

CURRICULUM VITAE

HOJUN SONG

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Born March 31, 1977. U.S. Citizen.

EDUCATION

THE OHIO STATE UNIVERSITY, Columbus, Ohio.

Doctor of Philosophy in Entomology, June 2006.

Advisor: Dr. John W. Wenzel

Dissertation: "Systematics of Cyrtacanthacridinae (Orthoptera: Acrididae) with a focus on the genus *Schistocerca* Stål 1873: Evolution of locust phase polyphenism and study of insect genitalia"

THE OHIO STATE UNIVERSITY, Columbus, Ohio.

Master of Science in Entomology, June 2002.

Advisors: Drs. John W. Wenzel and Norman F. Johnson

Thesis: "Post-emergence development of male genitalia in *Schistocerca americana* (Drury) (Orthoptera: Acrididae: Cyrtacanthacridinae)"

CORNELL UNIVERSITY, Ithaca, New York.

Bachelor of Science in Entomology, May 2000.

PROFESSIONAL EXPERIENCE

2009-present Research Associate. Department of Biology, Brigham Young University. NSF
Phylogenetic Systematics of Orthoptera (Insecta). (PI: H. Song)

2006-2009 Postdoctoral Research Fellow. Department of Biology, Brigham Young University. NSF
Phylogenetic Systematics of Orthoptera (Insecta). (PI: H. Song); NSF Assembling Tree
of Life (AToL): Beetle Tree of Life Project. (Supervisor: Dr. Michael F. Whiting)

2000-2006 Graduate Teaching Associate. The Ohio State University. Insect Morphology, Insect
Ecology, General Biology

2001-2002 Graduate Research Associate. Department of Entomology, The Ohio State University.
Hymenoptera Online Database. (Supervisor: Dr. Norman F. Johnson)

2001 Research Assistant. USDA Northern Plains Agricultural Research Lab. Molecular
phylogeny of *Schistocerca* Stål (Orthoptera: Acrididae). (Supervisor: Dr. Gregory A.
Sword)

- 1997-2000 Student Curator. Cornell University Insect Collection. (Supervisor: Dr. James K. Liebherr)
- 1999 Research Assistant. Department of Entomology, Cornell University. Biodiversity survey of McLean Bog Preserve. (Supervisor: Dr. James K. Liebherr)
- 1998-1999 Entomology Contractor. Department of Entomology, Smithsonian Institution. East Court Moving Project. (Supervisor: Dr. David G. Furth)

GRANTS & FELLOWSHIPS

- 2009 NSF REU Supplement Grant to DEB-0816962: Phylogenetic systematics of Orthoptera (Insecta): Evolution of male genitalia and study of nuclear mitochondrial pseudogenes (\$12,000)
- 2008-2011 NSF Systematic Biology and Biodiversity Inventories Grant (PI: H. Song, Co-PI: M.F. Whiting): Phylogenetic systematics of Orthoptera (Insecta): Evolution of male genitalia and study of nuclear mitochondrial pseudogenes (DEB-0816962: \$400,000)
- 2005 Herta Camerer Gross Fellowship, OSU College of Biological Sciences (\$5,000)
Edward Ray Travel Award, OSU Council of Graduate Students (\$750)
- 2002-2005 NSF Graduate Research Fellowship (\$21,500/yr)
- 2004 Tinker Foundation Field Research Grant (\$1,100)
Alumni Grants for Graduate Research and Scholarship, OSU (\$2,000)
- 2003-2004 NSF GRF Supplement Grant (\$1,200 each)
- 2003 Graduate Student Dissertation Research Travel Grant, OSU (\$1,500)
- 2002 Orthopterists' Society Research Grant (\$800)

PUBLICATIONS [<http://publicationslist.org/hojun.song>] (* undergraduates under my mentorship)

