

1. Contact information—Bryan Charles Carstens

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2. Education

Ph.D. in Zoology (December 2004), University of Idaho, with Jack Sullivan
M.S. in Zoology (May 2001), Michigan State University, with Barbara Lundrigan
B.S. Zoology (May 1998), Michigan State University
B.A. English (December 1993), Michigan State University

3. Professional positions held

August 2007 — present: Assistant Professor, Department of Biological Sciences, Louisiana State University.
January 2005 — May 2007: Postdoctoral Researcher, Department of Ecology and Evolutionary Biology, University of Michigan (with Lacey Knowles).

4. Research interests: Evolutionary genetics, molecular ecology, phylogeography, systematics.

Research in the Carstens lab seeks to identify diverging lineages at the earliest possible time in order to elucidate the forces that promoted their diversification. Our work incorporates species delimitation, evolutionary genetics, community phylogeography, and theoretical work aimed at understanding the generation of biodiversity.

5. Grants and awards—awarded

2009. A novel approach to the identification of independent evolutionary lineages. National Science Foundation (DEB 0918212), \$237,643. July 2009 — June 2012.
2009. ¹EAGER: Developing bioinformatics tools for the application of next-generation sequencing technologies to phylogeography. National Science Foundation (DEB 0956069), \$225,394. September 2009 — August 2012. ¹Robb Brumfield is CoPI.
2009. Evolution of the Louisiana pitcher plant and its commensal organisms. Louisiana Board of Regents, \$102,500. July 2009 — June 2011.
2009. Community phylogeography of Louisiana pitcher plants, their inquiline insects, and commensal bacteria. Louisiana State University Faculty Research Program, LSU Office of Research and Economic Development, \$9992.
2008. Genetics of the microbial fauna in the Louisiana Pitcher Plant (*Sarracenia alata*), and identification of the source of *Sarracenia* bacteria. Louisiana EPSCoR - Pfund, \$10,000.
2004. Assessing abundance and genetic diversity in *Dicamptodon aterrimus*. Idaho Department of Fish and Game, \$13,150.
2001. University of Idaho Presidential Fellowship, \$75,000.

6. Publications

6a. Manuscript(s) currently in review:

McVay JD, **Carstens BC**. Phylogenetic Model Choice: Species trees or concatenation? *Systematic Biology*, in revision.

6b. Manuscripts in press in peer-reviewed journals:

Koopman MM, **Carstens BC**. Plant genetic divergence predicts microbial community structure: Molecular *phylogeography* of carnivorous pitcher plants. *Microbial Ecology*, *in press*.

Hird SM, Brumfield RT, **Carstens BC**. PRGmatic: an efficient pipeline for collating genome-reduced second generation sequencing data using a pseudo-reference genome. *Molecular Ecology Resources*, *in press*.

Ence DD, **Carstens BC**. SpedeSTEM: A rapid and accurate method for species delimitation. *Molecular Ecology Resources* doi: 10.1111/j.1755-0998.2010.02947.x.

6c. Manuscripts published in peer-reviewed journals:

Carstens BC, Dewey TA. (2010) Species delimitation using a combined coalescent and information theoretic approach: An example from North American *Myotis* bats. *Systematic Biology* 59, 400-414.

Hird S, Kubatko L, **Carstens BC**. (2010) Replicated subsampling enables accurate species tree estimation in empirical systems. *Molecular Phylogenetics & Evolution* 57, 888-898.

Koopman MM, **Carstens BC**. (2010) Inferring population structure and demographic parameters across a riverine barrier in the carnivorous plant *Sarracenia alata* (Sarraceniaceae). *Conservation Genetic* 11, 2027-2038.

Koopman MM, Fuselier DM, Hird S, **Carstens BC**. (2010) Bacterial characterization of the carnivorous Pale Pitcher Plant reveals diverse, distinct, and temporally dependent communities. *Applied and Environmental Microbiology* 76, 1851-1860.

Hickerson MJ, **Carstens BC**, Cavender-Bares J, Crandall KA, Graham CH, Johnson JB, Rissler L, Victoriano PF, Yoder AD (2010) Phylogeography's past, present, and future: 10 years after Avise 2000. *Molecular Phylogenetics & Evolution* 54, 291-301.

Carstens BC, Stoute HN, Reid NM (2009) An information theoretical approach to phylogeography. *Molecular Ecology* 18, 4270-4282.

Koopman MM, Gallagher E, **Carstens BC** (2009) Isolation and characterization of nine microsatellite loci in the Pale Pitcher Plant *Sarracenia alata* (Sarraceniaceae). *Molecular Ecology Resources* 9, 1460-1466.

Cantrell M, **Carstens BC**, Wichman HA (2009) X Chromosome Inactivation and *XIST* Evolution in a Rodent Lacking LINE-1 Activity. *PLoS One* 4, e6252.

