

C. DARRIN HULSEY
Assistant Professor,
Department of Ecology and Evolutionary Biology,
University of Tennessee,
Knoxville, TN 37996
E-mail: chulsey@utk.edu Phone: 865-974-2189
Lab Website: <http://www.bio.utk.edu/hulseylab/>

Publications

- Holzman, R., D.C. Collar, S.A. Price, **C.D. Hulsey**, R.C. Thomson, and P.C. Wainwright. 2011. Biomechanical trade-offs bias rates of evolution in the feeding apparatus of fishes. *Proceedings of the Royal Society (London) Series B.* (in press).
- Chaves-Campos, J., S.G. Johnson, and **C.D. Hulsey**. 2011. Spatial geographic mosaic in an aquatic predator-prey network. *PLoS One*. 6: e22472.
- Hollingsworth Jr., P.R. and **C.D. Hulsey**. 2011. Reconciling gene trees of eastern North American minnows. *Molecular Phylogenetics and Evolution*. 61: 149-156.
- Hulsey, C.D.**, and P.R. Hollingsworth Jr. 2011. Do constructional constraints influence cyprinid (Leuciscine: Cyprinidae) craniofacial coevolution? *Biological Journal of the Linnean Society*. 103: 136-146.
- Hulsey, C.D.** and H. López-Fernández. 2011. Chapter 17: Historical biogeography of the fishes of Nuclear Central America. in *Historical Biogeography of Neotropical Freshwater Fishes* (eds. James Albert and Roberto Reis). University of California Press.
- Chaves-Campos, J., S.G. Johnson, F.J. García de León, and **C.D. Hulsey**. 2011. Phylogeography, genetic structure, and gene flow in the endemic freshwater shrimp *Palaemonetes suttkusi* from Cuatro Ciénegas, Mexico. *Conservation Genetics*. 557-567.
- Hulsey, C.D.**, B.P. Keck, and P.R. Hollingsworth Jr. 2011. Species tree estimation and the historical biogeography of heroine cichlids. *Molecular Phylogenetics and Evolution*. 58: 124-131.
- Hulsey, C.D.**, P.R. Hollingsworth Jr., and J.A. Fordyce. 2010. Temporal diversification of Central American cichlids. *BMC Evolutionary Biology*. 10: 279.
- Hulsey, C.D.**, P.R. Hollingsworth Jr., and R. Holzman. 2010. Co-evolution of the premaxilla and jaw protrusion in cichlid fishes (Heroine: Cichlidae). *Biological Journal of the Linnean Society*. 100: 619-629.
- Hulsey, C.D.**, M.C. Mims, N.F. Parnell, and J.T. Streebman. 2010. Comparative rates of lower jaw diversification in cichlid adaptive radiations. *Journal of Evolutionary Biology*. 23: 1456-1467.
- Mims, M.C., **C.D. Hulsey**, B.M. Fitzpatrick, and J.T. Streebman. 2010. Geography disentangles introgression from ancestral polymorphism in Lake Malawi cichlids. *Molecular Ecology*. 19: 940-951.
- Hulsey, C.D.** 2009. Cichlid genomics and phenotypic diversity in a comparative context. *Integrative and Comparative Biology*. 49: 618-629.
- Hulsey, C.D.** and S.C.P. Renn. 2009. Genomics and vertebrate adaptive radiation: a celebration of the first cichlid genome. *Integrative and Comparative Biology*. 49: 613-617.

