

**Alison G. Boyer**

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<http://www.bio.utk.edu/boyer/>

**Education**

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Ph.D. Biology. 2008. University of New Mexico, Albuquerque, NM. Advisor: James H. Brown.  
B.A. Biology (*Cum Laude with Distinction*). 2003. Hendrix College, Conway, AR

**Professional Experience**

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2014 – Research Scientist, ORNL DAAC, Environmental Sciences Division and Climate Change Science Institute, Oak Ridge National Laboratory, Oak Ridge, TN  
2014 – Joint Faculty Assistant Professor, Ecology and Evolutionary Biology, University of Tennessee, Knoxville  
2011 – 2014 Research Assistant Professor, Ecology and Evolutionary Biology, University of Tennessee, Knoxville  
2011 Visiting Scientist, National Museum of Natural History, Smithsonian Institution  
2009 – 2010 Postdoctoral Fellow in Biological Informatics, Ecology and Evolutionary Biology, Yale University  
2008 Postdoctoral Fellow, National Museum of Natural History, Smithsonian Institution  
2006 – 2008 Graduate Curator, Museum of Southwestern Biology, University of New Mexico  
2004 Participant, Complex Systems Summer School, Santa Fe Institute, Santa Fe, NM

**Grants Awarded (last 5 years)**

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Smithsonian Institution, Natural History Research Endowment. Co-PI. (2011-2012) \$25k. *Quantitative analysis of potential changes in avian community structure due to extinctions in two archipelagos.*

National Geographic Society, Committee for Research and Exploration. PI. (2010-2012) \$20k. *Long-term ecological change in a conservation hotspot: the vertebrate fossil record of New Caledonia.*

National Science Foundation, Postdoctoral Fellowship in Biological Informatics. PI. (2009-2010) \$123k. *Using the past to predict the future: A computational approach to broad-scale patterns of avian biodiversity* (DBI- 0805669).

Smithsonian Institution, National Museum of Natural History. Co-PI. (2009) \$5k. *The Quaternary vertebrate fossil record of New Caledonia.*

**Additional Grants Submitted (last 5 years)**

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- Oak Ridge National Laboratory, Laboratory Directed Research & Development Program. PI. (2014) \$100k. *Data Fusion Framework for Vegetation Phenology*. (Pending)
- National Aeronautics and Space Administration, ROSES 2014: Advanced Information Systems Technology. PI. (2014) \$1.14M. *PhenoFusion: Data Fusion Framework to Advance Validation and Enhance Usability of Multisource Phenological Data Sets*.
- National Center for Ecological Analysis and Synthesis. Working group proposal. Co-PI. (2012) \$75k. *Rarity and extinction risk: Synthesizing modern patterns of extinction using a null modeling approach*.
- National Science Foundation. Geography and Spatial Sciences. Co-PI. (2011 & 2012) Responsible for: \$96k, Total: \$350k. *Extinction risk in a changing world: who, where, and why?*

### **Publications** (Web of Science citations = 385; h-index = 10; [Google Scholar Profile](#))

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- 27 Larson, E.R, **Boyer, A.G.** and Paul R. Armsworth. 2014. Little evidence of behavioral responses to changing economic conditions by biodiversity conservation nonprofits. *Ecology and Evolution* – In Press
- 26 Saarinen, J.J, **Boyer, A.G.**, Brown, J.H., *et al.* (18 authors). 2014. Patterns of maximum body size evolution in Cenozoic land mammals: eco-evolutionary processes and abiotic forcing. *Proceedings of the Royal Society of London B, Biological Sciences*. 281:20132049. DOI: 10.1098/rspb.2013.2049
- 25 Theodor, J., **Boyer, A.G.** and Currie, D. 2014. Species Diversity. pp. 649-758, in F.A. Smith, J. Gittleman, J.H. Brown, eds. *Foundations of Macroecology*. Univ. Chicago Press, Chicago, IL
- 24 **Boyer, A.G.** and W. Jetz. 2014. Extinctions and the loss of ecological function in island bird communities. *Global Ecology and Biogeography*. 23:679-688. DOI: 10.1111/geb.12147

