

Sarah L. Boyer, PhD

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EDUCATION

Harvard University, PhD Organismic and Evolutionary Biology Dissertation: “Evolution and Diversity of Cyphophthalmi” Advisor: Gonzalo Giribet	2001 - 2007
University of California – Berkeley, MA Integrative Biology Thesis: “Neritid Gastropods of Moorea, French Polynesia” Advisor: Carole Hickman	1996 - 1998
Swarthmore College, BA Double Major: Biology and English Literature	1992 - 1996

PROFESSIONAL EMPLOYMENT

Associate Professor of Biology, Macalester College, St. Paul MN	2013 - present
Research Associate, Bell Museum of Natural History, St. Paul MN	2006 - present
Assistant Professor of Biology, Macalester College, St. Paul MN	2007 - 2013
Visiting Assistant Professor of Biology, Macalester College, St. Paul MN	2006 - 2007
Lecturer in Biology, John Carroll University, University Heights, OH	1999 - 2001

HONORS

Nominee, Educator of the Year Award, Macalester College	2017
Trustees’ Award, Macalester College	2016
• Exceptional Excellence in Teaching, Advising, Scholarship, and Service	
Nominee, Jack and Marty Rossman Teaching Award, Macalester College	2016
Student Talk Prize, Society for Integrative and Comparative Biology	2005
• Best Student Talk – Division of Systematic and Evolutionary Biology	
American Association of University Women Dissertation Fellowship	2005
Graduate School of Arts and Sciences Merit Fellowship, Harvard University	2005
Student Talk Prize, International Congress of Arachnology	2004
• Best Student Talk – Systematics	
Derek Bok Award for Excellence in Teaching, Harvard University	2001
NIH Genetics and Genomics Training Grant Fellowship, Harvard University	2001
University of California Regents’ Fellowship, UC-Berkeley	1996

PUBLICATIONS AND PRESENTATIONS

Research Papers - asterisk indicates undergraduate coauthor

- Sharma, P. P., C. M. Baker, J. Cosgrove, J. R. Johnson*, J. T. Oberski*, L. Prendini, R. Raven, M. Harvey, **S. L. Boyer**, and G. Giribet. Testing the phylogenetic position and age of the temperate Gondwanan family Bothriuridae in the scorpion tree of life. In revision, *Molecular Phylogenetics and Evolution*.
- Sharma, P. P., J. T. Oberski, M. A. Santiago, R. Kriebel, S. M. Lipps, P. A. C. Buenavente, A. C. Diesmos, M. Janda, **S. L. Boyer**, R. M. Clouse, and W. D. Wheeler. There is no evidence that Podoctidae carry eggs of their own species: Reply to Machado and Wolff (2017). In press, *Molecular Phylogenetics and Evolution*.
- Shoemaker, A. K.*, M. M. Burns, and **S. L. Boyer**. New records of harvestmen (Arachnida, Opiliones) from Minnesota, USA. In press, *Zootaxa*.
- Sharma, P. P., M. A. Santiago, R. Kriebel, S. M. Lipps, P. A. C. Buenavente, A. C. Diesmos, M. Janda, **S. L. Boyer**, R. M. Clouse, and W. C. Wheeler. 2017. A multilocus phylogeny of Podoctidae (Arachnida, Opiliones, Laniatores) and parametric shape analysis reveal the disutility of subfamilial nomenclature in armored harvestman systematics. *Molecular Phylogenetics and Evolution* 106: 164-173.
- Boyer, S. L.**, T. M. Markle, C. M. Baker*, A. M. Luxbacher, and K. H. Kozak. 2016. Historical refugia have shaped biogeographical patterns of species richness and phylogenetic diversity in mite harvestmen (Arachnida, Opiliones, Cyphophthalmi) endemic to the Australian Wet Tropics. *Journal of Biogeography* 43(7): 1400-1411.
- Clouse, R. M., P. P. Sharma, J. C. Stuart, L. R. Davis, G. Giribet, **S. L. Boyer**, and W. C. Wheeler. 2016. Phylogeography of the harvestman *Metasiro* (Arthropoda, Arachnida, Opiliones) reveals a potential solution to the Pangean paradox. *Organisms Diversity and Evolution*, 16(1): 167-184.
- Giribet, G., **S. L. Boyer**, C. M. Baker*, R. Fernandez, P. P. Sharma, B. L. De Bivort, S. R. Daniels, M. S. Harvey, and C. E. Griswold. 2016. A molecular phylogeny of the temperate Gondwanan family Pettalidae (Arachnida, Opiliones, Cyphophthalmi) and the limits of taxonomic sampling. *Zoological Journal of the Linnean Society*.
- Jay, K. R.*, Z. R. Popkin-Hall*, M. J. Coblens*, J. T. Oberski*, P. P. Sharma, and **S. L. Boyer**. 2016. New species of *Austropurcellia*, cryptic short-range endemic mite harvestmen (Arachnida, Opiliones, Cyphophthalmi) from Australia's Wet Tropics biodiversity hotspot. *ZooKeys* 486: 37-93.
- Boyer, S.L.**, C. M. Baker*, Z. R. Popkin-Hall*, D. I. Lauko*, H. W. Wiesner*, and R. M. Quay*. 2015. Phylogeny and biogeography of the mite harvestmen (Arachnida, Opiliones, Cyphophthalmi) of Queensland, Australia with a description of six new species from the rainforests of the Wet Tropics. *Invertebrate Systematics* 29: 37-70.
- Hove, M., B. Sietman, M. Berg, E. Frost, K. Wolf, T. Brady, **S. L. Boyer**, and D. J. Hornbach. Early life history of the sheepnose (*Plethobasus cyphus*) (Mollusca: Bilvalvia: Unionoidea). 2015. *Journal of Natural History* 50 (9-10): 1-20.
- Roe, K. H. and **S. L. Boyer**. 2015. A comparison of genetic diversity between sympatric populations of the endangered winged-mapleleaf (*Amphinaias fragosa*) and the pimpleback (*Quadrula pustulosa*) in the St. Croix River, U.S.A. *American Malacological Bulletin* 33(1):109.