- Fraser, G.J., **C.D. Hulsey**, R.F. Bloomquist, K. Uyesugi, N.R. Manley, and J.T. Streelman. 2009. An ancient gene network is co-opted for teeth on old and new jaws. *PLoS Biology*. 7: 2 e1000031. (Press Releases)**
- Hulsey C.D.**, R.J. Roberts, A.S.P Lin, R. Guldberg, and J.T. Streelman. 2008. Convergence in mechanically complex phenotype: Detecting structural adaptations for crushing in cichlid fish. *Evolution*. 62: 1587-1599.
- Parnell, N.F., **C.D. Hulsey**, and J.T. Streelman. 2008. Hybridization produces novelty when the mapping of form to function is many to one. *BMC Evolutionary Biology*. 8: 122.
- Hulsey, C.D.**, M.C. Mims, and J.T. Streelman. 2007. Do constructional constraints influence cichlid craniofacial diversification? *Proceedings of the Royal Society (London) Series B*. 274: 1867-1875.
- Johnson, S.G., **C.D. Hulsey**, and F.J. García de León. 2007. Spatial mosaic evolution of snail defensive traits. *BMC Evolutionary Biology*. 7: 50.
- Higham, T.E., **C.D. Hulsey**, O. Rican, and A.M. Carroll. 2007. Feeding with speed: prey capture evolution in cichlids. *Journal of Evolutionary Biology*. 20: 70-78.
- Hulsey, C.D.**, F.J. García de León, and R. Rodiles-Hernández. 2006. Micro- and macroevolutionary decoupling of cichlid jaws: a test of Liem's key innovation hypothesis. *Evolution*. 60: 2096-2109.
- Hulsey, C.D.** 2006. Function of a key morphological innovation: fusion of the cichlid pharyngeal jaw. *Proceedings of the Royal Society Series B*. 273: 669-675.
- Hulsey, C.D.**, J. Marks, D.A. Hendrickson, C.A. Williamson, A.E. Cohen, and M.J. Stephens. 2006. Feeding specialization in *Herichthys minckleyi*: a trophically polymorphic fish. *Journal of Fish Biology*. 68: 1-12.
- Hulsey, C.D.**, G.J. Fraser, and J.T. Streelman. 2005. Evolution and development of complex biomechanical systems: 300 million years of fish jaws. *Zebrafish*. 2: 243-257.
- Hulsey, C.D.** and F.J. García de León. 2005. Cichlid jaw mechanics: linking morphology to feeding specialization. *Functional Ecology*. 19: 487-494.
- Wainwright, P.C., M.E. Alfaro, D.I. Bolnick, and **C.D. Hulsey**. 2005. Many-to-one mapping of form to function: a general principle in organismal design. *Integrative and Comparative Biology*. 45: 256-262.
- Hulsey, C.D.**, D.A. Hendrickson, and F.J. García de León. 2005. Trophic morphology, feeding performance, and prey use in the polymorphic fish *Herichthys minckleyi*. *Evolutionary Ecology Research*. 7: 303-324.
- Hulsey, C.D.**, F.J. García de León, Y. Sanchez-Johnson, D.A. Hendrickson, and T.J. Near. 2004. Temporal diversification of Mesoamerican cichlid fishes across a major biogeographic boundary. *Molecular Phylogenetics and Evolution*. 31: 754-764.
- Bolnick, D.I., R. Svanbäck, J.A. Fordyce, L.H. Yang, J.M. Davis, **C.D. Hulsey**, and M.L. Forister. 2003. The ecology of individuals: incidence and implications of individual specialization. *American Naturalist*. 161: 1-28. (Mercer Award)
- Hulsey, C.D.** and P.C. Wainwright. 2002. Projecting mechanics into morphospace: disparity in the feeding system of Labrid Fish. *Proceedings of the Royal Society (London) Series B*. 269: 317-326.

- Wainwright, P.C., L.A. Ferry-Graham, T.B. Waltzek, A.M. Carroll, **C.D. Hulsey**, and J.R. Grubich. 2001. Examination of ram and suction feeding performance in cichlid fishes. *Journal of Experimental Biology*. 204: 3039-3051.
- Ferry-Graham, L.A., P.C. Wainwright, **C.D. Hulsey**, and D.R. Bellwood. 2001. Evolution and mechanics of long jaws in Butterflyfishes (Family Chaetodontidae). *Journal of Morphology*. 248: 120-143.
- Vargo, E.L. and **C.D. Hulsey**. 2000. Multiple glandular origins of queen pheromones in the fire ant *Solenopsis invicta*. *Journal of Insect Physiology*. 46: 1151-1159.