- In Press [20] Moulton, M.J.*, Song, H., and Whiting, M.F. Assessing the effects of primer specificity on eliminating numt co-amplification in DNA barcoding: A case study from Orthoptera (Arthropoda: Insecta). **Molecular Ecology Resources**.
- [19] Legendre, F., Robillard, T., Song, H., Whiting, M.F. and Desutter-Grandcolas, L. One hundred years of instability in Ensiferan relationships. **Systematic Entomology**.
- [18] Song, H., Sheffield, N.C.*, Cameron, S.L., Miller, K.B. and Whiting, M.F. When phylogenetic assumptions are violated: The effect of base compositional heterogeneity and among-site rate variation in beetle mitochondrial phylogenomics. **Systematic Entomology**.

- 2009 [17] Jensen, D.*, Svenson, G.J., Song, H. and Whiting, M.F. 2009. Phylogeny and evolution of male genitalia within the praying mantis genus *Tenodera* (Mantodea: Mantidae). **Invertebrate Systematics**. 23: 409-421
- [16] Song, H. and Bucheli, S.R. 2009. Comparison of phylogenetic signal between male genitalia and non-genital characters in insect systematics. **Cladistics**. DOI:10.1111/j.1096-0031.2009.00273.x
- [15] Cameron, S.L., Sullivan, J., Song, H., Miller, K.B. and Whiting, M.F. 2009. A mitochondrial genome phylogeny of the Neuropterida (lace-wings, alderflies and snakeflies) and their relationship to the other holometabolous insect orders. **Zoologica Scripta**. 38(6): 575-590.
- [14] Sheffield, N.C.*[§], Song, H.[§], Cameron, S.L. and Whiting, M.F. 2009. Nonstationary evolution and compositional heterogeneity in beetle mitochondrial phylogenomics. **Systematic Biology**. ([§] contributed equally) 58(4): 381-394.
- [13] Song, H. 2009. Species-specificity of male genitalia is characterized by shape, size, and complexity. **Insect Systematics and Evolution**. 40(2): 159-170.
- 2008 [12] Sheffield, N.C.*, Song, H., Cameron, S.L. and Whiting, M.F. 2008. A comparative analysis of mitochondrial genomes in Coleoptera (Arthropoda: Insecta) and genome descriptions of six new beetles. **Molecular Biology and Evolution** 25(11): 2499-2509.
- [11] Fenn, J.D.*, Song, H., Cameron, S.L. and Whiting, M.F. 2008. A mitochondrial genome phylogeny of Orthoptera (Insecta) and approaches to maximizing phylogenetic signal found within mitochondrial genome data. **Molecular Phylogenetics and Evolution**. 49: 59-68.
- [10] Song, H., Buhay, J.E., Whiting, M.F., and Crandall, K.A. 2008. Many species in one: DNA barcoding overestimates the number of species when nuclear mitochondrial pseudogenes are coamplified. **Proceedings of the National Academy of Sciences of the U.S.A.** 105(36): 13486-13491.
- [9] Song, H. and Wenzel, J.W. 2008. Mosaic pattern of genital divergence in three populations of *Schistocerca lineata* Scudder, 1899 (Orthoptera: Acrididae: Cyrtacanthacridinae). **Biological Journal of the Linnean Society** 94: 289-301.
- [8] Song, H. and Wenzel, J.W. 2008. Phylogeny of bird-grasshopper subfamily Cyrtacanthacridinae (Orthoptera: Acrididae) and the evolution of locust phase polyphenism. **Cladistics** 24: 515-542.
- 2006 [7] Song, H., Weissman, D., Barrientos-Lozano, L., and Cano-Santana, Z. 2006. The Locust Island. **American Entomologist** 52(3): 168-181.
- 2006 [6] Song, H. 2006. Description of *Schistocerca cohni* n. sp. and redescription of *S. socorro* (Dirsh) (Orthoptera: Acrididae: Cyrtacanthacridinae) from Mexico. **Zootaxa** 1150: 43-52.

