Environmental Conditions and Biotic Responses during the Permian-Triassic Boundary Crisis and Early Triassic Recovery (Thomas J. Algeo, Hugo Bucher, Peter Roopnarine, Arne M.E. Winguth)

This session will feature new research related to the globally disturbed conditions associated with the end-Permian mass extinction and its aftermath during the early Triassic.

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GSA 2014 SESSIONS SPONSORED BY THE PALEONTOLOGICAL SOCIETY, CONT.

T198. The Ordovician Revolution: Co-Evolution of Climate and the Biosphere (Thomas J. Algeo, Pedro J. Marenco, Matthew R. Saltzman)

This session will feature new research related to changes in global climate, oceanographic conditions, and marine biotas during the Ordovician period.

T199. Conodonts as Stratigraphic and Paleoclimatic Tools (Charles M. Henderson, Michael J. Orchard)

This session will focus on the increasing use of conodonts as stratigraphic and paleoclimatic tools and welcomes contributions involving conodont biostratigraphy and isotope geochemistry of conodonts.

T200. Advancing the Digitization of Paleontology and Geoscience Collections: Projects, Programs, and Practices (Talia S. Karim, Gil Nelson, Russell D. White)

Digitization programs in paleontology and geoscience collections have become widespread, and researchers and educators now expect that these data will be discoverable online. This session will present new developments in digitization and data discovery.

T201. Eocene Northern North America: Biotic Change and Environmental Context (S. Bruce Archibald, Kathleen B. Pigg, David R. Greenwood, Melanie L. DeVore)

This session will examine progress in understanding Eocene communities and their plant and animal lineages in the context of climate and geography in the rich northern North America and Arctic terrestrial fossil record.

T202. The Tonian-Cryogenian World (Leigh Anne Riedman, Erik A. Sperling, Phoebe Cohen, Susannah M. Porter)

This session seeks to explore a wide range of topics related to the Tonian and Cryogenian periods. We welcome papers investigating all aspects of this time interval, including paleontology, geochemistry, tectonic evolution, and more.

T203. Timing, Tempo, and Mode of Evolutionary and Paleoenvironmental Changes across Boundary Events and Transitions: The Protistan Evidence (Eduardo A.M. Koutsoukos, Brian T. Huber, R. Mark Leckie)

This session focuses on protistan studies characterizing the timing, tempo, and mode of evolutionary and paleoenvironmental changes across boundary events and transitions. These include the search for extinction/recovery patterns, paleoclimate/paleoceanographic changes, and oceanic carbon cycles.

T204. Fossil Mammalian Communities across Periods of Pronounced Climate Change (Anne Weil, Jessica Theodor, Craig Scott)

How have mammalian faunas responded to changes in global and regional climate conditions in the past? We encourage abstracts examining correlated faunal changes, including those in taxonomic composition, morphological disparity, diet, range, and relative abundance.

T205. Major Evolutionary Events of the Early Mesozoic—Paleontology and Paleoecology from the Middle Triassic to the Late Jurassic (Lydia S. Tackett, Rowan C. Martindale, David Bottjer)

The early Mesozoic represents one of the most evolutionarily chaotic intervals of the Phanerozoic. This session encourages paleontological and paleoecological studies from the middle Triassic through the Jurassic (e.g., Mesozoic Marine Revolution, Triassic-Jurassic, Toarcian OAE).

T206. Mass Extinctions: Volcanism, Impacts, and Catastrophic Environmental Change (David P.G. Bond, Gerta Keller, Thierry Adatte)

This session explores recent advances in the stratigraphic and geochemical records of mass extinctions and impacts that have seen the impact-kill scenario recede in favor of terrestrial causes that may ultimately derive from massive volcanism.

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GSA 2014 SESSIONS SPONSORED BY THE PALEONTOLOGICAL SOCIETY, CONT.

T207. Dynamic Landscapes and the Diversification of North American Rodents (Rebecca C. Terry, Samantha S.B. Hopkins)

Using fossils, genes, isotopes, and landscapes, we will address how 25 million years of tectonic and climatic change has influenced the evolutionary history, community assembly, and diversification of functional ecological traits in North American rodents.

T208. Ecosystem Paleobiology and Geobiology: Energy, Nutrients, and Food Webs in Deep Time (Andrew M. Bush, Sara B. Pruss, Jonathan L. Payne)

Ecosystems represent the interface between the biological and earth systems. This session will explore how changes in the structure and function of ecosystems controlled the history of life and environments (marine, freshwater, and terrestrial).

T210. Topics in Paleocology: Modern Analogues and Ancient Systems (Amelinda E. Webb, Darrin J. Molinaro, Ben M.J. Collins, Austin J.W. Hendy, Gary J. Motz, Michael E. Burns)

This session highlights the diversity of paleoecological research, organized within a framework of biotic interactions/predation, community/organismal ecology, and fidelity/conservation paleobiology.

T211. Paleocology and Taphonomy of Late Paleozoic Lagerstätten (Emma Rose Locatelli, Victoria E. McCoy, Simon A.F. Darroch, James D. Schiffbauer, Marc Laflamme)

Late Paleozoic Lagerstätten are rare. We will investigate mid- to late Paleozoic Lagerstätten (Rhynie Chert, Mazon Creek, Bear Gulch, Hunsrück Slate, Joggins) for insight into the paleoecology of marine, mixed marine, freshwater, and terrestrial ecosystems.

T212. Co-Evolution on Earth's Surface: Terrestrial Ecosystem and Environmental Interactions (Jonathan P. Wilson, Ellen D. Currano)

New fossil discoveries, analytical advances, and improved

proxies are reshaping our picture of the evolution of Phanerozoic terrestrial environments. We encourage abstracts on any aspect of plant-animal-environmental interactions, from models to mass extinctions.

T213. Echinoderm Paleobiology: Phylogenetics, Morphology, and Evolutionary Paleocology (Jeffrey R. Thompson, David F. Wright, Selina R. Cole)

This session will address recent advances in the understanding of echinoderm evolution and paleontology. This complex topic will include trends in phylogeny, morphology, paleoecology, macroevolution, taphonomy, and systematics.

T214. Unearthing the History of Life: The Application of Phylogenetic Methods to the Fossil Record (James C. Lamsdell, Curtis R. Congreve)

This symposium focuses on the many different ways both phylogenetic methods and phylogenetic theory can be applied to fossil data to help better understand big questions in the history of life.

T236. The Ediacaran-Cambrian Ecosphere (R) evolution: Emerging Records from Central and East Asia (Christoph E. Heubeck, Francis A. Macdonald)

Late Proterozoic terranes from central Asia hold a mostly low-latitude marine record of the Cryogenian and the Ediacaran-Cambrian ecosphere turnover that has received little attention to date. We encourage contributions on all aspects.)

T243. Road-Testing the Placement of the GSSP Golden Spikes (Arthur D. Donovan, Lucy E. Edwards, Stanley C. Finney, Brian R. Pratt)

This session is devoted to discussing the utility of GSSP boundary placement from the end-user perspective of geoscientists doing regional mapping and correlations and utilizing outcrop and subsurface data.

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ANNOUNCEMENTS

Paleontological Research Institution 8th Annual Summer Symposium



On the weekend of August 2 & 3, 2014, the PRI in Ithaca, NY will be holding its 8th annual Summer Symposium. The registration

deadline is July 21st. For details or to register online please see <http://www.museumoftheearth.org/research.php?page=548301>.

