

# Paul Marek

Curriculum Vitae

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Assistant Professor  
Department of Entomology  
Virginia Tech  
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## Education

Ph.D. in Biology, East Carolina University, NC 2008  
M.A. in Systematic Biology and Ecology, San Francisco State University, CA 2002  
B.S. in Biology, Loyola University of Chicago, IL 2000

## Research Grants

NSF Collections in Support of Biological Research Grant, sole PI, 2015-present  
National Science Foundation (\$467,249)

NSF Biodiversity: Discovery & Analysis Grant, co-PI, 2013-present  
National Science Foundation (\$783,747)

NSF Phylogenetic Systematics Grant, sole PI, 2011-2015  
National Science Foundation (\$254,385)

Expeditions Council Grant, sole PI, 2012-2014  
National Geographic Society (\$17,050)

NSF Doctoral Dissertation Improvement Grant, co-PI, 2006-2008  
National Science Foundation (\$10,510)

Student Project Grant 2002  
College of Science and Engineering, San Francisco State University (\$150)

Travel Grant 2002  
Graduate Student Council in Biology, San Francisco State University (\$200)

Travel Grant 2002  
Division of Research, California Academy of Sciences (\$300)

Mulcahy Grant 1999-2000  
Department of Biology, Loyola University (\$2000)

## Publications

Garcia, A.J., S. Priya, P.E. Marek. 2015. Understanding the locomotion and dynamic controls for millipedes: Part 1 – Kinematic analysis of millipede movements, *in review*.

Meyer, W.M., J. Eble, K. Franklin, R.B. McManus, S.L. Brantley, J. Henkle, P.E. Marek, W.E. Hall, C.A. Olson, R. McInroy, E.M. Bernal Loaiza, R.C. Brusca, W. Moore. 2015. Ground-Dwelling Arthropod Communities of a Sky Island Mountain Range in Southeastern Arizona, USA: Obtaining a Baseline for Assessing the Effects of Climate Change, *PLoS ONE*, 10, 1-18.

Means, J.C., E.A. Francis, A.A. Lane, P.E. Marek. 2015. A general methodology for collecting and preserving xystodesmid and other large millipedes for biodiversity research, *Biodiversity Data Journal*, 3, 1-17.

- Marek, P.E. and W. Moore. 2015. Discovery of a glowing millipede in California and the gradual evolution of bioluminescence in Diplopoda, *Proceedings of the National Academy of Sciences, USA*, 112, 6419-6424.
- Harris, M.C., E.J. Dotseth, B.T. Jackson, S.L. Paulson, P.E. Marek, D.M. Hawley. 2015. Detection and isolation of La Crosse virus in field-collected *Aedes japonicus japonicus* (Diptera: Culicidae) in the Appalachian Region, *Emerging Infectious Diseases*, 21.
- Marek, P.E., T. Tanabe, and S. Sierwald. 2014. A species catalog of the millipede family Xystodesmidae (Diplopoda: Polydesmida), *Virginia Museum of Natural History Special Publications*, 17: 1 – 117.
- Kamali, M., Peery, A., P.E. Marek, C. Antonio-Nkondjio, C. Ndo, Z. Tu, F. Simard, and I.V. Sharakhov. 2014. Temporal diversification of major African malaria vectors inferred from multigene phylogenetics, *PLoS ONE*, 9, 1-9.
- Marek, P.E., W.A. Shear, and J.E. Bond. 2012. A redescription of the leggiest animal, the millipede *Illacme plenipes*, with notes on its natural history and biogeography (Diplopoda, Siphonophorida, Siphonorhinidae), *ZooKeys*, 241, 77–112.
- Marek, P.E., J. Yeager, S. Molina, D. Papaj, and W. Moore. 2011. Bioluminescent aposematism in millipedes, *Current Biology*, 21, R680-R681.
- Marek, P.E. 2010. A revision of the Appalachian millipede genus *Brachoria* Chamberlin, 1939 (Polydesmida, Xystodesmidae, Apheloriini), *Zoological Journal of the Linnean Society*, 159, 817-889.
- Shear, W.A. and P.E. Marek. 2009. *Andrognathus hoffmani*, n. sp., a second species in the genus and the first species of Andrognathidae from México (Diplopoda, Platydesmida, Andrognathidae). Festschrift in honor of Richard Hoffman, *Memoirs of the Virginia Museum of Natural History*, 16, 149-158.
- Marek, P.E. and J.E. Bond. 2009. A Müllerian mimicry ring in Appalachian millipedes, *Proceedings of the National Academy of Sciences, USA*, 106, 9755-9760.
- Walker, M.J., A.K. Stockman, P.E. Marek, and J.E. Bond. 2009. Pleistocene glacial refugia across the Appalachian Mountains and coastal plain in the millipede genus *Narceus*: Evidence from population genetic, phylogeographic, and paleoclimatic data, *BMC Evolutionary Biology*, 9, 25.
- Marek, P.E. and J.E. Bond. 2007. A reassessment of apheloriine millipede phylogeny: additional taxa, Bayesian inference, and direct optimization. *Zootaxa*, 1610, 27-39.
- Marek, P.E. and J.E. Bond. 2006. Phylogenetic systematics of the colorful, cyanide-producing millipedes of Appalachia (Polydesmida, Xystodesmidae, Apheloriini) using a total evidence Bayesian approach. *Molecular Phylogenetics and Evolution*, 41, 704-729.