Kubatko L, **Carstens BC**, Knowles LL (2009) STEM: Species tree estimation using maximum likelihood for gene trees under coalescence. *J. Bioinformatics* 25, 971-973.

Eckert AJ, **Carstens BC**. (2008) Does gene flow destroy phylogenetic signal? The performance of three methods for estimating species phylogenies in the presence of gene flow. *Molecular Phylogenetics & Evolution* 49, 832-842.

Carstens BC, Knowles LL (2007) Estimating phylogeny from gene tree probabilities in *Melanoplus* grasshoppers despite incomplete lineage sorting. *Systematic Biology* 56, 400-411.

Carstens BC, Richards CL (2007) Integrating coalescent and ecological niche modeling in comparative phylogeography. *Evolution* 61, 1439-1454.

Carstens BC, Knowles LL (2007) Shifting distributions and speciation: genomic resolution of species divergence during rapid climate change. *Molecular Ecology* 16, 619-627.

Knowles LL, **Carstens BC** (2007) Delimiting species without monophyletic gene trees. *Systematic Biology* 56, 887-895.

Richards CL, **Carstens BC**, Knowles LL (2007) Distribution modeling and statistical phylogeography: an integrative framework for generating and testing alternate biogeographical hypotheses. *J. Biogeography* 34, 1833-1845.

Knowles LL, **Carstens BC**, Keat ML (2007) Coupling genetic and ecological-niche models to examine how past population distributions contribute to divergence. *Current Biology* 17, 1-7.

Brunsfeld SJ, Miller TR, **Carstens BC** (2007) Insights into the biogeography of the Pacific Northwest of North America: Evidence from the phylogeography of *Salix melanopsis* (Salicaceae). *Systematic Botany* 32, 129-139.

Knowles LL, **Carstens BC** (2007) Inferring a population-divergence model for statistical phylogeographic tests in montane grasshoppers. *Evolution* 61, 477-493.

Carstens BC, Knowles LL (2006) Variable nuclear markers for *Melanoplus oregonensis* identified from the screening of a genomic library. *Molecular Ecology Notes* 6, 683-685.

Carstens BC, Brunsfeld SJ, Demboski JR, Good JD, Sullivan J (2005) Investigating the evolutionary history of the Pacific Northwest mesic forest ecosystem: Hypothesis testing within a comparative phylogeographic framework. *Evolution* 59, 1639-1652.

Carstens BC, Degenhardt JD, Stevenson AL, Sullivan J (2005) Accounting for coalescent stochasticity in testing phylogeographic hypotheses: Modeling Pleistocene population structure in the Idaho Giant Salamander *Dicamptodon aterrimus*. *Molecular Ecology* 14, 255-265.

Carstens BC, Bankhead III A, Joyce P, Sullivan J (2005) Testing population genetic structure using parametric bootstrapping. *Genetica* 124, 71-75.

Steele CA, **Carstens BC**, Storfer A, Sullivan J (2005) Testing hypotheses of speciation timing in *Dicamptodon copei* and *Dicamptodon aterrimus* (Caudata: Dicamptodontidae). *Molecular Phylogenetics & Evolution* 36, 90-100.

Johnson DG, **Carstens BC**, Sheppard WS, Zack RS (2005) Phylogeny of the leafhopper subgenus *Errhomus* (*Erronus*) (Hemiptera: Homoptera: Cicadellidae) based on mitochondrial DNA sequences. *Annals of the Entomological Society of America* 98, 165-172.

Carstens BC, Stevenson AL, Degenhardt JD, Sullivan J (2004) Testing nested phylogenetic and phylogeographic hypotheses in the *Plethodon vandykei* species group. *Systematic Biology* 53, 781-792.

Carstens BC, Sullivan J, Davalos LM, Larsen PA, Pedersen SC (2004) Exploring population genetic structure in three species of Lesser Antillean bats. *Molecular Ecology* 13, 2557-2566.

Carstens BC, Lundrigan BL, Myers P (2002) A phylogeny of the Neotropical nectar-feeding bats (Chiroptera: Phyllostomidae) based on morphological and molecular data. *Journal of Mammalian Evolution* 9, 23-53.

6d. *Book Chapters & Invited Commentaries.*

Carstens BC, Knowles LL (2010) Navigating the Unknown: Model selection in phylogeography. *Molecular Ecology* 19, 4581-4582.

Fleming TH, Murray KL, **Carstens BC**. (2010) Phylogeography and Genetic Structure of Three Evolutionary Lineages of West Indian Phyllostomid Bats. Chapter 5 in *Evolution, Ecology, and Conservation of Island Bats*, T.H. Fleming and P.A. Racey, eds. Univ. Chicago Press.