Paleontology Field Methods and Research Course at UW

The course is held in the type area of the Hell Creek Formation in northeastern Montana, deposits made famous as the type location for *T. rex* and the epicenter of the KT debates in the 1980s (and ongoing!).

For a printable flyer and more information see http://faculty.washington.edu/gpwilson/BIO475_Paleo_Field_Methods.htm

This is a five-week intro to paleontological field methods and research, in which students develop skills in collecting, analyzing, and interpreting field data and designing research projects by participating in ongoing paleontological research on the Cretaceous-Paleogene mass extinction. Topics include excavation of fossils, identification and curation of fossils, collection/interpretation of stratigraphic and taphonomic data, and report writing.

If you are a high-energy, enthusiastic student ready for a summer of hard work and discovery, please contact the instructor! (gpwilson@uw.edu)

Note that this is a University of Washington course BUT it is open to students from other institutions. In fact, last year half of our students were from universities and colleges other than UW. And thus far, we've been able to help non-UW student find cheap (mostly free) accommodations for their time in Seattle.

TAPHOS 2014

The 7th International Meeting on Taphonomy and Fossili-

zation, TAPHOS 2014, will be held in Ferrara, Italy, on September 11-13, 2014. Theme sessions and field trip proposals are presented in: <http://web.fe.infn.it/taphos2014/>

Please feel free to contact us (taphos2014@unife.it) to express your interest or if you have any questions.

We are looking forward to seeing you in Ferrara!

Want to purchase back issues of Society Special Publications?

Effective May 2009, Paleontological Research Institution in Ithaca, New York, assumed the role of publications sales agent for back issues in the PS Special Publications series. All previous publications are available for order (\$20 per volume plus shipping and handling) at the PRI Publications website. Starting with volume 16, volumes will be \$25.00 per copy. Order at www.museumoftheearth.org/publications/bookstore.php or contact Dr Paula M. Mikkelsen, PRI Director Publications (pmm37@cornell.edu or by phone 607-273-6623, ext 20).

Digital articles of the *Treatise* available

Treatise Online will publish chapters prepared for parts of the *Treatise on Invertebrate Paleontology* as they are ready, rather than waiting for an entire hard copy *Treatise* to be printed. The first series of papers, being parts of the forthcoming volumes listed below, are available for purchase as individual chapters from paleo.ku.edu.

Members of the Paleontological Society, Palaeontological Association, and SEPM can access these for free directly through their respective member web page.

Part E (Revised), Porifera, vol. 4, Hypercalcified Porifera
Part G (Revised), vol. 1, Bryozoa

Part L (Revised), Mollusca 4, vol. 3B, Triassic and Jurassic Ammonoidea

Part M, Mollusca 5, vol. 1, Coleoidea

Part N (Revised), Mollusca 6, vol. 1, Bivalvia

Part P (Revised), Arthropoda 2, vol. 1, Chelicerata

Part R (Revised), Arthropoda 4, vol. 1, Crustacea

Part T (Revised), Echinodermata 2, vol. 1, Crinoidea

Part V (Revised), vol. 1, Graptolithina

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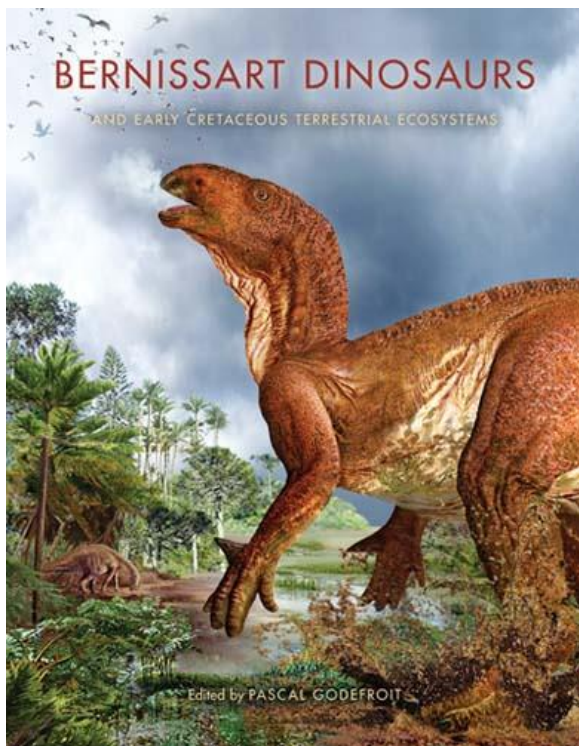
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- Student research grants opportunities.
- Discounted registration rates for annual and regional meetings of the Geological Society of America (GSA). Participate in paleontological topical sessions and other programs at GSA meetings.
- Opportunities to participate in North American Paleontological Conventions.
- Participate in supporting the Society's programs, awards, and publications; including:
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 - Student NSF travel grants; solicited and distributed by the Paleo Society
 - Educational outreach to K-12 children and the general public
- ... and more

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Year	Student	Regular	Retired	Emeritus	Spouse	Total
2008	317	944	151	77	17	1506
2009	324	904	141	82	14	1465
2010	295	940	134	89	10	1468
2011	403	959	125	92	10	1589
2012	379	951	123	91	8	1552
2013	357	886	107	91	9	1450
2014	354	877	105	91	9	1436

BOOK REVIEWS



Godefroit, P. (Ed.). 2012. *Bernissart Dinosaurs and Early Cretaceous Terrestrial Ecosystems*. Indiana University Press, Bloomington, IN, 648 pp. (\$59.50 cloth, \$52.49 e-book with 30% PS discount.)

Reviewer: Cynthia D. Crane

This extensive tome is a compilation of scientific research on a specific locality and includes comparisons with equivalent faunal discoveries worldwide. Beginning with a historical review on the nature of the discovery of the fossil-laden sinkhole, this book sets the stage for the introduction of the Bernissart *Iguanodon*. Chapters convey the detailed account on how the Bernissart Iguanodons were discovered, the people involved in the initial investigations, and what arose as a result of the discovery. Interestingly included are details of how this discovery contributed to major advances in the field of vertebrate paleontology such as the development of field methods and preservation techniques, the trials and tribulations of displaying specimens for public view, and the creation of the discipline known as paleobiol-

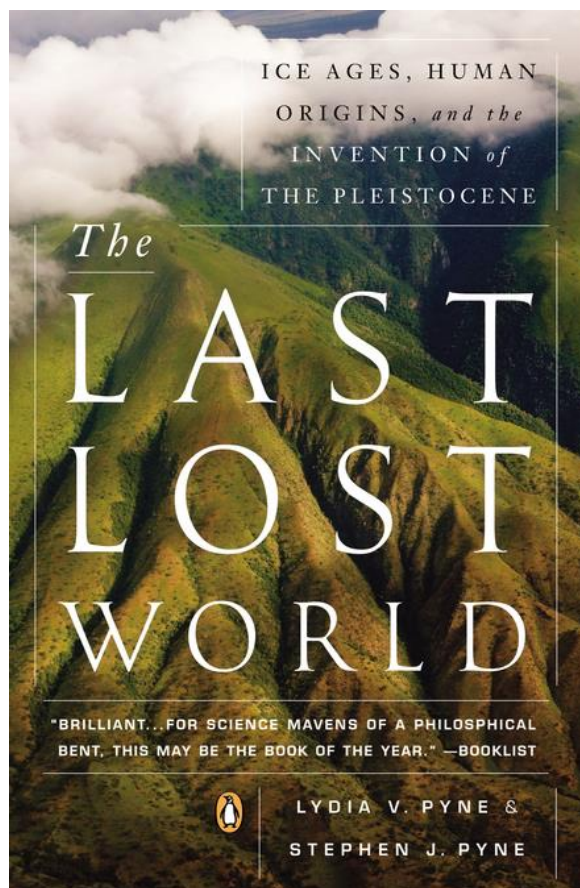
ogy. The book also includes a discussion of the circumstances involved in retaining the Bernissart specimens (and the sinkhole site) in Belgium's possession during World War I.