- 2005 [5] Song, H. 2005. Phylogenetic perspectives on the evolution of locust phase polyphenism. **Journal of Orthoptera Research** 14(2): 235-245.
- 2004 [4] Song, H. 2004. On the origin of the desert locust *Schistocerca gregaria* (Forskål) (Orthoptera: Acrididae: Cyrtacanthacridinae). **Proceedings of the Royal Society of London B** 271: 1641-1648.
- [3] Song, H. 2004. Revision of the Alutacea Group of genus *Schistocerca* (Orthoptera: Acrididae: Cyrtacanthacridinae). **Annals of the Entomological Society of America** 97: 420-436.
- [2] Song, H. 2004. Post-adult emergence development of genitalic structures in *Schistocerca* Stål and *Locusta* L. (Orthoptera: Acrididae). **Proceedings of the Entomological Society of Washington** 106: 181-191.
- 2002 [1] Liebherr, J.K and Song, H. 2002. Distinct ground beetle (Coleoptera: Carabidae) assemblages within a New York State wetland complex. **Journal of the New York Entomological Society** 110: 127-141.

SUBMITTED PAPERS (* undergraduates under my mentorship)

Song, H., Moulton, M.J.*, Hiatt, K.D.*, Whiting, M.F. Uncovering historical signature of mitochondrial DNA hidden in the nuclear genome: The origin of the desert locust revisited. **Systematic Biology**.

Song, H. Grasshopper systematics: Past, present and future. **Journal of Orthoptera Research**.

OTHER PUBLICATIONS

- 2008 Song, H. 2008. Ecological study of the Central American locusts on Socorro Island. **Econature** 15: 66-71. [in Korean]
- 2007 Song, H. 2007. Mouse-catching locust – A mysterious creature revealed. **Metaleptea** 27(1): 6-7.
- 2004 Weissman D.B., Song, H. and Barrientos-Lozano, L. 2004. Locust Outbreak on Socorro Island, Islas Revillagigedo, México. **TecnoINTELECTO** 1(2): 119-121.
- 2000 Song, H. 2000. Ground beetle diversity at McLean Bogs. **Cornell Plantations Notes** 74: 8-9.

INVITED SEMINARS

- 2010 Northeastern Symposium on Evolutionary Divergence Time, Rutgers University, New Brunswick, New Jersey. “Uncovering historical signature of mitochondrial DNA hidden in the nuclear genome: The origin of the desert locust revisited”

- 2009 Entomology Collections Network Annual Meeting, Indianapolis, Indiana. “Introducing Korean National Institute of Biological Resources”
- CSIRO, Department of Entomology, Canberra, Australia. “Nuclear mitochondrial pseudogenes and heteroplasmy in mitochondrial systematics: Friends or Foes?”
- Locust Research Group, University of Sydney, Sydney, Australia. “Nuclear mitochondrial pseudogenes and heteroplasmy in mitochondrial systematics: Friends or Foes?”
- Dan Otte Symposium. University of Lethbridge, Lethbridge, Canada. “Grasshopper systematics: Past, Present and Future”
- National Institute of Biological Resources, Incheon, Korea. “Cost of untested assumptions in molecular systematics in the age of rapid and massive data generation”
- 2008 Smithsonian Institution, Department of Entomology, Washington, D.C. “Linking pattern and process: Phylogenetic perspectives on the evolution of swarming locusts and the study of insect male genitalia” (Job seminar for Research Curator position)
- Sam Houston State University, Department of Biological Sciences, Huntsville, Texas. “Ordinary penis: Evolution of insect male genitalia is not so special”
- 2005 Program Symposium on Evolution of insect sexual characters and courtship behavior, Entomological Society of America Annual Meeting, Ft. Lauderdale, Florida. “Variation of insect genitalia: Are we assuming too much?”
- Plenary Symposium on Advances and Controversies in Phase Polyphenism Research, Ninth International Conference of the Orthopterists’ Society, Canmore, Canada. “Phylogenetic perspectives on the evolution of locust phase polyphenism”
- Departmental Seminar. The Ohio State University, Department of Entomology, Columbus, Ohio. “The Locust Island – A fascinating story of the swarming locusts on Socorro Island, Mexico”
- 2004 Symposium on Future of Orthopteran Science, Entomological Society of America Annual Meeting, Salt Lake City, Utah. “Phylogenetic perspectives on the evolution of insect genitalia”
- 2003 Symposium on Multidisciplinary Advances in Orthopteran Science, Entomological Society of America Annual Meeting, Cincinnati, Ohio. “Phylogeny of *Schistocerca* – Origin of desert locust revisited”