*Altmetrics Top 25% of all articles.*

- 23 Fishburn, I., **Boyer, A.G.**, Kareiva, P., Gaston, K. and P.R. Armsworth. 2013. Tracking a Shift from Opportunistic to Systematic Patterns of Conservation Investment by a Major Land Trust. *Biological Conservation*. 161:223-229. DOI: 10.1016/j.biocon.2013.02.007
- 22 Okie, J. G., **Boyer, A. G.**, Brown, J. H., *et al.* (18 authors). 2013. Effects of allometry, productivity and lifestyle on rates and limits of body size evolution. *Proceedings of the Royal Society B*. 280: 20131007. DOI: 10.1098/rspb.2013.1007
- 21 Duncan, R., **Boyer, A.G.** and T. Blackburn. 2013. Magnitude and variation of prehistoric bird extinctions in the Pacific. *Proceedings of the National Academy of Sciences USA*. 110: 6436-6441. DOI: 10.1073/pnas.1216511110

*Over 11,900 pageviews in 2013. Boyer interviewed on CBC Quirks & Quarks and local NPR affiliate WUOT. PNAS news highlight, Science NOW, Huffington Post, and 'The EEB and Flow' blog.*

- 20 McClain, C.R., Durst, P.A.P., **Boyer, A.G.** and C.D. Francis. 2013. Unraveling the Determinants of Insular Body Size Shifts. *Biology Letters*. 9: 20120989. DOI: 10.1098/rsbl.2012.0989
- 19 Payne, J.L., F.A. Smith, M. Kowalewski, R.A. Krause Jr., **A.G. Boyer**, C.R. McClain, S. Finnegan, P.M. Novack-Gottshall and L. Sheble. 2012. A Lack Of Attribution: Closing The

Citation Gap Through A Reform Of Citation And Indexing Practices. *Taxon*. 61: 1349-1351