Key geologic studies are presented in this book including the depositional history of the Mons Basin and investigations and interpretations on the nature of the sinkhole. Biostratigraphic, palynologic, chronographic, and sedimentologic investigations are included to help discern the age, paleoenvironment, and stratigraphic framework of the Mons Basin and the *Iguanodon*-bearing Wealden facies. Also included are interesting studies on floodplain flora taphonomy, paleoecology, and paleoenvironment. Vertebrate studies include a wide scope of investigations including mineralogy, diagenesis, and histology and offer insights into the process of fossilization and subsequent degradation of the fossil elements. Re-evaluations on nomenclature and systematics provide keen insight on modern paleontological interpretations. Taphonomic scenarios and geologic models as to the demise of the Bernissart *Iguanodon* are also included.

Overall, this book is divided into four parts: background of discovery and regional- and local- scale geologic investigations; comparison chapters of the Bernissart iguanodontids with those from Early Cretaceous deposits in England, Africa, China, and Kazakhstan; research on terrestrial ecosystems of Early Cretaceous age from Europe, Asia, and Australia; and finally, detailed investigations of Late Cretaceous faunas. Although some of the chapters are more technical than others, the way in which it is compiled offers a nice flow of information and can be used as a great reference for Early Cretaceous research. I would suggest this book to anyone who has not only an interest in vertebrate paleontology but also in geology. Well done!



BOOK REVIEWS



Pyne, L.V. and S.J. Pyne. 2013. *The Last Lost World: Ice Ages, Human Origins, and the Invention of the Pleistocene*. Penguin Group, New York, 320 pp. (\$17 paper, \$13.99 e-book.)

Reviewed by Ilaria Mazzini (Università Roma TRE)

The *Last Lost World* is a book about the Pleistocene Era (Ice Age) written by a father-daughter team of historians. The authors complement the scientific approach to geological time with a focus on the evolution of the idea of the Pleistocene through human history. Thus, the book is more a history of the study of the Pleistocene epoch than the story of the Pleistocene itself. Such a point of view could be very interesting to those with a solid scientific background on the science behind the Pleistocene's definition, but many readers may need help in understanding some of the many metaphors based on classic books and themes, such

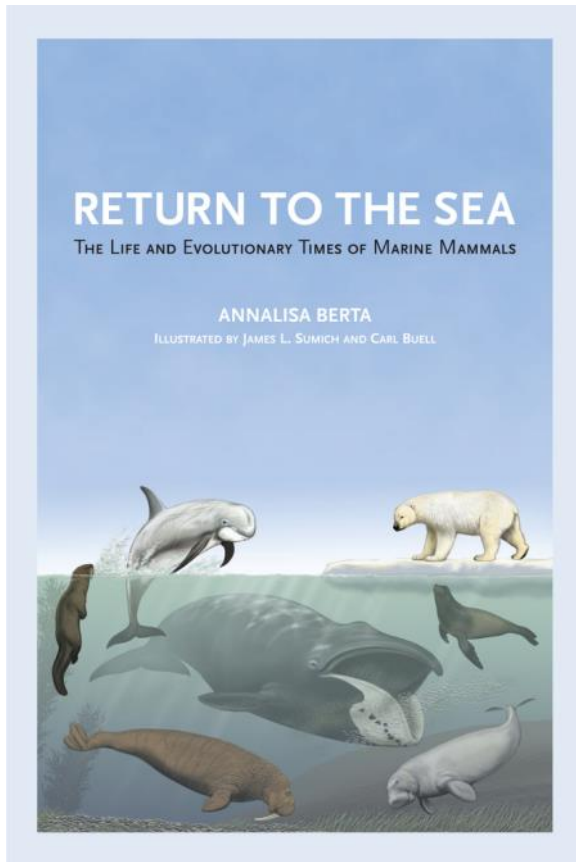
as Plato's philosophy or Paul Feyerabend's ideas about science in the society.

The book is organised in three parts. The first one, "How the Pleistocene Got Its Ice", opens by describing the wet and warm Miocene and Pliocene followed by the drier and cooler Pleistocene in a more fragmented setting of the continents. It deals with land bridges and mountain chains and the changes in global climate leading to the *Eiszeit* concept, which created the geological basis for the Pleistocene. It also deals with the development of ideas about human origins linked to climate and geography as well as our ability to adapt and change, possibly also in future times. The second part, "The great game", focuses on the fossil record, starting from the Olduvai Gorge and the discovery of hominine remains by the Leakey's family. It deals also with the concept of human evolution and the evolution of the concept itself, the development of the "missing link" concept, from the "Vast Chain of Being" by Alexander Pope to Haeckel's "Tree of Life" and further into Steven Jay Gould and the impossibility to place human evolution in a flowing scheme. The description about the discovery of *Homo floresiensis* and its link with the local legend of *ebu gogo*, implying the coexistence of different species of human on the planet, is particularly well written and intriguing. The third and last part, "How the Pleistocene lost its tale", is about how humans influenced the world they inherited during the Pleistocene, operating on very different principles. The authors advance the idea that humans control their own environment, supporting the idea of an Anthropocene starting 12.000 years ago. They explore the differences between mind and brain as well as nature and society, but mainly between the humanities and science and how they can tackle, in different and complementary ways, the history of our planet during the last 2.6 million years.

All three parts develop through three braided narratives: the geographic, the genomic and the cultural narrative. I found this approach very interesting although sometimes the arguments seem to wander. The attempt to integrate Pleistocene human evolution with a philosophy of earth

BOOK REVIEWS

science and sociology is successful, although its projections to modern society seem to be a little forced. The book includes good endnotes and a few illustrations that could be implemented. It could be improved by a glossary and a bibliography related to each part. In sum, I recommend this book to readers who are already familiar with the scientific topics and issues concerning the Pleistocene and wish to add a humanistic and philosophic perspective to it.



Berta, A. 2012. *Return to the Sea: The Life and Evolutionary Times of Marine Mammals*. University of California Press, Berkeley, CA, 224 pp. (\$47.95 cloth.)

Reviewed by Neil Kelley (National Museum of Natural History, Smithsonian Institution)

From *Moby Dick* to *Free Willy*, marine mammals cut a broad wake through our collective cultural imagination. Relationships between humans and marine mammals—in

fiction and reality—have a complex and often bloody history. Over the past several decades these charismatic animals have assumed (or been designated) roles as ambassadors of conservation. Yet, despite laudable successes (e.g. sea otters, northern elephant seals), many marine mammal species remain critically endangered. Concerns about direct and indirect human impacts on marine mammal populations continue to grab headlines and engage the attention of scientists, activists and the public.

In addition to their role as symbols of ecological stewardship, marine mammals carry enormous potential to serve as educational ambassadors of evolution. Living marine mammals have evolved sophisticated adaptations to marine life, but these adaptations are superimposed upon clear hallmarks of their terrestrial mammalian ancestry. Even better, the marine mammal fossil record documents many of the intermediary steps along these successful adaptive pathways.