7. Invited Symposia & Departmental Seminars

- 2011 Trinity University, Department of Biology.
- 2011 University of Texas-Austin, Integrative Biology Department.
- 2010 NIMBios Working Group; Species Delimitation
- 2010 BIOTA-FAPESP International Symposium on Phylogeography, São Paulo, Brazil.
- 2010 University of Mississippi, Department of Biology.
- 2010 Southeastern Louisiana University, Department of Biology.
- 2009 Florida State University, Department of Biological Sciences.
- 2009 University of Minnesota, Department of Ecology and Evolutionary Biology.
- 2009 University of South Alabama, Department of Biology.
- 2008 University of New Mexico, Department of Biology.
- 2008 Virginia Commonwealth University, Department of Biology.
- 2008 Merging Phylogenetic Biology and Spatial Ecology, *Evolution Annual Meeting*.
- 2008 Phylogeography of Western North America, *Botany Annual Meeting*.
- 2008 Generating (and Testing) Hypotheses in Comparative Phylogeography, Nescent-PIRE.
- 2007 University of New Orleans, Department of Biological Sciences.

8. Professional organizations and service

- 8a. *Professional organizations*: Society for the Study of Evolution, Society of Systematic Biologists, American Society of Microbiology.
- 8b. *Associate Editor*: Molecular Ecology
- 8b. *Editorial Review Board*: Systematic Biology
- 8c. *Reviews provided for*: American Midland Naturalist, American Museum Novitates, American Naturalist, Bioinformatics, Biological Journal of the Linnean Society, BMC Evolutionary Biology, Evolution, Gene, Genetica, Journal of Biogeography, Journal of Heredity, Journal of Mammalogy, Journal of Mammalian Evolution, Journal of Molecular Evolution, Molecular Ecology, Molecular Biology & Evolution, Molecular Phylogenetics & Evolution, Occasional Papers of the Museum of Texas Tech University, Proceedings of the Royal Society of London (B), Systematic Biology.

9. Teaching experience

- 2010. BS 7800: *Computational Phylogeography*, LSU.
- 2010-2008. BS 3040: *Evolution, Communications Intensive Section*, LSU.
- 2009. BS 7046: *Current topics in Molecular Evolution Seminar*, LSU.
- 2009. BS 4299: *Genetics of the Evolutionary Process*, LSU.
- 2009, 2010. Statistical Phylogeography Workshop, American Museum of Natural History Southwestern Field Station (with Mike Hickerson and Naoki Takebayashi).
- 2008. BS 7901: *Ecological Niche Modeling Seminar*, LSU.
- 2007. BS 3040: *Evolution*, LSU.
- 2003. Teaching Assistant. *Principles of Systematic Biology*, UI.
- 2001. Teaching Assistant. Center for Integrated Biological Sciences, MSU.
- 2000-1998. Teaching Assistant. Biological Sciences, MSU.
- 1998-1996. Education Specialist. Organization for Bat Conservation.

10. Mentoring

- 10a. *Post-doctoral researchers*: Amanda Zellmer (February 2010—present); Erica Tsai (February 2010—present); Margaret M. Koopman (August 2008—May 2010).
- 10b. *Graduate Students*: John D. McVay (August 2008—present); Noah Reid (August 2008—present); Sarah Hird (July 2009—present); Tara Pelletier, (June 2009—present).
- 10c. *Publications with undergraduate students*: Jeremiah Degenhardt, Angela Stevenson, Peter Larsen, Marcia Keat, Elizabeth Gallagher, Holly Stoute, Danielle Fuselier.
- 10d. *Current LSU undergraduate students*: Danielle Fuselier.
- 10e. *Service on Graduate Committees*. Andres Cuervo, Melissa Debiase, Tim Jones, Haw-Chaun Lim, Lori Patrick, Carlos Prada, Eric Rittmeyer, Chris Reid.

11. Field experience

Collecting plant and environmental microbe samples, basic ecological field methods, surveying amphibians in the Pacific Northwest, behavioral ecology of ground squirrel populations in the Sierra Nevada Mountains, handling and preparing a variety of amphibians, reptiles and small mammals, mist-netting bats in Michigan.

12. Outreach activities

Testimony before the Louisiana Senate and House Education Committees regarding SB 733 in the spring of 2008. In addition to this testimony, I conducted print interviews and radio interviews regarding the 'Academic Freedom' bill in Louisiana. Testimony before the Louisiana Board of Education regarding high school biology textbooks in October of 2010. Guest presentations to Zachary, LA, Elementary School on Carnivorous Plants (Oct 2010; Jan 2011). Guest presentations to Westdale Heights Academic Magnet School on Carnivorous Plants (Sept 2010; Jan 2011).