- Giribet, G., R. Fernández, and **S. L. Boyer**. 2014. On four poorly known harvestmen from New Zealand (Arachnida, Opiliones: Cyphophthalmi, Eupnoi, Dyspnoi, Laniatores). *New Zealand Journal of Zoology* 41(4): 223-233.
- Popkin-Hall, Z. R.* and **S. L. Boyer**. 2014. New species of mite harvestmen from Southern Queensland greatly extend the known range of the genus *Austropurcellia* (Arachnida, Opiliones, Cyphophthalmi). *Zootaxa* 3827(4): 517-541.
- Boyer, S. L.** and C. N. Reuter*. 2012. New species of mite harvestmen (Opiliones, Cyphophthalmi, Pettalidae) from Australia's Wet Tropics, with commentary on biogeography of the genus *Austropurcellia*. *Journal of Arachnology* 40(1): 96-112.
- Giribet, G., P. Sharma, L. R. Benavides, **S. L. Boyer**, R. M. Clouse, B. L. de Bivort, D. Dimitrov, G. Y. Kawauchi, J. Y. Muriene, P. J. Schwendinger. 2012. Evolutionary and biogeographic history of an ancient and global group of arachnids (Arachnida, Opiliones, Cyphophthalmi) with a new taxonomic arrangement. *Biological Journal of the Linnean Society* 105(1): 92-130.
- Štáhlavský, F., **S. L. Boyer**, M. S. Harvey, and G. Giribet. 2012. First cytogenetic study of a member of the harvestman family Pettalidae (Opiliones: Cyphophthalmi). *Australian Journal of Entomology* 51:299-302.
- Szumowski, S. C.*, **S. L. Boyer**, D. J. Hornbach, and M. C. Hove. 2012. Genetic diversity of two common freshwater mussels, *Lampsilis cardium* and *Quadrula pustulosa* (Bivalvia, Unionidae), in a large federally protected waterway (St. Croix River, Minnesota/Wisconsin, USA). *American Malacological Bulletin* 30: 1-14.
- Boyer, S. L.**, A. A. Howe*, N. W. Juergens*, and M. C. Hove. 2011. A DNA barcoding approach to identifying parasitic freshwater mussel larvae recovered from wild-infested fishes. *Journal of the North American Benthological Society* 30(1):182-194.
- Giribet, G. and **Boyer, S.L.** 2010. Viewpoint – ‘Moa’s Ark’ or ‘Goodbye Gondwana’: Is New Zealand’s terrestrial invertebrate fauna ancient, recent, or both? *Invertebrate Systematics* 24: 1-8.
- Boyer, S.L.** and G. Giribet. 2009. Welcome back New Zealand: Regional biogeography and Gondwanan origin of three endemic genera of mite harvestmen (Arachnida, Opiliones, Cyphophthalmi). *Journal of Biogeography* 36 (6): 1084-109.
- Boyer, S. L.**, J. M. Baker*, and G. Giribet. 2007. Deep genetic divergences in *Aoraki denticulata* (Arachnida, Opiliones, Cyphophthalmi): a widespread “mite harvestmen” defies DNA taxonomy. *Molecular Ecology* 16: 4999-5016.
- Boyer, S. L.**, R. C. Clouse, L. Benevides, P. Schwendinger, P. Sharma*, I. Karunathana, and G. Giribet. 2007. Biogeography of the World from a globally-distributed arachnid. *Journal of Biogeography*. 34 (9): 2070-2085.
- Boyer, S. L.** and G. Giribet. 2007. A new model Gondwanan taxon: Systematics and biogeography of the harvestman family Pettalidae (Arachnida, Opiliones, Cyphophthalmi), with a taxonomic revision of genera from Australia and New Zealand. *Cladistics* 23 (4): 337-361.
- Giribet, G., N. Tsurusaki, and **S. L. Boyer**. 2006. Confirmation of the type locality and distributional range of *Suzukielus sauteri* (Opiliones, Cyphophthalmi) in Japan. *Acta Arachnologica* 55(2): 87-90.
- Boyer, S. L.**, I. Karaman, and G. Giribet. 2005. The family Sironidae (Opiliones, Cyphophthalmi) in Europe: a phylogenetic approach to Eastern Mediterranean biogeography. *Molecular Phylogenetics and Evolution* 36(3): 554-567.
- Boyer, S. L.** and G. Giribet. 2003. A new *Rakaia* species (Opiliones, Cyphophthalmi) from Otago, New Zealand. *Zootaxa* 133: 1-14.