PRESENTATIONS CONTRIBUTED AS PRIMARY AUTHOR

- 2009 Entomological Society of America Annual Meeting, Indianapolis, Indiana. “Use of nuclear mitochondrial pseudogenes as molecular fossils: a case study using the grasshopper genus *Schistocerca* (Orthoptera: Acrididae)”

- 2009 10th International Congress of Orthopterology, Antalya, Turkey. “Phylogeny of *Schistocerca* revisited: Locust biogeography inferred from molecular fossils”
- 2008 Entomological Society of America Annual Meeting, Reno, Nevada. “A mitochondrial genome phylogeny of Coleoptera (Insecta): Overcoming systematic bias from base compositional heterogeneity”
- NSF Assembling Tree of Life (AToL) PIs meeting, New Orleans, Louisiana. “Assembling the Beetle Tree of Life (BToL): A progress report”
- 2006 Entomological Society of America Annual Meeting, San Diego, California. “Nuclear mitochondrial pseudogenes introduce ambiguity in DNA barcoding”
- 2006 The Willi Hennig Society, Oaxaca, Mexico. “Systematics of Cyrtacanthacridinae (Orthoptera: Acrididae) and the evolution of locust phase polyphenism”
- 2006 Entomological Society of America Annual Meeting, Indianapolis, Indiana. “Phylogeny of Cyrtacanthacridinae (Orthoptera: Acrididae) and the evolution of locust phase polyphenism”
- 2003 The Willi Hennig Society, New York Botanical Garden, New York. “Where did the desert locust come from? - Insight from a phylogenetic study”
- 2002 Entomological Society of America Annual Meeting, Ft. Lauderdale, Florida. “Morphological phylogeny of *Schistocerca* Stål (Orthoptera: Acrididae: Cyrtacanthacridinae) - The origin of *Schistocerca gregaria*”
- 2001 Entomological Society of America Annual Meeting, San Diego, California. “Development of male genitalia in relation to the phylogeny of North American *Schistocerca* (Orthoptera: Acrididae: Cyrtacanthacridinae)”
- International Conference on Orthopteroid Insects, 8th Meeting of the Orthopterists’ Society, Montpellier, France. “Phylogenetic relationships of North American *Schistocerca* (Orthoptera: Acrididae: Cyrtacanthacridinae) and problems with current taxonomy”

HONORS

- 2008 Student and Young Professional Award, Entomological Society of America (\$125)
- 2006 John Henry Comstock Graduate Student Award, Entomological Society of America
- 2005 DeLong Award for travel to ESA, OSU Department of Entomology (\$1000)
- 2005 W. Fred Hink Research Award, OSU Department of Entomology (\$250)

PROFESSIONAL SERVICE

Manuscripts reviewed: Zoosystema, Genome, Zoologica Scripta, Entomological News, Proceedings of the International Symposium of Tropical Biology, Journal of Orthoptera Research, Zootaxa, Systematic Entomology, Great Plains Research, Zoological Science, Molecular Phylogenetics and Evolution, Proceedings of the Entomological Society of Washington, Biological Journal of the Linnean Society, Journal of Insect Science, Canadian Journal of Zoology, Insect Systematics & Evolution, Pakistan Journal of Zoology, Cladistics, BMC Genomics