Annalisa Berta capitalizes on this educational opportunity in *Return to the Sea*. This book is designed as a companion text for college courses aimed at non-scientists, and is well crafted for that purpose. However this compact but detailed, up-to-date and highly readable volume is equally valuable as a primer for non-specialist scientists looking for a concise sketch of some of the most compelling case studies in vertebrate evolution.

The structure of the book is straightforward. An introductory chapter lays out key terminology and methodology of modern marine mammal science, with the expected excursions into nomenclature, phylogenetics and oceanography. Notably missing is an explicit definition or explanation of natural selection (or sexual selection). Common descent and Darwin are mentioned and natural selection is implied in sections on adaptation and speciation but this omission feels like a missed opportunity.

A second chapter provides a concise but comprehensive overview of the marine mammal fossil record, including a brief introduction to geologic time and fossil age determi-

BOOK REVIEWS

nation. The prose walks through different intervals in marine mammal evolutionary history providing snapshots of physical changes in the oceans and concurrent evolutionary highlights in different marine mammal lineages represented by key fossils. Small illustrations of roughly contemporaneous taxa by the masterful Carl Buell and full-page maps illustrating key fossil localities beautifully complement the text. This chapter is a clear highlight.

Subsequent chapters focus on individual taxa. Pinnipeds and cetaceans each get their own comprehensive summaries covering the evolutionary history, systematics, key adaptations and ecological diversity of these groups. These chapters synthesize an impressive range of published research with succinct clarity, illuminated with more excellent Buell reconstructions and a selection of relevant graphs and figures modified from publications. Sirenians receive a briefer—but still thorough—treatment and are lumped with a hodgepodge of ‘minor’ marine mammal taxa (desmostylians, sea sloths, otters, polar bears). Completists could decry the omission of the enigmatic ‘beach bear’ *Kolponomos* and the historically extinct sea mink *Neovison macrodon*, but these are excusable omissions in a text aimed at a popular audience.

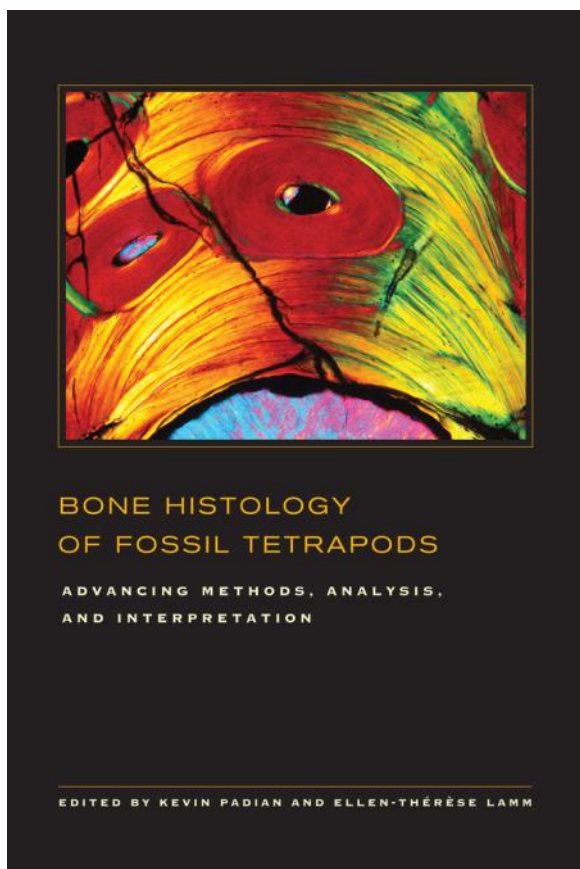
A final chapter on ecology and conservation provides another wide-ranging review, one that is likely to connect with students given the strong interest in marine mammal conservation. I hoped for discussion of recent controversies around “dolphin-safe” tuna labeling and debates about marine mammals in captivity. But to be fair, these complex problems might be beyond the scope of this book. Another set of hot-button issues, commercial and aboriginal harvesting of whales and seals, does get a brief mention, as do the impacts of noise pollution and climate change. Given recent high-profile film and television coverage of the stickier side of human/marine mammal interactions (e.g. *The Cove*, *Whale Wars*, *Blackfish*), instructors developing a course about marine mammal science should be prepared to field student questions.

Berta elects not to provide in-text citations or footnotes when summarizing research results, but rather provides a short list of suggested ‘further readings’ for each chapter at the end of the book. This is probably an effort to enhance readability for a non-scientist audience. While it might be a fair move in a book of this sort, it could be helpful to set a better example for students to emulate in their own academic writing. In some cases I had to hunt to find original references for research mentioned in the text. Students interested in digging deeper, but unfamiliar with navigating scientific literature, might be stymied. There are a handful of trivial errors and inconsistencies: *Simocetus* is labeled ‘*Simocyon*’ in one figure; shark families are mixed up in a sidebar about filter feeding; 27–25 Ma is described as ‘Late Oligocene’ in one paragraph, but later on the same page the same ages are described as middle Miocene. The handsome cover reveals how much dimension color adds to the Buell illustrations compared to the grayscale versions in the book, but as a cost-cutting measure this is entirely understandable.

There is no shortage of academic books covering marine mammal evolution. Other desktop references provide more comprehensive coverage of some topics, including Berta’s own textbook *Marine Mammals: Evolutionary Biology* (co-authored with Sumich and Kovacs). However, *Return to the Sea* provides a terrific resource for non-scientists and non-specialists interested gaining a current scientific perspective on the fascinating evolutionary history of some of the most charismatic animals on the planet.



BOOK REVIEWS



Padian, K., and Lamm, E.-T. (eds.). 2013. *Bone Histology of Fossil Tetrapods: Advancing Methods, Analysis, and Interpretation*. University of California Press, Berkeley, CA, 285 pp. (\$75 cloth.)

Reviewed by James O. Farlow (Indiana-Purdue University Fort Wayne)

Much of what we know about the growth and life history, and a significant component of the systematics, of dinosaurs and other extinct tetrapods has been revealed by study of the microstructure of their fossilized bones. This volume provides a nice state-of-the-art review of how this information is obtained and interpreted. Individual chapters are written by specialists on the pertinent topics.

The book is organized into three parts. The first two chapters introduce readers to the study of bone (modern and fossil), and explain why the histology of fossil bone is of

research interest. The next four chapters constitute the practical how-to-study-fossil-bone section of the book. The final four chapters summarize what has been learned from study of fossil bone, with emphasis on dinosaurs and other archosaurs.

In the first chapter, Padian writes what amounts to an abstract of the theoretical content of the book. Bone histology records four signals about the lives of extinct vertebrates. Ontogeny, the most important of these signals, is reflected in bone tissue types preserved in growth increments, and also the intervals of slowed or halted growth between those increments. Phylogeny is reflected in the fact that closely related forms are more likely to show the same kinds of osteohistological features. The stresses imposed by the growing animal's activities, and the environment(s) in which those activities take place, constitute the third and fourth signals.

In the second chapter, Huttenlocker, Woodward and Hall present a concise review of the biology of bone, describing the kinds of tissues deposited during growth (compacta vs. spongiosa, different orientations and concentrations of "vascular" canals, patterns of bone deposition), and a brief discussion of the origin and evolution of the earliest bone tissues.