- Giribet, G. and **S. L. Boyer**. 2002. A cladistic analysis of the cyphophthalmid genera (Opiliones, Cyphophthalmi). *Journal of Arachnology* 30: 110-128.
- Boyer, S. L.**, J. R. Johansen, V. R. Flechtner, and G. L. Howard. 2002. Phylogeny and genetic variance in terrestrial *Microcoleus* (Cyanophyceae) species based on sequence analysis of the 16S rRNA gene and associated 16S-23S ITS region. *Journal of Phycology* 38: 1222-1235.
- Flechtner, V. R., **S. L. Boyer**, J. R. Johansen, and M. L. DeNoble. 2002. *Spirirestis rafaelensis* gen. et sp. nov. (Cyanophyceae), a new cyanobacterial genus from arid soils. *Nova Hedwigia* 74: 1-24.
- Boyer, S. L.**, V. R. Flechtner, and J. R. Johansen. 2001. Is the 16S-23S internal transcribed spacer (ITS) a good tool for molecular systematics and population genetics? A case study in cyanobacteria. *Molecular Biology and Evolution* 18(6): 1057-1069.

Reports and Book Chapters

- Boyer, S. L.** and T. Lafrancois. 2014. Assessing the possible presence of the Baltic zooplankton *Bosmina maritima* in the St. Croix National Scenic Riverway. Final Report to the National Park Service.
- Wolf, K., M. C. Hove, B. E. Sietman, **S. L. Boyer** and D. J. Hornbach. 2012. Additional minnows and topminnow identified as suitable sheepsnose (*Plethobasus cyphus*) hosts. *Ellipsaria* 14(3): 7-8.
- Hove, M. C., A. Fulton, K. Wolf, B. Sietman, D. J. Hornbach, **S. L. Boyer**, and N. Ward. 2011. Additional suitable hosts identified for rock pocketbook (*Arcidens confragosus*). *Ellipsaria* 13(3): 6-7
- Sietman, B. E., K. Bloodsworth, B. Bosman, A. Lageer, M. Lyons, M. C. Hove, and **S. L. Boyer**. 2009. Freshwater drum confirmed as a suitable host for *Leptodea*, *Potamilus*, and *Truncilla* species. *Ellipsaria* 11(3): 18-19.
- Boyer, S. L.** and G. Giribet. 2007. Methods for molecular studies in systematics. *Harvestmen: Biology of the Opiliones*, R. Pinto-da-Rocha, G. Machado, and G. Giribet. Harvard University Press, Cambridge, MA. 506-510.
- Giribet, G. and **S. L. Boyer**. 2007. Pettalidae Shear, 1980. *Harvestmen: Biology of the Opiliones*, R. Pinto-da-Rocha, G. Machado, and G. Giribet. Harvard University Press, Cambridge, MA. 99-101.