- 18 **Boyer, A.G.** and W. Jetz. 2012. Conservation Biology, pp. 271-279 in R. Sibly, J.H. Brown, A. Kodric-Brown, eds. *Metabolic Ecology: a scaling approach*. Wiley-Blackwell
- 17 Smith, F.A. and **Boyer, A.G.** 2012. Losing time? Incorporating a deeper temporal perspective into modern ecology. *Frontiers of Biogeography*. 4: 26-39
- 16 Evans, A.R., Jones, D., **Boyer, A.G.**, et al. (17 authors). 2012. The maximum rate of mammal evolution. *Proceedings of the National Academy of Sciences USA*. 109: 4187-4190  
*PNAS cover image and featured article. Boyer interviewed for print feature in National Geographic Magazine. Extensive media coverage (MSNBC, Nature News, Australian Broadcast. Corp.)*
- 15 Davidson, A.D., **Boyer, A.G.**, Kim, H., Pompa-Mansilla, S., Hamilton, M.J., Costa, D.P., Ceballos, G., and J.H. Brown. 2012. Drivers and hotspots of extinction risk in marine mammals. *Proceedings of the National Academy of Sciences USA*. 109: 3395-3400  
*Featured in University of New Mexico publication "UNM Today."*
- 14 Kowalewski, M., J.L. Payne, F.A. Smith, S. C. Wang, D.W. McShea, S. Xiao, P. Novack-Gottshall, C.R. McClain, R.A. Krause Jr., **A.G. Boyer**, et al. (15 authors). 2011. The Geozoic Supereon. *Palaios*. 26: 251-255
- 13 Payne, J.L., McClain, C.R., **Boyer, A.G.**, et al. (14 authors). 2011. The evolutionary consequences of oxygenic photosynthesis: a body size perspective. *Photosynthesis Research*. 107: 37-57
- 12 Smith, F.A., **Boyer, A.G.**, et al. (20 authors). 2010. The evolution of maximum body size of terrestrial mammals. *Science*. 330: 1216-1219  
*Extensive media coverage with >400 print articles including New York Times, BBC World News, USA Today, Discovery News, National Geographic News. Boyer interviewed by New Haven Register.*
- 11 **Boyer, A.G.**, James, H.F., Olson, S.L. and Grant-Mackie, J.A. 2010. Long-term ecological change in a conservation hotspot: The fossil avifauna of Mé Auré Cave, New Caledonia. *Biodiversity and Conservation*. 19:3207–3224
- 10 **Boyer, A.G.** and W. Jetz. 2010. Biogeography of body size in Pacific island birds. *Ecography*. 33: 369–379
- 9 **Boyer, A.G.** 2010. Consistent ecological selectivity through time in Pacific island avian extinctions. *Conservation Biology*. 24: 511-519  
*Discussed in numerous conservation biology blogs.*
- 8 **Boyer, A.G.**, J.L.E. Cartron and J.H. Brown. 2010. Interspecific pairwise relationships among body length, clutch size, and latitude: anatomy of a macroecological paradox in birds. *Journal of Biogeography*. 37:47-56
- 7 Davidson, A.D., Hamilton, M.J., **Boyer, A.G.**, Ceballos, G. and Brown, J.H. 2009. The ecological structure of extinction risk in mammals. *Proceedings of the National Academy of Sciences USA*. 106:10702-10705  
*University of New Mexico featured research.*
- 6 McClain, C.R. and **Boyer A.G.** 2009. Biodiversity and body size are linked across metazoans. *Proceedings of the Royal Society of London B, Biological Sciences*. 276:2209-2215
- 5 Payne, J., **Boyer, A.G.**, et al. (13 authors). 2009. Two-phase increase in the maximum size of life over 3.5 billion years reflects biological innovation and environmental opportunity. *Proceedings of the National Academy of Sciences USA*. 106:24-27

*Top 10 most-viewed articles in PNAS during January 2009. Press coverage including wired.com and numerous blogs. Research group featured in podcast by National Evolutionary Synthesis Center.*

- 4 J.C. Nekola, A.L. Šizling, **A.G. Boyer**, and D. Storch. 2008. Artifacts in the log-transformation of species abundance distributions. *Folia Geobotanica*. 43:259-268
  - 3 **Boyer, A.G.** 2008. Extinction patterns in the avifauna of the Hawaiian Islands. *Diversity and Distributions*. 14: 509-517
- Boyer interview on the Hawaii conservation blog "Raising Islands."*
- 2 McClain, C.R., **A.G. Boyer**, and G. Rosenberg. 2006. The island rule and the evolution of body size in the deep sea. *Journal of Biogeography*. 33:1578-1584
  - 1 **Boyer, A.G.**, R.E. Swearingen, M.A. Blaha, C.T. Fortson, S.K. Gremillion, K.A. Osborn, and M.D. Moran. 2003. Seasonal variation in top-down and bottom-up processes in a grassland Arthropod community. *Oecologia*. 136:309-316

### **Selected manuscripts in review or revision (\*\* Undergraduate student)**

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- Boyer, A.G.**, Belmaker, J., and W. Jetz. The Island Biogeography of Functional Diversity. *Journal of Biogeography* – In preparation
- Boyer, A.G.**, Brenner, M., Burney, D., Pandolfi, J. and M. Savarese. Conservation Paleobiology Roundtable: From promise to application, in K. Flessa and G. Dietl, eds. *Conservation Paleobiology*. University of Chicago Press – In review
- Fulwood\*\*, E.L. and **Boyer, A.G.** Post-cranial element evenness in an avian-dominated *Tyto alba* pellet assemblage. *PeerJ* – In preparation
- Haworth\*\*, I., and **Boyer, A.G.** The functional role of introduced bird species in island communities. *Ecography* – In preparation
- Uhen, M.J., **Boyer, A.G.**, *et al.* (17 authors). The trajectory of marine mammal body mass over the Cenozoic. *Proceedings of the National Academy of Sciences USA* – In revision