In the "how-to" middle section of the book, Padian, Lamm and Werning (Chapter 3) consider how to select specimens for sampling, given the specific research questions of interest, and which bone elements preserve the best growth records. One of the most interesting and confounding aspects (at least for dinosaurs) is that the biggest individuals in a fossil sample don't always turn out to be the ontogenetically oldest animals.

In the fourth and longest chapter, Lamm writes a very detailed, thoroughly illustrated description of the nuts-and-bolts of preparing thin sections of fossil bone, from initial documentation of specimens through the equipment, materials, and expendable supplies needed to make the slides, to final curation of the prepared sections. This will likely be

BOOK REVIEWS

the most useful part of the book for persons wanting to get started doing paleohistological work, although the discussion of specific products will eventually become dated.

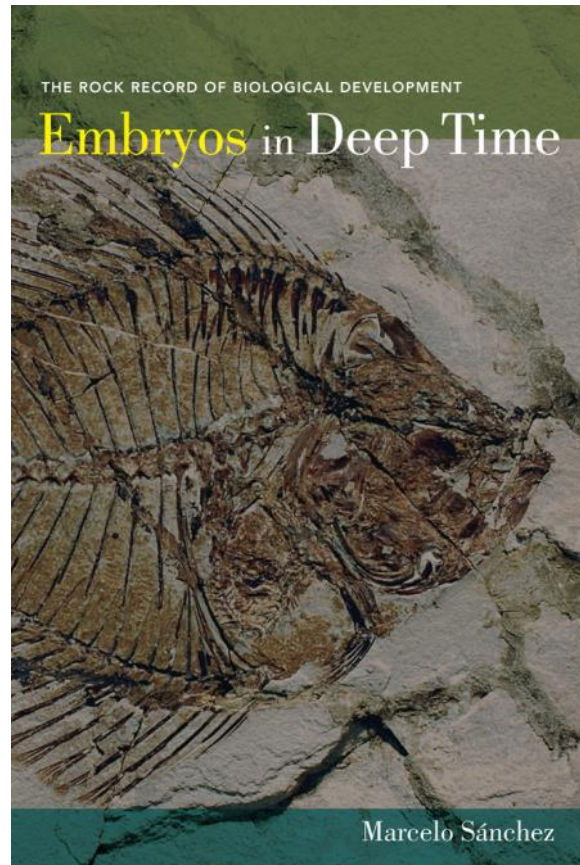
The same is probably even more true of the material in the fifth (Bromage and Werning on standardization of digital images of bone thin sections) and sixth (Wilson and de Boef Miara on database standardization) chapters. Even so, considerations of how best to image cut sections, and to store information about them, should remain useful regardless of the specific technology and software that the future provides.

In the seventh chapter, Woodward, Padian and Lee consider skeletochronology of fossil bone, and in the eighth chapter Lee, Huttenlocker, Padian and Woodward examine growth rates derived from skeletochronology. The osteohistological texture of dinosaurian primary bone suggests faster growth rates than in at least most extant reptiles (but see Werner and Griebeler 2014, PLoS One 9(2): e88834. doi:10.1371/journal.pone.0088834). Accurate growth rate estimates derived from skeletochronology necessitate choosing the most appropriate growth model for the data (also see Myrrvold 2013, PLoS One 8(12): e81917. doi:10.1371/journal.pone.0081917). Unlike most modern birds, but like most reptiles and mammals, dinosaurs reached sexual maturity well before attaining skeletal/somatic maturity.

In the final chapter, Padian, de Boef Miara, Larsson, Wilson and Bromage summarize material presented in earlier chapters, discuss areas of uncertainty, and consider potential future applications of osteohistology and skeletochronology to other fields of biology.

Overall, the book provides a useful introduction to an important research program in vertebrate paleontology, particularly for persons wanting to gear up for doing this kind of work. The authors and editors are aware that this is a rapidly changing area of study, and in the preface (p. x) state that a website (www.histoworkshop.org) has been created for updates. However, at the time this review was

written, the site was not yet up and running for reasons beyond the control of the editors, a circumstance that we can hope will soon be rectified.



Sánchez, M. 2012. *Embryos in Deep Time: The Rock Record of Biological Development*. University of California Press, Berkeley, CA, 265 pp. (\$41.95 cloth.)

Reviewed by Jesse Carlucci (Midwestern State University)

Paleontologists and biologists alike study diversity patterns of life as depicted by evolutionary trees and patterns of common ancestry. These types of analyses tend to portray animals as static units, rather than organisms that change, grow, and travel through different developmental cycles during their lifespan. Our understanding of these growth cycles has increased dramatically over time, and has strongly influenced how scientists think about evolutionary

BOOK REVIEWS

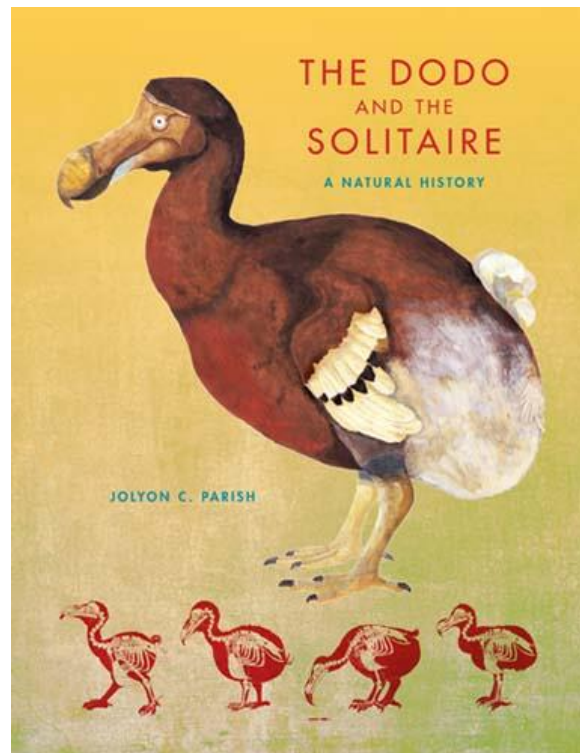
relationships. Developmental biologists study the origin and gene expression of tissues and organs throughout this process, almost exclusively on modern faunas. The contributions of developmental biology, and in particular “evo devo,” have revolutionized our understanding of the molecular basis of developmental mechanisms. These contributions were only recently possible because of the availability of comparative molecular sequence data that has slowly accumulated from the 1980s to the present. What then, does the field of paleobiology have to offer the developmental community?

In *Embryos in Deep Time (EDT)* Sánchez boldly addresses this question. In a series of broad chapters, he outlines both the limits of what paleobiology can contribute to developmental biology and what can *directly* be learned from the fossil record. The main text includes such diverse topics as: an intro to evo devo, parallels between developmental biology and paleontology, fossilized vertebrate ontogenies, and proportions and scaling in growth patterns. Throughout the book, Sánchez uses interesting and relevant examples, including those from his own work on turtles and mammals. Each large chapter is split into a series of sub-sections that tell a particular story, often with some discussion of historical context or anecdotes by the author about his research experiences.

For example, the chapter “Bones and Teeth under the Microscope” includes a sub-section on dinosaur growth patterns and the origin of birds. Sánchez begins by discussing the pioneering work by Armand de Ricqlès and others that demonstrated the vascularization of dinosaur bone, suggestive of a high basal metabolism. He then moves to discussion on the various exothermic vs. endothermic hypotheses and what recent work has shown about growth rates in dinosaurs. Finally, he concludes by elaborating on recent work by Kevin Padian and others that shows that reduction of size in the bird lineage involved a truncation of the rapid growth phase of their ancestors. In other words, Sánchez brought the discussion back to the book’s central premise: what did paleobiology contribute to the study of modern

developmental processes in birds?