Invited Talks and Seminars

- 2017 Department of Biological Sciences, University of Idaho, Moscow, ID
- 2017 Department of Biology, Portland State University, Portland, OR
- 2017 Department of Entomology, University of Minnesota, St. Paul, MN
- 2016 Department of Ecology, Evolution and Behavior, U. of Minnesota, St. Paul, MN
- 2015 Biology Department, St. Louis University, St. Louis, MO
- 2013 International Congress of Arachnology, Harvestman Symposium, Kenting, Taiwan
- 2012 Biology Department, Carleton College, Northfield, MN
- 2011 Zoology Department, Field Museum of Natural History, Chicago, IL
- 2011 Biology Department, Grinnell College, Grinnell, IA
- 2010 Biology Department, Swarthmore College, Swarthmore, PA

- 2010 Department of Ecology, Evolution and Behavior, U. of Minnesota, St. Paul, MN
- 2007 Department of Biology, St. Thomas University, St. Paul, MN
- 2006 Biology Department, Macalester College, St. Paul, MN
- 2005 Department of Biology, John Carroll University, University Heights, OH

Presentations at Professional Meetings

- 2017 Society for Integrative and Comparative Biology – New Orleans, Louisiana
- 2016 International Congress of Arachnology – Golden, Colorado
- 2016 Society for Integrative and Comparative Biology – Portland, Oregon
- 2015 Society for Integrative and Comparative Biology – West Palm Beach, Florida
- 2013 International Congress of Arachnology - Kenting (Taiwan)
- 2013 Society for Integrative and Comparative Biology - San Francisco, California
- 2012 Evolution - Ottawa, Ontario (Canada)
- 2011 St. Croix River Research Rendezvous - Marine-on-St. Croix, Minnesota
- 2011 Society for Integrative and Comparative Biology - Salt Lake City, Utah
- 2010 St. Croix River Research Rendezvous - Marine-on-St. Croix, Minnesota
- 2010 Minnesota Faculty in Ecology, Evolution, and Behavior at Primarily Undergraduate Institutions - Hamline University, St. Paul, Minnesota
- 2010 Society for Integrative and Comparative Biology - Seattle, Washington
- 2009 St. Croix River Research Rendezvous - Marine-on-St. Croix, Minnesota
- 2009 Society for Integrative and Comparative Biology - Boston, Massachusetts
- 2008 Evolution - Twin Cities, Minnesota
- 2008 Society for Integrative and Comparative Biology - San Antonio, Texas
- 2008 St. Croix River Research Rendezvous - Marine-on-St. Croix, Minnesota
- 2006 Society for Integrative and Comparative Biology - Orlando, Florida
 - Award: Best Student Talk, Division of Systematic and Evolutionary Biology
- 2004 International Congress of Arachnology - Ghent (Belgium)
 - First Prize: Student Talks in Systematics
- 2004 Meeting of the Willi Hennig Society - Paris (France)
- 2002 Meeting of the Willi Hennig Society - New York, New York
- 2001 Phycological Society of America - Estes Park, Colorado
- 2000 Evolution - Bloomington, Indiana
- 1997 California Paleontology Conference - Berkeley, California

FIELDWORK

I have organized, led, and participated in many fieldwork expeditions, most of them aimed at collecting leaf litter arthropods. Sites include Queensland, Australia (2011-2015), New Zealand (2003-2006), Japan (2005), the US Pacific Northwest (2005), Florida (2005), Bahamas (2005), Sri Lanka (2004), and French Polynesia (1997).

FUNDING

External Grants

- NSF Biodiversity Discovery and Analysis #1732643: The Opiliones of New Zealand (invited to submit full proposal), 2017.
- NSF Biodiversity Discovery and Analysis #1630754: The Opiliones of New Zealand (invited to submit full proposal), 2016.
- NSF Systematic Biology and Biodiversity Inventories #1020809: Systematics and Biogeography of Mite Harvestmen from the Australian Wet Tropics (\$285,076), 2010-2016
- National Park Service Cooperative Agreement: DNA-based Identification of Zooplankton (\$13,600), 2012-2013
- National Geographic Society Committee on Research and Exploration: Understanding the Origin of Rainforest Diversity – Historical Biogeography of Mite Harvestmen from the Australian Wet Tropics (\$3,653), 2011
- National Park Service Cooperative Agreement: Determining Genetic Markers for Native Mussels (\$18,673), 2010-2011
- NSF MRI: Acquisition of a Variable Pressure Scanning Electron Microscope for Materials Characterization in Multidisciplinary Research and Training Proposal #0922927 (\$351,668), 2009
- NSF Doctoral Dissertation Improvement Grant #0508789: Phylogeography of *Aoraki denticulata* in the South Island of New Zealand (\$5,290), 2005-2006
- Marie Stopes Travel Award, Willi Hennig Society (\$500), 2004