- 2007-present Subject editor (Orthoptera) for Zootaxa
- 2009-present Editor of Metaleptea, a newsletter of the Orthopterists' Society
- 2004-present Taxonomic expert on Cyrtacanthacridinae for the Orthoptera Species File Online (<http://osf2.orthoptera.org>)
- 2009 Symposium moderator, 10th International Congress of Orthopterology
- 2005-2008 Associate Editor of Metaleptea, a newsletter of the Orthopterists' Society
- 2008 Student Competition Judge, Entomological Society of America Annual Meeting
- 2007-2008 Symposium moderator, Entomological Society of America Annual Meeting
- 2004-2009 Symposium organizer, Korean Young Entomologists (KYE), Entomological Society of America Annual Meeting
- 2005 Symposium organizer, Welcome to the phallic cult – Evolution of insect sexual characters and courtship behavior (selected as Program Symposium), Entomological Society of America Annual Meeting
- 2003-2004 Symposium organizer, Orthopterists' Society Meeting, Entomological Society of America Annual Meeting

TEACHING EXPERIENCE

- 2006-present Guest Lecturer. Brigham Young University. *Introductory Entomology, Principle of Systematics*.
- 2006 Graduate Teaching Associate. The Ohio State University. *Insect Morphology*. Included short lectures on morphology of diverse insect orders, preparation of specimens for dissection, creating and administrating laboratory practical, teaching and grading scientific illustration. Also included preparation and presentation of two lectures, "Insect internal reproductive system" and "Insect external reproductive system."
- 2005 Graduate Teaching Associate. The Ohio State University. *Insect Ecology*. Included demonstration of various sampling techniques in the field, helping students identifying specimens, grading laboratory reports and exams. Also included preparation and presentation of a lecture, "Biology and ecology of locusts."
- 2001 Graduate Teaching Associate. The Ohio State University. Head TA for *General Biology*. Included training other teaching associates, preparation of laboratory sections, creating lab quizzes and practical exam.
- 2000 Graduate Teaching Associate. The Ohio State University. Teaching of two sections of *General Biology* laboratory. Included preparation of laboratory work, grading quizzes and laboratory reports, recitation on biological concepts.

ACADEMIC COMMITTEE

2008-present Joseph Mugleston, Dissertation Committee, Department of Biology, Brigham Young University

UNDERGRADUATE MENTORING

2009 (summer) Daniel Kaonohi and Steven Young (BYU-Hawaii). Molecular phylogeny of Orthoptera (as a part of NSF-sponsored summer workshop).
2008-present Kevin Hiatt (BYU). Mitochondrial genome evolution in Orthoptera.
2008-present Matthew Moulton (BYU). Evolution of nuclear mitochondrial pseudogenes.
2006-2009 Dana Jensen (BYU). Phylogeny and genital evolution in *Tenodera* mantids.
2006-2008 Nathan Sheffield (BYU). Mitochondrial genome evolution in Coleoptera
2006-2008 Daniel Fenn (BYU). Mitochondrial genome phylogeny of Orthoptera.

MISCELLANEOUS SERVICE

2006 Website designer, OSU Department of Entomology (<http://entomology.osu.edu/>)
2004-2005 President, Entomology Graduate Student Association, OSU Department of Entomology
2003-2004 Graduate Studies Committee, OSU Department of Entomology
2000-2005 Volunteer for Columbus Zoo Insect Fair

PROFESSIONAL SOCIETY MEMBERSHIP

Orthopterists' Society
Entomological Society of America
Entomological Society of Washington
Willi Hennig Society