EDT follows a similar format throughout the book, and reads very much like a series of interconnected essays that provide evidence of how a historical context is necessary for studies on extant fauna. Each sub-section is relatively broad in scope, and few subjects are discussed with serious rigor. Therefore, *EDT* provides a very good summary of the field for an advanced undergraduate, early graduate student, or anyone with at least a bit of interest in biology and paleontology. The text touches on a lot of topics of broad interest (e.g., dinosaurs, human evolution), but also discusses invertebrates such as trilobites, their molting strategies, and general development. The book would make a very good companion to a course in evolutionary paleobiology, or provide a good starting point for anyone interested in developmental biology and paleontology.



Parish, J.C. 2013. *The Dodo and the Solitaire: A Natural History*. Indiana University Press, Bloomington, IN, 432 pp. (\$52.50 cloth, \$45.49 e-book with 30% PS discount.)

BOOK REVIEWS

Reviewer: Jakob Hansen (Geopark Odsherred, Denmark)

When the American consul to Mauritius arrived in Boston in 1866, he brought home two complete skeletons of an extinct bird—the Dodo. This precious cargo was intended for Louis Agassiz and was brought to him by the publisher James T. Fields. The remains of the birds are still deposited at the Museum of Comparative Zoology at Harvard University. The Dodo and the Solitaire are by far some of the most iconic and well-known birds—both to layman and scientist alike—and today, the Dodo is as much a curiosity as at that time.

Early Indian Ocean explorers in search of fresh meat unintentionally contributed to the loss of what would definitely have been some of the weirdest looking birds alive today. And the infamous *Ice Age* movie-phrase "there goes the last female" truly showed to be fitting when they knocked down the last of the Dodo around 1690 and of the Solitaire around a century later.

Both birds, and obviously mostly the Dodo, have become the prime example of extinction and of man's influence on nature, and will serve so for years to come. For that reason, many a scientist has over the years contributed to the natural history of the Mascarene birds, but only few in the way of the latest by Jolyon C. Parish. In *The Dodo and the Solitaire: A Natural History*, Parish provides a thorough historical account on the now-extinct birds.

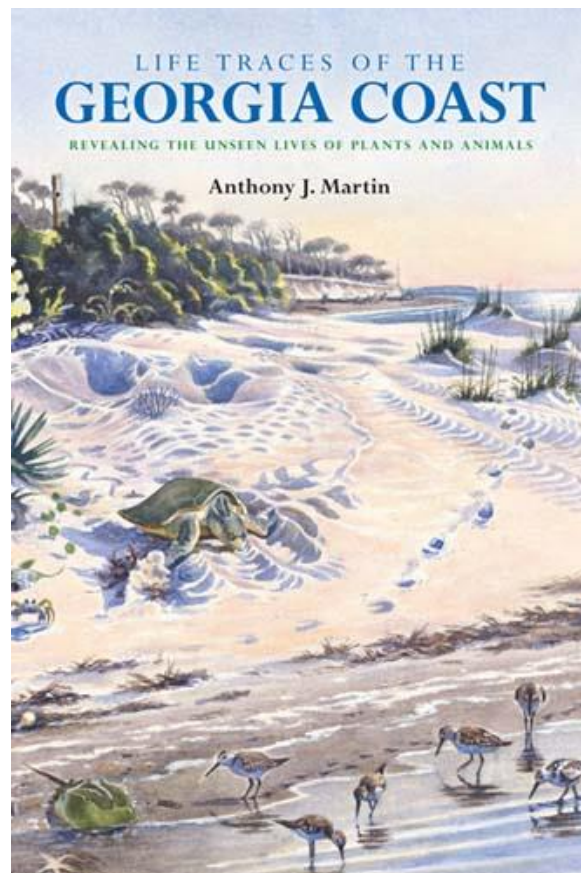
In the book, Parish manages to cover the long history of the Dodo and the Solitaire and includes both old and present data, e.g. in the form of a long list of written accounts and contemporary illustrations. Parish also includes secondary contemporary sources which contributes to the complete picture of a very thoroughly researched and concise facsimile.

The large-format book includes a lot of beautiful and some very old illustrations, and Parish decided to use his own drawings for the book, but somehow, though, they do not

fit into the layout. There are too many repetitions of the same image and there is throughout the book simply too much free space around the text. The layout does not seem fitting and it could have been presented in a more reasonable way, had the typesetter decided to use less paper.

That having been said, Parish's historical account on these enigmatic birds ranks—together with Cheke and Hume's *Lost Land of the Dodo* (2008) which masterly presents the wildlife, past and present, of the Mascarene Islands—amongst the most complete works on the Mascarene birds and will remain so for a very long time.

If you have any interest in natural history—and I take it that you do, since you are reading this volume of *Priscum*—you should definitely consider reading Parish's concise volume on one of the most extraordinary birds with one of the most extraordinary stories.



Martin, A. J. 2013. *Life Traces of the Georgia*

BOOK REVIEWS

***Coast: Revealing the Unseen Lives of Plants and Animals.* Indiana University Press, Bloomington, IN, 692 pp. (\$42.00 cloth, \$34.99 e-book with 30% PS discount.)**

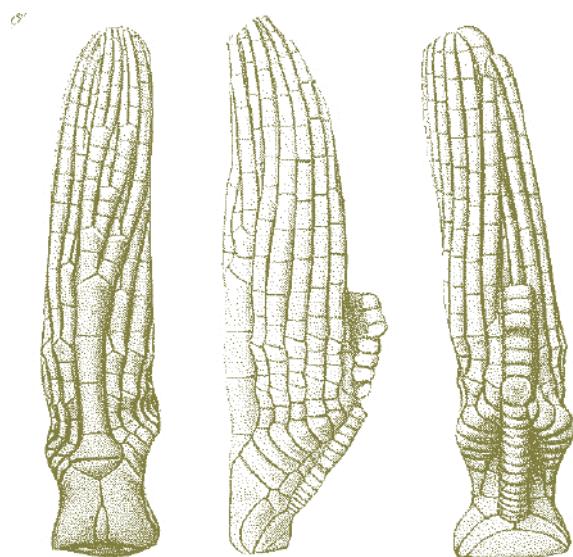
Reviewed by Daniel I. Hembree (Ohio University)

Trace fossils are an invaluable source of ancient environmental and ecological data, but are typically overlooked or at least misunderstood by most non-specialists despite the abundance of modern examples of footprints, trails, burrows, nests, and borings that are all around us every day. The trace-making animals themselves draw continuous attention to themselves, constantly changing the appearance of our lawns, gardens, homes, and streets. Venture out of the cities and suburbs and into forests, grasslands, marshes, and beaches and you are faced with a much more varied and abundant assemblage of the physical evidence of organism behavior. Anthony J. Martin's *Life Traces of the Georgia Coast* is an excellent step toward educating the general public as well as paleontologists and geologists in the wonderfully fascinating world of ichnology. As the title suggests, this book focuses on the coast of Georgia, specifically the string of barrier islands just off the Georgia mainland. Given the limited geographic extent of the study area, one might expect *Life Traces* to be a rather short book. Despite the small area being considered, however, the Georgia barrier islands consist of a wide array of environments that provide myriad habitats for a host of organisms both endemic and introduced. The diversity of life hidden below the sediment surface provides an almost infinite amount of subject material, but Martin is able to distill it all into a manageable quantity.