****Press Releases**

Science News:

http://www.sciencenews.org/view/generic/id/40690/title/Vertebrates,_perhaps_even_humans,_share_teeth_genes

Science Daily:

<http://www.sciencedaily.com/releases/2009/02/090209205101.html>

EcoDario:

<http://ecodiario.eleconomista.es/salud/noticias/1022823/02/09/EEUU-Un-circuito-genetico-comun-controla-el-desarrollo-de-todos-los-dientes-en-los-seres-vivos-segun-estudio.html>

Georgia Institute of Technology:

<http://www.gatech.edu/newsroom/release.html?id=2531&ga=2>

Presentations at Professional Meetings

- Hollingsworth Jr., P.R. and **C.D. Hulsey**. 2011. Reconciling gene trees of eastern North American minnows. Evolution Meeting. Norman, OK.
- Hulsey, C.D.** 2010. Lower jaw evolution in Neotropical cichlid radiations. International Conference of Vertebrate Morphology. Punta del Este, Uruguay.
- Xiques, R.A. and **C.D. Hulsey**. 2010. Community Phylogeography of a Biodiversity Hotspot: Endemic Genetic Diversity in Cuatro Ciénegas, México. Evolution Meeting. Portland OR.
- Watson, K. and **C.D. Hulsey**. 2010. Pectoral Fin Evolution in Central American Cichlids. Evolution Meeting. Portland OR.
- Hollingsworth Jr., P.R. and **C.D. Hulsey**. 2010. Gene trees and species trees for eastern North American minnows (Cyprinidae). Evolution Meeting. Portland OR.
- Hulsey, C.D.** 2010. Comparative rates of lower jaw evolution in cichlid radiations. Evolution Meeting. Portland OR.
- Hulsey, C.D.** and J.T. Streebman 2010. Comparative lower jaw mechanics in cichlid radiations. Society for Integrative and Comparative Biology. Seattle WA.
- Hollingsworth Jr, P.R.. and **C.D. Hulsey**. 2010. Do constructional constraints constrain cyprinid craniofacial diversification? Society for Integrative and Comparative Biology. Seattle, WA.
- Kendall, K.D., B.A. Hedgespeth, M.L. Niemiller, B.M. Fitzpatrick, and **C.D. Hulsey**. 2009. Effects of acclimation temperature on escape performance and critical thermal maximum of the cave-dwelling crayfish *Orconectes australis*. Southeastern Population Ecology and Evolutionary Genetics Meeting. Georgia.
- Hedgespeth B.A., K.D. Kendall, B.M. Fitzpatrick, **C.D. Hulsey**, and M.L. Niemiller.