Marek, P.E. and J.E. Bond. 2006. Biodiversity hotspots: Rediscovery of the world's leggiest animal. *Nature*. 441, 707.

Marek, P.E. and D.H. Kavanaugh. 2005. The evolutionary relationships of North American *Diplous* Motschulsky (Coleoptera: Carabidae: Patrobini) inferred from morphological and molecular evidence. *Invertebrate Systematics*. 19, 145-168.

Marek, P.E., J.E. Bond, and P. Sierwald. 2003. Rhinocricidae Systematics II: A species catalog of the Rhinocricidae (Diplopoda: Spirobolida) with synonymies. *Zootaxa*. 308, 1-108.

Bond, J.E. and P.E. Marek. 2003. Rhinocricidae Systematics I: The taxonomic placement of the species of *Zipyge* Chamberlin, 1925 and *Oxygygides* Chamberlin, 1922 (Diplopoda: Spirobolida: Rhinocricidae: Oxygyginae). *Zootaxa*. 292, 1-8.

## Websites

Marek, P.E. 2012. Diplopoda.org, An online resource for millipedes and centipedes, online at <http://www.diplopoda.org>.

Marek, P.E. 2010. *Brachoria* Chamberlin 1939. Version 16 September 2010, online at <http://tolweb.org/Brachoria> in *The Tree of Life Web Project*, <http://tolweb.org/>.

## Teaching Experience

Assistant Professor, Virginia Tech

Course: Insect Biology Lecture and Laboratory

Adjunct Professor, Pima Community College, 2009

Course: General Biology II Lecture and Laboratory

Teaching Assistant, East Carolina University, 2007

Course: Phylogenetic Theory

Teaching Assistant, East Carolina University, 2004

Course: Terrestrial Arthropod Biology

Teaching Assistant, San Francisco State University, 2001-2002

Course: Insect Taxonomy Laboratory

## Insect Curation Experience

Curator, Virginia Tech Insect Collection, 2013-present

Curation of Virginia Tech Insect Collection

Curator, San Francisco State University, 2001-2002

Curation of San Francisco State University Entomology Museum

Research Assistant, CalBug. California Academy of Sciences. May-June 2002

Retrospective databasing and georeferencing entomology collections

Undergraduate Volunteer, University of Central Florida, February-August 2000  
Curation and identification of Florida Carabidae backlog

Undergraduate Volunteer, Field Museum of Natural History, 1998-1999  
Curation of Austral rove beetles

### **Awards & Honors**

Sigma Xi Helms Award for Student Research, 2010  
East Carolina University

Faculty Standards Teaching Award, 2009  
Pima Community College

Ernst Mayr Award Nomination, 2009  
Society for Systematic Biology, Annual Meeting

Postdoctoral Excellence in Research and Teaching (PERT) Fellowship, 2008  
National Institutes of Health, Center for Insect Science, University of Arizona

Second Place Presentation, 2007  
Student Paper Competition, Entomological Society of America

First Place Presentation, 2007  
Student Paper Competition, East Carolina Graduate Student Research Day

Partnerships for Enhancing Expertise in Taxonomy (PEET) Fellowship, 2003-2008  
National Science Foundation, East Carolina University

Scholars Award 2003-2005  
Graduate School, East Carolina University

Graduate Assistantship 2000-2002  
Division of Research, California Academy of Sciences

Partnerships for Enhancing Expertise in Taxonomy Internship 2000  
Department of Zoology, Field Museum of Natural History

REU Internship, Summer Systematics Institute 1999  
Division of Research, California Academy of Sciences

### **Professional Appointments**

Assistant Professor, Virginia Tech, 2013-present  
Department of Entomology, Insect Taxonomy & Systematics.