Life Traces is written with a casual, approachable, and engaging voice. This is not a jargon-laden textbook, but is easily accessible to high school students or college freshmen. That said it is not simplistic, and even experienced ichnologists should learn something new in every chapter. Most chapters start with a narrative describing an interest-

ing trace that Martin or one of his colleagues came across in their exploration of the Georgia barrier islands. The subjects of these narratives include broken bivalve shells, plant roots, crayfish burrows, horseshoe crab trails, alligator resting traces, turtle tracks, and a dead opossum (for good measure). These stories convey important lessons on how to interpret both modern and ancient traces, providing examples of the detailed information that can be derived from the simplest traces, the deceptive complexity of many traces, and the ability of organisms to defy expectations of what we think we know about them. These introductory stories are entertaining to read and provide a good introduction to what traces are, how they are produced, and how they are studied.

Life Traces begins (Chapters 1-3) with an introduction to the basics of ichnology and the Georgia coast including its recent geological history, the history of ichnological investigations of the area, as well as the habitats and substrates of trace-making organisms within the various environments of the Georgia coastline. First (Ch. 1), Martin addresses the three foundations of ichnology, substrate, anatomy, and behavior, as well as the guiding principles ichnologists use to interpret trace fossils, thereby providing a crash course in the science of ichnology to be applied to the rest of the book. Next (Ch. 2), Martin presents a 55,000-year history



BOOK REVIEWS

of the Georgia coast, describing the migration of environments as sea level changed and the responses of organisms and the traces they left behind. Martin also discusses human interaction with the environments of the Georgia coast starting with shell rings made by Native Americans (~7,000 b.p.) and ending with vacation homes built for 21st century tourists. Martin also covers the extensive history of the ichnological study of the Georgia coast which was at its peak in the 1960s and 1970s. Finally (Ch. 3), Martin describes the major environments of the barrier islands and the flora and fauna that characterize each one. These environments are broadly defined as salt marshes, freshwater ponds and marshes, maritime forests, dunes and back-dune meadows, beaches, and subtidal zones. If you could only read one chapter of *Life Traces*, this would be the one as it provides an excellent summary of the environments, organisms, and traces typical of the Georgia coast.

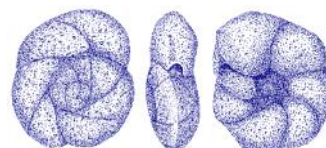
The core of *Life Traces* is Chapters 4–9 which include details of the trace-making behaviors of a wide range of terrestrial, marginal-marine, and marine organisms that inhabit the Georgia coast including plants (Ch. 4), invertebrates (Ch. 5–6), and vertebrates (Ch. 7–9). Each chapter contains a wealth of information on the trace-making behaviors and resulting traces of organisms in each setting. This information is drawn from an extensive literature review as well as personal observations by Martin during years of field research. When reading *Life Traces*, I found myself moving back and forth between these chapters looking for organisms of interest, trying to see how behaviors and traces changed within similar taxa across different environments (or among disparate taxa in similar environments). The chapters are well organized so that this is easily accomplished and provide an excellent reference for future studies. But as Martin states again and again in the text, *Life Traces* is by no means an exhaustive survey of the traces to be found on the Georgia coast. There is much more out there than any one book could hold. The chapters are well illustrated with line drawings, black-and-white photographs, and color plates providing an extensive atlas

of the morphology of most of the traces described in the text.

With the review of the modern traces of the Georgia coast completed, Martin returns to the subject of ichnology (Chapter 10), providing more details of the science including ichnotaxonomy, ichnofacies, and ichnocoenoses. While the subjects are technical, Martin is able to discuss them clearly and effectively to non-specialists. Of greatest interest is the synthesis of the data Martin has collected from the Georgia coast into the standard ichnofacies model, using the environments, organisms, and traces already discussed to better describe, explain, and even improve on this theoretical construct.

Life Traces concludes (Chapter 11) with a summary of new techniques being used in the fields of ichnology and neoichnology, the use of ichnology to help track the movement of invasive species, and the work left to be done with the ichnology of the Georgia coast including its application to the understanding of analogous environments of the Earth's past.

Life Traces of the Georgia Coast is a well-written, nontechnical overview of the science of ichnology with an application that extends far beyond the barrier islands of Georgia. *Life Traces* makes a good reference for ichnologists and sedimentologists, but really shines as an educational resource. The study of modern traces provides a simple way of engaging students in the basics of paleontology and geology, emphasizing uniformitarianism and hypothesis testing. *Life Traces* encourages its readers to start looking at the traces of life present all around them. Once you know what to look for they are hard to miss and the connections between organisms and their environment become apparent. Anthony Martin has done an excellent job in presenting the field of ichnology in an engaging and entertaining way that will hopefully inspire a new generation of ichnologists.



BOOKS AVAILABLE FOR REVIEW

The following volumes are available to Paleontological Society members in exchange for writing a review for *Priscum*. Reviews should be informative, engaging, and 400–800 words long. The tone can be informal and casual, appropriate to recommending or critiquing a book to friendly colleagues. (Longer reviews are allowed, but please request ahead of time.) Reviews should be submitted by May 1 for inclusion in the Spring/Summer issue or Dec. 1 for inclusion in the Winter issue. Reviewers must be a current member of the Paleontological Society before beginning review. If interested in reviewing one of these volumes, please contact book review editor Phil Novack-Gottshall (pnovack-gottshall@ben.edu). Reviews will be assigned on a first-claimed basis to individuals with appropriate knowledge and experience with book content.

- Arthur, W. 2011. *Evolution: A Developmental Approach*. Wiley-Blackwell.
- Ayala, F.J. and J.C. Avise., eds. 2014. *Essential Readings in Evolutionary Biology*. Johns Hopkins University Press.
- Bose, R. 2013. *Palaeobiology of Middle Paleozoic Marine Brachiopods: A Case Study of Extinct Organisms in Classical Paleontology*. SpringerBriefs in Earth Sciences. Springer.
- Bose, R., and A. Bartholomew, 2013. *Macroevolution in Deep Time*. SpringerBriefs in Evolutionary Biology. Springer.
- Főzy, I. and I. Szenté. 2013. *Fossils of the Carpathian Region*. Indiana University Press.
- Gangloff, R.A. 2012. *Dinosaurs under the Aurora*. Indiana University Press.
- Gee, H. 2013. *The Accidental Species: Misunderstandings of Human Evolution*. University of Chicago Press.
- Goldberg, W.M. 2013. *Biology of Reefs and Reef Organisms*. University of Chicago Press.
- Grande, L. 2013. *The Lost World of Fossil Lake: Snapshots from Deep Time*. University of Chicago Press.
- Kielan-Jaworowska, Z. 2013. *In Pursuit of Early Mammals*. Indiana University Press.
- Lawrance, P. and S. Stammers. 2014. *Trilobites of the World: An Atlas of 1000 Photographs*. Siri Scientific Press.
- Rivera-Sylva, Carpenter, and Frey, eds. 2014. *Dinosaurs and Other Reptiles from the Mesozoic of Mexico*. Indiana University Press.
- Smith, F.A. and K. Lyons, eds. 2013. *Animal Body Size*. University of Chicago Press.
- Thompson, J.N. 2013. *Relentless Evolution*. University of Chicago Press.
- Witton, M. 2013. *Pterosaurs*. Princeton University Press.
- Zalohar, J. and T. Hitij. 2014. *Fossil Seahorses and Other Biota from the Tunjice Konservat-Lagerstätte, Slovenia*. Siri Scientific Press.