2009. Size dependent kinematics associated with the tail-flip escape response of the cave-dwelling crayfish species *Orconectes australis*. Southeastern Population Ecology and Evolutionary Genetics Meeting. Georgia.
- Hulsey, C.D. 2009.** Comparative lower jaw mechanics in cichlid radiations. American Society of Ichthyologists and Herpetologists. Portland, OR.
- Hulsey, C.D. 2009.** Genomics and Vertebrate Adaptive Radiation: A Celebration of the First Cichlid Genome. Society for Integrative and Comparative Biology. Boston, MA. (Co-organizer of Symposium with Suzy Renn)
- Joice, J.P., D.A. Etnier, and **C.D. Hulsey.** 2008 Tennessee Fish Collection. American Society of Ichthyologists and Herpetologists. Portland, OR.
- Hulsey, C.D.** and P.R. Hollingsworth Jr. 2008. Constructional constraints in Lake Malawi cichlid and North American minnow heads. Southeastern Fishes Council. Chattanooga, TN.
- Joice, J.P., D.A. Etnier, and **C.D. Hulsey.** 2008 Tennessee Fish Collection: Strengths and Development. Southeastern Fishes Council. Chattanooga, TN.
- Hulsey, C.D.** 2008. Convergence in mechanically complex phenotype: Detecting structural adaptations for crushing in cichlid fish. Evolution Meetings. Minneapolis, MN.
- Hulsey, C.D.** 2008. Convergence in mechanically complex phenotype: Detecting structural adaptations for crushing in cichlid fish. Society for Integrative and Comparative Biology. Phoenix, AZ.
- Hulsey, C.D.,** G.J. Fraser, and J.T. Streebman. 2007. Evolution and development of complex biomechanical systems: 300 million years of fish jaws and teeth. European Society for Evolutionary Developmental Biology. 2006. Prague, Czech Republic.
- Hulsey, C.D.** Finite-element modeling of the cichlid pharyngeal jaw. American Society of Ichthyology and Herpetology. 2006. New Orleans, Louisiana
- Hulsey, C.D.** Cichlid pharyngeal jaw fusion: is suturing the key to unparalleled trophic divergence? Society for Integrative and Comparative Biology. 2006. Orlando, Florida.
- Hulsey, C.D.,** G.J. Fraser, and J.T. Streebman. Evolution and development of complex biomechanical systems: 300 million years of fish jaws and teeth. Society for Integrative and Comparative Biology. 2006. Orlando, Florida.
- Hulsey, C.D.** and F.J. García de León. Molecular divergence in the polymorphic Cuatro Ciénegas cichlid *Herichthys minckleyi*. Desert Fishes Council Meeting. 2005. Cuatro Ciénegas, Coahuila, Mexico.
- Hulsey, C.D.** Evolutionary decoupling of oral and pharyngeal jaws in Central American Cichlid fishes. Society for Integrative and Comparative Biology. 2004. New Orleans, Louisiana.
- Hulsey, C.D.** and F.J. García de León. Evolution and functional ecology of Central American cichlid oral and pharyngeal jaws. American Society of Ichthyology and Herpetology. 2003. Manaus, Brazil.
- Hulsey, C.D.** Evolution of Central American cichlid oral and pharyngeal jaws. Evolution Meetings. 2003. Chico, California.

- Hulsey, C.D.**, F.J. García de León, and D.A. Hendrickson. Evolutionary ecology of the trophic polymorphism in *Herichthys minckleyi*. Ecological Society of America. 2002. Tucson, Arizona.
- Hulsey, C.D.**, F.J. García de León, and D.A. Hendrickson. Evolutionary ecology of the trophic polymorphism in *Herichthys minckleyi*. American Society of Ichthyology and Herpetology. 2002. Kansas City, Missouri
- Hulsey, C.D.**, F.J. García de León, and D.A. Hendrickson. Evolutionary ecology of the trophic polymorphism in *Herichthys minckleyi*. Evolution Meetings. 2002. Urbana-Champaign, Illinois.
- Hulsey, C.D.**, D.A. Hendrickson, and J. Marks. Role of Prey Functional Disparity in Maintenance of Fish Pharyngeal Jaw Polymorphism. Society for Integrative and Comparative Biology. 2002. Anaheim, California.
- Hulsey, C.D.**, D.A. Hendrickson, and J. Marks. Ontogeny of feeding and functional morphology in *Herichthys minckleyi*. Desert Fishes Council. 2001. Alpine, Texas.
- Hulsey, C.D.**, P.C. Wainwright, and J.R. Grubich. Theoretical and empirical diversity of anterior jaw functional feeding morphology. Society for Integrative and Comparative Biology. 2001. Chicago, Illinois.

Invited Seminars

- Rationalists of East Tennessee. 2011.
- Fishhead seminar series. 2011. Oak Ridge National Laboratories
- Evolutionary Morphology Seminar Series. 2010. University of Chicago
- Young Investigators in Aquatic and Fisheries Science. 2009. University of Washington
- Ecology and Evolutionary Biology Department Seminar Series. 2009. Brown University
- Biology Department Seminar Series 2009. Case Western University
- Ecology and Evolution Seminar Series. 2007. Yale University
- Department of Biology. 2007. Florida State University
- Department of Zoology. 2007. University of Florida
- Ecology and Evolution Seminar Series. 2007. University of Tennessee-Knoxville.
- Evolutionary Biology Series. 2006. Konstanz University, Germany
- Department of Biology Seminar Series. 2005. Clemson University
- Ecology and Evolution Seminar Series. 2004. University of New Orleans
- Ecology and Evolution Seminar Series. 2004. University of Tennessee-Knoxville.
- Population Biology Seminar Series. 2004. University of California - Davis
- Biology Departmental Seminar. 2004. Texas State University-San Marcos
- Museum of Vertebrate Zoology and Evolutionary Biology Seminar Series. 2003. University of California-Berkeley