Research Associate/Principal Investigator, University of Arizona, 2011-2013  
Evolution of bioluminescence in millipedes.

NIH Postdoctoral Research Associate, University of Arizona, 2008-2011  
Evolution of luminescence in Californian millipedes. Advisors, Wendy Moore and Dan Papaj

Doctoral Fellow, East Carolina University, 2003-2008  
Systematics and evolution of mimicry in Appalachian millipedes. Advisor: Jason Bond

Graduate Assistant, San Francisco State University, 2000-2002  
Systematics of the North American ground beetle *Diplous*. Advisor: David Kavanaugh

Expedition Entomologist, California Academy of Sciences, 2002  
Spider biodiversity of the Gaoligong Mountains of China. Advisor: Charles Griswold

Curator, San Francisco State University, 2001-2002  
Curation of San Francisco State University Entomology Museum. Advisor: John Hafernik

Undergraduate Research Assistant, Field Museum of Natural History, 2000  
Classification and systematics of the millipede family Rhinocricidae. Advisor: Petra Sierwald

NSF Undergraduate REU Intern, California Academy of Sciences, 1999  
Beetle systematics (Summer Systematics Institute). Advisor: David Kavanaugh

Undergraduate Research Assistant, Loyola University Chicago, 1999  
Effects of elevated CO<sub>2</sub> on leaf chemistry and crane fly detritivory. Advisor: Nancy Tuchman

Undergraduate Research Assistant, Loyola University Chicago, 1999  
Cladistic analysis of the leaf-rolling weevil genus group *Attelabina*. Advisor: Robert Hamilton

Undergraduate Volunteer, Field Museum of Natural History, 1998-1999  
Curation of Austral rove beetles. Advisors: Margaret Thayer and Alfred Newton

### **Community Engagement and Public Outreach**

Interviewed by National Public Radio's Science Friday Radio Show for research on the leggiest animal on the planet, *Illacme plenipes*, 2012

Interviewed by the BBC News for research on the leggiest animal on the planet, the enigmatic *Illacme plenipes*, 2012.

Arizona Insect Festival, co-organized "Luminous Insect" exhibit, 2012

Scientific advisor for National Geographic Television's Series, "Wild Wild West".  
Traveled with NGS photographers to film bioluminescent millipedes, 2012

Interviewed by National Public Radio's Science Friday Radio Show for research on bioluminescent and biofluorescent millipedes, 2012

Scientific contributor for Xylem and Phloem's educational iPad app, "Isopod: The Roly Poly Science Game" featuring scientific topics authored by entomologists, biologists and teachers.

Scientific advisor for American Museum of Natural History's science exhibit "Creatures of Light: Nature's Bioluminescence" (included as part of the exhibit, an educational iPad app, which includes the bioluminescent millipede *Motyxia sequoiae* and our recent study in *Current Biology*).

BioBlitz Saguaro National Park, National Geographic/National Park Service, Organized public arthropod inventory focused on bioluminescence, fluorescence, and arthropod coloration, 2011

Interviewed by Canadian Broadcast Corporation's Quirks & Quarks Radio Show, LiveScience, Discover Magazine, New Scientist, MSNBC, and National Geographic for research on bioluminescent aposematism in millipedes, 2011

Arizona Insect Festival, Organized "D.E.A.D." tent (Decomposer Education and Appreciation Destination), 2011

Undergraduate Biology Research Program Small Group Leader, University of Arizona, 2011

Natural History, millipedes and insects blogger, [http://www.apheloria.org/Paul/millipedia\\_blog/millipedia\\_blog.html](http://www.apheloria.org/Paul/millipedia_blog/millipedia_blog.html), 2009 - present

Meet the Beetles! Playing live at the Arizona-Sonora Desert Museum, 2010

Darwin Day, Darwin 200th Birthday Celebration, University of Arizona, 2009

Interviewed by National Public Radio, Voice of America, New York Times, BBC News, Reuters, and Associated Press for research on *Illacme plenipes*, "leggiest animal on the planet," and biodiversity, 2006 (VOA interview broadcast globally through shortwave radio)