Note to book publishers

Would you like to have your book reviewed by knowledgeable paleontologists interested in promoting the best new books on paleontology, evolutionary biology, ecology, sedimentary geology, and the earth sciences? Would you like your books' reviews to be viewed by more than 1,600 professional and avocational paleontologists? Then contact Book Editor Phil Novack-Gottshall (pnovack-gottshall@ben.edu) or send review copies to Department of Biological Sciences, Benedictine University, 5700 College Road, Lisle, IL 60532.

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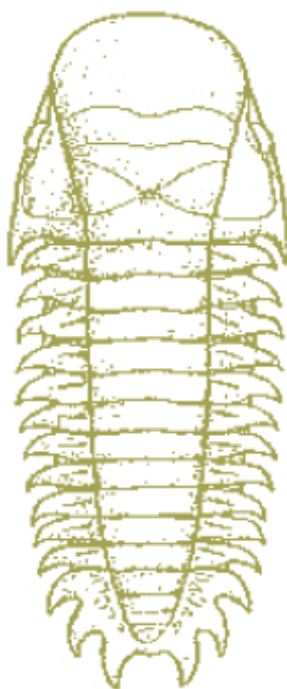
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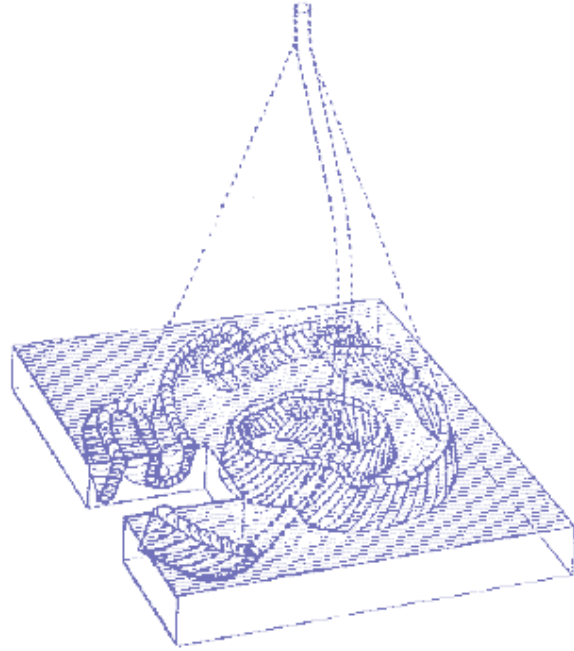
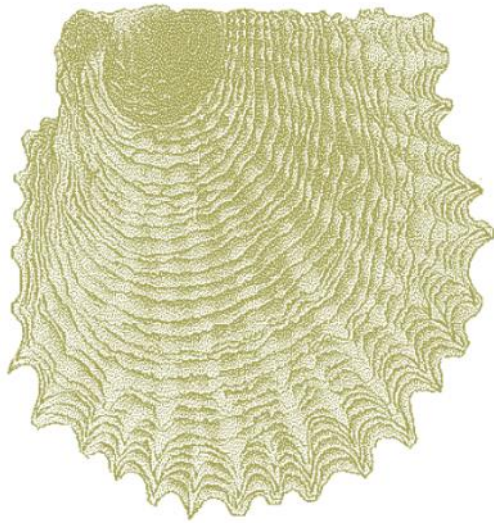
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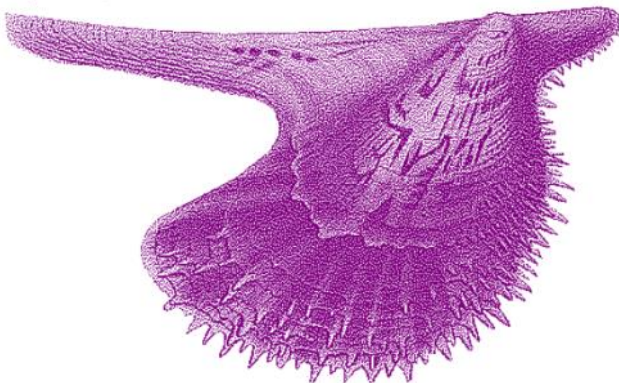
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Student membership

There are many benefits to student membership in the Society, including opportunities for research grants, travel grants, and poster awards at Society meetings. Check www.paleosoc.org/students.html for additional benefits. The current student representatives are Sarah Tweedt (University of Maryland, TweedtS@si.edu) and Max Christie (Pennsylvania State University, mchristie09@gmail.com). And for those on Facebook (whether student or not!), keep up on the latest Society news at <http://www.facebook.com/pages/The-Paleontological-Society/224953157529926>.



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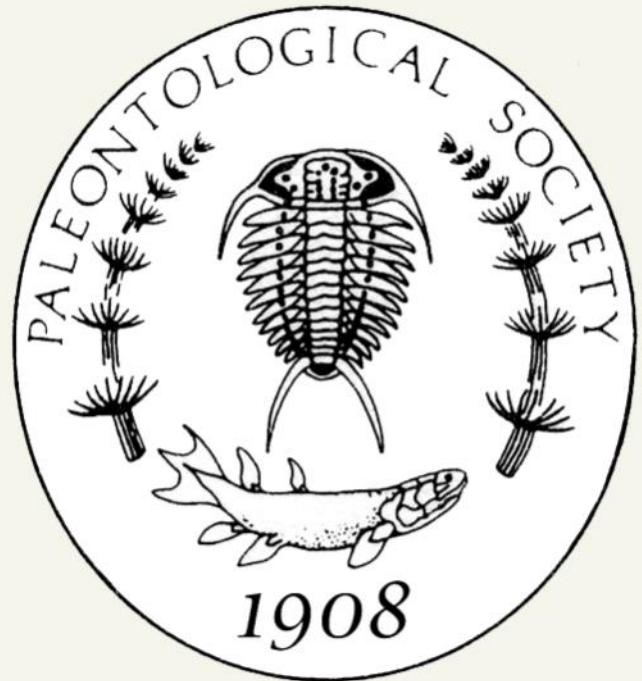
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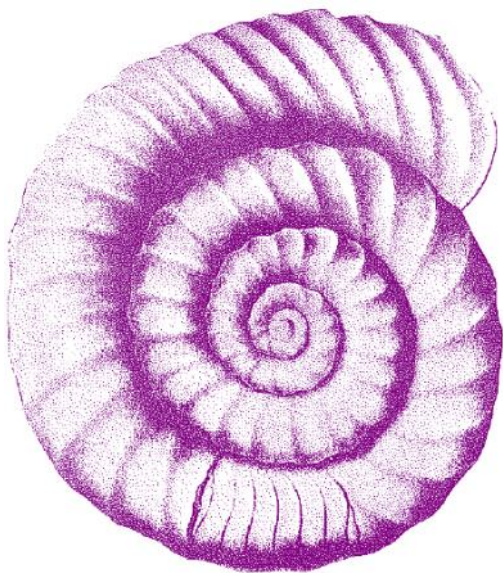
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IDEAS FOR *PRISCUM* CONTENT?



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