### **Fellowships, Awards and Honors**

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| 2009 | NSF Postdoctoral Fellowship in Biological Informatics                     |
| 2008 | Smithsonian Institution Postdoctoral Fellowship                           |
| 2008 | National Evolutionary Synthesis Center Postdoctoral Fellowship (declined) |
| 2008 | Outstanding Student Paper, Cooper Ornithological Society                  |
| 2008 | Student Research Award, Society for Conservation Biology                  |
| 2007 | Best Poster Award, International Biogeography Society                     |
| 2003 | Graduate Research Fellowship in Biocomplexity, Univ. New Mexico           |

### **Seminars, workshops, and conference presentations (\*\* undergraduate student)**

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- 2014 Ecological Society of America, Invited participant in Workshop on *Next Generation of Methods and Techniques to Address Global Change Problems*. Sacramento, CA  
(<http://dx.doi.org/10.6084/m9.figshare.1187047>)
- 2014 Ecological Society of America, Invited participant in *Symposium on Island Biogeography*:

- Recent Advances and an Emerging Synthesis*. Sacramento, CA  
(<http://dx.doi.org/10.6084/m9.figshare.1162889>)
- 2014 Haworth\*\*, I. and Boyer, A.G. Island Biology Conference, Honolulu, HI. (poster)
- 2014 University of California Museum of Paleontology, Invited speaker for *Short Course on Extinction*. Berkeley, CA.
- 2013 Society of American Archaeologists, Invited speaker for *Birds and Pacific Peoples symposium*, Honolulu, HI.
- 2013 International Biogeography Society, Invited speaker for *Island Biogeography symposium*, Miami, FL.
- 2012 University of Tennessee, Invited speaker for *Office of Research Science Forum*. Knoxville, TN.
- 2012 University of New Mexico, *Symposium honoring James H. Brown*. Albuquerque, NM.
- 2012 NSF Research Coordination Network: *Integrating Macroecological Pattern and Processes across Scales*. Santa Fe, NM. Meeting twice annually 2007-2012.
- 2012 Southeastern section Geological Society of America, *Conservation paleobiology symposium*, Asheville, NC.
- 2012 Fulwood\*\*, E.L. and Boyer, A.G. Southeastern section Geological Society of America, Asheville, NC. (poster)
- 2011 Evolution of Life on Pacific Islands and Reefs, Invited speaker for *Island ecosystems symposium*. Honolulu, HI.
- 2011 International Biogeography Society, *Island biogeography session*. Heraklion, Greece.
- 2010 Society for Conservation Biology, *Addressing the extinction crisis for a changing planet symposium*. Edmonton, AL.
- 2010 The Metabolic Basis of Ecology Gordon Research Conference. Biddeford, ME.
- 2010 Oak Ridge National Laboratory, Invited seminar in Geographic Information Science and Technology Group. Oak Ridge, TN.
- 2010 National Evolutionary Synthesis Center. Invited Seminar. Durham, NC.
- 2010 American Ornithologist's Union. San Diego, CA.
- 2009 University of Tennessee, Seminar to Ecology and Evolutionary Biology Dept. Knoxville, TN.
- 2009 Ecological Society of America. Albuquerque, NM.
- 2009 North American Paleontological Convention. Pursuing General Laws in Body-Size Evolution and Ecology symposium. Cincinnati, OH.
- 2009 National Evolutionary Synthesis Center, Phanerozoic Body Size Trends in Time and Space working group. Durham, NC. Meeting twice annually 2007-2009.
- 2009 International Biogeography Society, Extinction Biogeography symposium. Mérida, Mexico.