FIELD EXPERIENCE

Australia (Western Australia) (22 August–17 September 2009)
South Africa (Western Cape, Eastern Cape) (4-26 February 2009)
Papua New Guinea (New Britain, New Ireland) (17 July-3 August 2008)
Socorro Island, Mexico (Ecological study of *Schistocerca*, sponsored by CONABIO and UNAM, 14 October-10 November 2004)
Utah, Colorado, Oklahoma, Kansas (5-23 July 2004)
South Carolina (22-25 March 2004)
Arizona (2-7 September 2002)
Florida (1-9 August 2002)

MUSEUM VISIT

Australian National Insect Collection, CSIRO, Canberra, Australia (August 2009)
Muséum National d'Histoire Naturelle, Département Systématique et Evolution (March-April 2009)
National Institute of Biological Resources, Incheon, Korea. (January 2009)
British Museum of Natural History, Department of Entomology (August 2003, April 2009)
Academy of Natural Sciences at Philadelphia, Department of Entomology (March 2003, October 2008)
Hope Museum of Entomology, Oxford University (August 2003)
American Museum of Natural History (July 2003)
The Ohio State University, Insect Collection (2000-2006)
Numerous visits to University of Michigan Museum of Zoology (2001-2006)

RESEARCH FEATURED IN POPULA MEDIA

- 2009 *BYU-Hawaii News*, “Papua New Guinea to Provo: Biology students participate in mentoring program” by Leilani Miller (<http://newsroom.byuh.edu/?q=node/2243>)
Scientific American, “When grasshoppers go biblical: Serotonin causes locusts to swarm” by Katherine Harmon (<http://www.sciam.com/article.cfm?id=when-grasshoppers-go-bibl>)
- 2008 *NSF Press Release*, “DNA barcodes: Are they always accurate?” (http://www.nsf.gov/news/news_summ.jsp?cntn_id=112113)
Wired, “DNA Barcoders Make Mistakes” by Brandon Keim (<http://blog.wired.com/wiredscience/2008/08/dna-barcoders-m.html>)
Deseret News, “Y. scientists leery of “barcoding” life” by James Thalman (<http://deseretnews.com/article/1,5143,700255376,00.html>)
GenomeWeb Daily News, “Research Raises Questions about DNA Barcoding Methodology” by Andrea Anderson (<http://www.genomeweb.com/issues/news/149021-1.html>)
- 2007 Scientific consultant and interviewee for History Channel Documentary “Mega Disasters: Super Swarms” (aired on Nov. 6, 2007) (<http://shop.history.com/detail.php?p=70217>)
- 2006 *Science News*, “Locust Upset: DNA puts swarmer's origin in Africa” by Susan Milius (Vol. 169, No. 1, Jan. 7, 2006, p. 5.)
- 2005 *National Geographic News*, “Ancient Locust Swarm Crossed the Atlantic, Study Says” by Stefan Lovgren (http://news.nationalgeographic.com/news/2005/12/1228_051228_locusts.html)
- 2004 *Wissenschaft*, “Biblische Heuschreckenplage kam aus Amerika” by Ilka Lehnen-Beyel (<http://www.wissenschaft.de/wissen/news/241709.html>)

REFERENCES

Dr. John W. Wenzel. Professor and Director of Museum of Biological Diversity, Department of Entomology, The Ohio State University, 1315 Kinnear Road, Columbus, Ohio 43212, USA, Tel: 614-292-1995; Fax: 614-292-7774; Email: wenzel.12@osu.edu

Dr. Michael F. Whiting. Professor and Curator, Department of Biology, 401 WIDB, Brigham Young University, Provo, Utah 84602 USA, Tel: 801-422-5651; Fax: 801-422-0090; Email: michael_whiting@byu.edu

Dr. Gregory A. Sword. Associate Professor, School of Biological Sciences, University of Sydney, The Macleay Building A12, Sydney, NSW 2006, Australia, Tel: +61 (02) 9351 2386; Fax: +61 (02) 9351 4119; Email: greg.sword@bio.usyd.edu.au