BugFest, North Carolina State Museum of Natural History, 2005

"Don't Bug Me" event tutor, Science Olympiad, C.M. Eppes Middle School, NC, 2005-2007

Teacher Services Assistant, California Academy of Sciences, 2000-2002

## **Research Talks**

Invited seminar, University of Missouri - St. Louis 2012: "Millipede systematics and the evolutionary ecology of warning coloration"

Invited seminar, Purdue University 2012: "Millipede systematics and the evolutionary ecology of warning coloration"

Invited seminar, Field Museum of Natural History, Watson Armour Research Seminar Series 2012: "The glow means No: the evolution of bioluminescence in millipedes"

Invited seminar, University of Illinois at Chicago 2012: "The glow means No: the evolution of bioluminescence in millipedes"

Invited lecture, Millsaps College Moreton Lecture 2012: "Glow-in-the-dark millipedes, mimicry rings and the 750-legged beast"

Invited lecture, University of Arizona, Topics in Behavioral Ecology class 2012: "Behavioral ecology of color and light"

Invited seminar, University of Vermont 2011: "Millipede systematics and the evolutionary ecology of warning coloration"

Invited seminar, Stephen F. Austin University 2011: "Millipede systematics and the evolutionary ecology of warning coloration"

Invited seminar, California Academy of Sciences 2011: "The glow means No: the evolution of bioluminescence in millipedes"

Invited seminar, Stetson University 2011: "Millipedes, mimicry, and bioluminescence"

Invited seminar, Cleveland Museum of Natural History 2011: "Mimicry, bioluminescence, and the 750-legged beast"

Invited lecture, San Diego State University, Biology Department 2011: "The future of taxonomy and cybertaxonomy"

Invited seminar, San Diego State University, Biology Department 2011: "The glow means No: the evolution of bioluminescence in millipedes"

University of Arizona, Ecology and Evolutionary Biology Department 2010: "The glow means, No: the evolution of bioluminescence in millipedes"

University of Arizona, Center for Insect Science, Hexapodium 2010: "The glow means, No: the evolution of bioluminescence in millipedes"

Society of Systematic Biologists, Evolution 2009: "Mimicry in Appalachian millipedes"

Invited seminar, University of Arizona, Entomology Department 2008: "Warning, cyanide and masquerade: A Müllerian mimicry ring in Appalachian millipedes"

Invited seminar, University of Tennessee Martin, Biology Department 2008: "Mimicry in Appalachian millipedes"

Richard Hoffman Birthday Festschrift 2007: "A molecular phylogenetic approach to genus delimitation within the xystodesmid tribe Apheloriini (Polydesmida)"

North Carolina Academy of Science 2007: "Systematics and color mimicry evolution of the cyanide-producing millipedes of Appalachia"

East Carolina University, Graduate Student Research Day 2007: "Systematics and color mimicry evolution of the cyanide-producing millipedes of Appalachia"

Entomological Society of America 2007: "Systematics and color mimicry evolution of the cyanide-producing millipedes of Appalachia"

Invited lecture, East Carolina University, Field Zoology Class 2006: "Bizarrodiversity"

Southeastern Population Ecology and Evolutionary Genetics 2006: "Systematics and color mimicry evolution of the cyanide-producing millipedes of Appalachia"

Society of Systematic Biologists, Evolution 2006: "An exemplar phylogenetic approach to evaluating higher-level classification problems in cyanogenic xystodesmid millipedes in Appalachia"

Association of Southeastern Biologists 2006: "Systematics and color mimicry evolution of the cyanide-producing millipedes of Appalachia"

Entomological Society of America 2005: "Systematics and mimicry evolution of colorful cyanide-producing millipedes of Appalachia"

Southeastern Ecology and Evolution Conference 2005: "Systematics and mimicry evolution of cyanide producing millipedes"

East Carolina University, Graduate Student Research Day 2005: "Systematics and mimicry evolution of cyanide producing millipedes"

## **Research Permits**

Threatened and Endangered Species Collection/Research/Survey Permit, Virginia Department of Game and Inland Fisheries, VADGIF Permit No. 054135

Scientific Research and Collecting Permit, United States Department of the Interior National Park Service, Blue Ridge Parkway, Permit No. BLR-201-4-SCI-0033