Honors and Funded Awards

- 2011-2012: \$51,600 Initiative for Quarternary Paleoclimate Research. PIs: Horn, S. Zhenghua, L., Grissino-Mayer, H. D., McKay, L. D., Yingkui, L., Anderson, D. G.,

Hulsey, C. D. Tootle, G. A., Classen, A. T. University of Tennessee Organized Research Unit Funding Year 2.
2009-2011: \$166,555 **PI: C. D. Hulsey.** Evolutionary Plasticity: Is Remodeling Key to Cichlid Pharyngeal Jaw Diversification. National Science Foundation.
2010-2011: \$60,000 Initiative for Quaternary Paleoclimate Research. PIs: Horn, S. Zhenghua, L., Finkelstein, D., Grissino-Mayer, H. D., McKay, L. D., Yingkui, L., Anderson, D. G., **Hulsey, C. D.** University of Tennessee Organized Research Unit Funding Year 1.
2009: \$8500 **PI: C. D. Hulsey.** Light sources for vertebrate biology classes. ARAA stimulus funds. National Science Foundation.
Mercer Award-Ecological Society of America for best ecological research paper by young researchers. 2005.
National Science Foundation Predoctoral Fellowship.

Employment

Assistant Professor **University of Tennessee-Knoxville**
Spring 2008 to present

PI in the department of Ecology and Evolutionary Biology.

Postdoctoral Researcher **Georgia Tech-Atlanta**
Summer 2005 to Fall 2007: Developmental genetics and functional morphology of cichlid fishes with Dr. Todd Strelman.

Postdoctoral Researcher **University of Tennessee-Knoxville**
Fall 2004 to Spring 2005: Fossil calibration of molecular clock rates of evolution and biogeography of cichlid and percid fishes with Dr. Thomas Near.

Teaching Assistant (Herpetology) **University of California-Davis**
Spring 2003: Laboratory and field classes involving the herpetofauna of California under the direction of Dr. Brad Shaffer.

Teaching Assistant (Ecology) **University of California-Davis**
Fall 2000 and 2004: Laboratory and field experiences in Ecology under the direction of Dr. Sharon Strauss and Dr. David Spiller respectively.

Research Assistant **University of Texas-Austin**
September 1997 to September 1998: Physiology of alternative social forms of the invasive fire ant, *Solenopsis invicta*. This work identified multiple glands that were responsible for the production of pheromones important in social regulation. I worked with Dr. Ed Vargo now at NC State.

Aquatic Biologist and Taxonomist **Paul Price Associates-Austin**
May 1994 to August 1997: As a biological consultant, I was responsible for the collection and identification of both fish and invertebrates, community surveys of aquatic organisms, and environmental impact reports.

Languages

English

Spanish

Journal Activities

I have reviewed manuscripts for the journals: American Naturalist, Conservation Genetics, Functional Ecology, Journal of Morphology, Zootaxa, Zoology, BMC Evolutionary Biology, Journal of Fish Biology, University of Michigan Museum of Zoology's Miscellaneous Publications, Zoological Journal of the Linnean Society, Biological Journal of the Linnean Society, Conservation Biology, Environmental Biology of Fishes, BMC Evolutionary Biology, Invasion Biology, and Evolution.

Education

Ph.D. Population Biology. University of California-Davis September 2004

B.S. Zoology. University of Texas-Austin 1997

B.A. Plan II University of Texas-Austin 1997