## Teaching Experience

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### University of Tennessee, Knoxville, TN

- 2012 - 2013 General Ecology (BIO 250). Core biology course with lab, 4 credit hours, with enrollment of ~100 second and third-year students. Provides an introduction to the science of ecology illustrated with in-class exercises and examples from the primary literature. Laboratories include field methods, statistical analysis, and culminate in a group research project and paper. Boyer was responsible for all aspects of the course, including lectures, exams, labs, and supervising graduate teaching assistants. Taught three semesters.

- Fall 2011 Graduate Seminar in Paleobiology (GEOL 640), co-instructor. Interdisciplinary discussion group on taphonomy, preservation biases, and biodiversity in the fossil record. Enrollment of 8 graduate students.
- Spring 2011 Community Ecology (EEB 421). Elective 3 credit-hour course with enrollment of 25 third and fourth year EEB majors. Lectures covered the main ideas and history of thought in the field, with special emphasis on reading the primary literature, developing scientific writing skills, and methods of data analysis. The final project was based on field research conducted during an overnight trip to the Great Smoky Mountains National Park.

### **University of New Mexico, Albuquerque, NM**

- Spring 2006 Biogeography (Biol 494), co-instructor. Upper-level elective course with ~25 students. Course examined the geographic distribution of plants and animals and the role of geography in ecology and evolution.
- Fall 2004 Introduction to Biology for Non-majors (Biol 112L). Taught three sections of laboratory. Course presented an overview of basic biological concepts, from biodiversity to meiosis, including both “wet lab” and conceptual exercises.

### **Mentoring Experience**

- Postdocs: A. Michelle Lawing (NIMBioS Fellow, now Assistant Prof. at Texas A&M U.)
- Graduate student committees, UTK: Lacy D. Chick (Ph.D.), Rachel Fovargue (Ph.D.), Melquisedec Gamba Rios (Ph.D.), Daniela Rivarola (Ph.D.), Jessica Welch (Ph.D.). Past: Morgan Douglas (M.S. 2013).
- Undergraduate researchers, UTK: Ivan Haworth (Sp 2013- Su 2014), Olivia Harber (F 2013- Sp 2014). Past: Colby Brooks, Ricki Draper, Kate DeVries, Ethan Fulwood, Ian Herrell, Cynthia Valenzuela, Jessica Welch.
- Undergraduate researchers, ORNL: Olivia Harber (Su 2014), Kathryn Grabenstein (F 2014)
- Informal mentoring: Advised non-UTK undergraduate Aaron Woodruff on graduate school opportunities and professional development. Aaron is currently a graduate student in Paleontology at East Tennessee State University (<http://cenozoiclife.blogspot.com/>).

### **Professional and Community Service**

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Editorial Board of *Ecography*, handling ~12 manuscripts per year.

#### Proposals reviewed

- Czech Science Foundation (GACR), Biological Sciences, 2012
- American Chemical Society, Petroleum Research Fund, 2012
- National Science Foundation, Division of Earth Sciences, 2010
- International Biogeography Society, student travel grants, 2008 & 2012

Manuscript reviewer for *The American Naturalist*, *Biology Letters*, *Conservation Biology*, *Diversity and Distributions*, *Ecography*, *Ecological Applications*, *Ecology Letters*, *Evolutionary Ecology Research*, *Global Ecology and Biogeography*, *The Holocene*, *Journal of Animal Ecology*, *Journal of Biogeography*, *Proceedings of the National Academy of Sciences USA*, *Proceedings of the Royal Society B.*, *The Wilson Journal of Ornithology*.

Textbook reviewer for W.H. Freeman Publishing

High-school outreach Mentored two high-school students on individual research projects for entry in

the Tennessee Junior Science and Humanities Symposium (Summer 2012).

Symposium organized: Addressing the extinction crisis for a changing planet. *Society for Conservation Biology* meeting, 2010

Member: American Ornithologists' Union, American Geophysical Union, Ecological Society of America, International Biogeography Society