Internal Grants

- Macalester College Student-Faculty Summer Research grant (\$35,860; 9 awards), 2008-2016
- Mellon “New Perspectives on the Fine Arts” course development grant (\$500), 2014
- Macalester College Three Rivers Center: DNA barcoding of freshwater mussels in the St. Croix River (\$25,000; five awards), 2008-2011
- Macalester College Science and Research Office grant (\$3,500), 2008
- Putnam Expedition Grant, Harvard University: Collecting Cyphophthalmi in Papua New Guinea (\$7,000) (declined), 2006
- Putnam Expedition Grant, Harvard University: Collecting Cyphophthalmi in New Zealand (\$8,500), 2002
- UC-Berkeley South Pacific Research Station Student Research Award: A catalogue of the nerite gastropods of Moorea, French Polynesia (\$2,500), 1997

PROFESSIONAL SERVICE

Membership in Professional Societies

- Society for Integrative and Comparative Biology
- International Society of Arachnology

Reviewer

Journals: *Journal of Biogeography*, *PLoS ONE*, *Molecular Ecology*, *Molecular Phylogenetics and Evolution*, *Proceedings of the Royal Society B*, *Invertebrate Systematics*, *Journal of Arachnology*, *Biological Journal of the Linnean Society*, *Cladistics*, *Bulletin of the Museum of Comparative Zoology*, *Ecology and Evolution*, *BMC Microbiology*, *Soil Organisms*, *Freshwater Biology (Journal of the North American Benthological Society)*, *Organisms Diversity and Evolution*, *Biology Letters*, *PeerJ*, *Micron*, *Zootaxa*

Books: *Life: The Science of Biology* (Sinauer, 2015), *Evolution: Making Sense of Life* (Roberts & Co., 2011), *Harvestmen: Biology of the Opiliones* (Harvard University Press, 2009)

Panelist

- Northstar Science Film Festival, 2016
- Alumni Career Panel, Harvard Organismic and Evolutionary Biology, 2016
- WISE Beyond Your Years: Celebrating 10 Years of Harvard Graduate Women in Science and Engineering, 2015
- Workshop: Teaching Evolution Across the Biology Curriculum, Society for Integrative and Comparative Biology, 2014
- Ecology/Evolution/Behavior Graduate Student Lunch: Perspectives on Careers at Primarily Undergraduate Institutions, University of Minnesota, 2012
- Preparing Future Faculty: The Tenure Process, University of Minnesota, 2012
- Preparing Future Faculty: The Interview Process, University of Minnesota, 2011
- Women in Science and Math Faculty Panel, Macalester College, 2007
- Landing a Faculty Position, Graduate School of Arts and Sciences, Harvard University, 2006
- Going to Grad School: Considerations and Opportunities, Women in Science at Harvard-Radcliffe, Harvard University, 2006
- National Symposium on the Advancement of Women in Science, Harvard University, 2003

Organizer

- Gender and Science Reading Group, Macalester College, 2010-11
- Systematics Discussion Group, Harvard University, 2005-06
- Founding Member, Harvard Graduate Women in Science & Engineering, 2004-07
- Organismic and Evolutionary Biology Graduate Student Seminar Series, Harvard University, 2003-4
- Harvard University Genetics and Genomics Training Grant Symposium, 2002

Other Service

- Faculty Advisor, Macalester Women in Science and Math, 2008-2011, 2015—
- Macalester College Faculty Personnel Committee, 2014-2016
- Faculty Mentor to PhD Students and Postdocs, Preparing Future Faculty Program, University of Minnesota, 2009—
- Student Talks Judge, SICB Division of Phylogenetic and Comparative Biology, 2008—
- Education Committee, Society for Integrative and Comparative Biology, 2013-2016
- American Association of University Women grants panel: International Fellowships, 2014
- Faculty Mentor, Macalester HHMI Young Researchers Summer Program, 2014
- NSF grants panel: Systematics and Biodiversity Science, 2013
- Student Support Committee, Society for Integrative and Comparative Biology, 2010-13
- NSF grants panel: Systematic Biology and Biodiversity Inventories, 2011
- Macalester College Scholarly Publishing Committee, 2010-2011
- Graduate Student Representative, Harvard University Task Force on Women in Science and Engineering, 2004
- Graduate Student Mentor to Undergraduate Women in Science, Harvard College Science Mentors Program, 2002-2004
- Northeast Ohio Science and Societal Issues Symposium Judge, Case Western Reserve University, 2001