

CURRICULUM VITAE: MICHAEL COLLYER

ASSOCIATE PROFESSOR

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Research Gate: https://www.researchgate.net/profile/Michael_Collier2

Last updated: 30 May 2015

PERSONAL INFORMATION

Born: Detroit, Michigan, USA

Languages: English (Native), German (conversant), French (intermediate written comprehension)

EDUCATION AND TRAINING

Postdoc	2003-2007	Iowa State University, Statistics, and Ecology, Evolution, and Organismal Biology
Ph. D.	2003	North Dakota State University, Zoology
M. S.	2000	North Dakota State University, Zoology
B. S.	1997	University of Minnesota, Major: Fisheries and Wildlife, Minor: Biology

PROFESSIONAL EXPERIENCE

2015-present	Associate Professor, Biostatistics, Western Kentucky University, Department of Biology
2012-present	Online Graduate Director, Western Kentucky University, Department of Biology
2011-2015	Assistant Professor, Biostatistics, Western Kentucky University, Department of Biology
2007-2011	Assistant Professor, Vertebrate Ecology, Stephen F. Austin State University, Texas, Department of Biology, Curator: Fish Collection
2006-2007	Postdoctoral Research Associate, Iowa State University: Department of Statistics, and Department of Ecology, Evolution, and Organismal Biology, Adams Lab
2004-2005	Postdoctoral Fellow and Statistical Consultant, Iowa State University, NSF VIGRE Program: Department of Statistics, and Department of Ecology, Evolution, and Organismal Biology
2003-2004	Lecturer, Department of Ecology, Evolution, and Organismal Biology, Iowa State University
1998-2003	Graduate Research Assistant. North Dakota State University, Department of Biological Sciences (Formerly Department of Zoology).
1999-2000	Teaching Assistant, North Dakota State University, Department of Zoology.
1996-1997	Undergraduate Research Assistant, Tour Guide – Bell Museum of Natural History, University of Minnesota.

PERSONAL NARRATIVE: ECOMORPHOLOGY AND BIOSTATISTICS

I am a quantitative ecologist and biostatistician with research specialization in the ecomorphology of vertebrates. In addition to a PhD in Zoology that included intensive study in quantitative methods, I spent four years in a postdoctoral position that trained me as a statistical consultant, as an instructor of statistics, and as a researcher in statistics research. I gained much experience during my PhD and postdoctoral training from attending geometric morphometrics workshops and courses in advanced statistics and probability theory. In the last decade I have published 15 articles (among over 20 articles) that develop statistics methods or apply novel methods to ecological and evolutionary research. I teach undergraduate biostatistics, graduate biometry, and graduate multivariate analysis courses, plus lecture on geometric morphometrics and multivariate data analysis at international workshops. I am skilled at multivariate analyses, non-parametric resampling procedures, and hierarchical models. I regularly collaborate on projects, provide statistical consultation, and supervise student statistical consultants. I also provide evaluations of statistical methods in manuscript reviews for various journals. In sum, I work at the interface of statistics and the biological sciences, functioning as a liaison between statistical theory and applied statistical needs of researchers.

SPECIFIC EDUCATIONAL AND PROFESSIONAL DEVELOPMENT IN BIOSTATISTICS (ALSO MAY BE PROVIDED IN OTHER SECTIONS)

<i>MATHEMATICS COURSES IN TRANSCRIPTS</i>	Calculus 1, Calculus 2, Calculus 3, Elementary Differential Equations
<i>STATISTICS COURSES IN TRANSCRIPTS</i>	Probability and Statistics (Engineering), Assessment and Management of Vertebrate Populations, Introduction to Experimental Design, Analysis of Ecosystems
<i>STATISTICS COURSES AUDITED FOR PROFESSIONAL DEVELOPMENT (ISU)</i>	Advanced Statistical Methods for Research Workers, Introduction to the Theory of Probability and Statistics, Advanced Statistical Methods
<i>STATISTICS PROGRAMMING LANGUAGES</i>	R (package contributor/developer), SAS (extensive experience), SPSS, JMP, SYSTAT
<i>WORKSHOPS ATTENDED</i>	Geometric Morphometrics (Rome, Italy, 2002), Geometric Morphometrics Laboratory for Systematics and Evolutionary Research (Pesche, Italy, 2010)
<i>STATISTICAL CONSULTANT</i>	Formal: Iowa State University (2005-2006) Informal: Stephen F Austin State University (2007-2011), Western Kentucky University (2011-present) Supervisor: Western Kentucky University (2013-present)
<i>ARTICLES PUBLISHED</i>	Novel Statistical methodology: 7 Novel Application of Statistical Methods: 7
<i>WORKSHOPS TAUGHT</i>	Geometric Morphometric Workshop using geomorph for R, Université du Québec à Montréal (2015) An introduction to geometric morphometrics using R, ForBio, University of Tromsø - The Arctic University of Norway (2014) Multivariate methods in ecology and evolution, in R, CIBIO, Portugal (2012)

GRANTS, FELLOWSHIPS, AND OTHER FUNDING

2014-2015	Western Kentucky University, Faculty-Undergraduate Student Engagement (\$4,500 USD)
2012-2013	Western Kentucky University, Research and Creative Activities Program, Development of a non-parametric permutation method for analysis of multidimensional trait variance (\$11,000 USD)
2010	United States Forest Service: Toledo Bend Project, FERC No. 2305: Fish/Mussel Distribution/Habitat Relative to Toledo Bend Reservoir (\$38,400 USD)
2008- 2009	Stephen F. Austin State University Faculty Research Grant (\$16,500 USD)
2008- 2011	Stephen F. Austin State University Research Development Grant: Waters of East Texas (WET) Center (\$402,640 USD) Co-PI with Kenneth Farrish, Leon Young, Matthew McBroom, Hans Williams
2004-2005	National Science Foundation, Vertical Integration of Graduate Research and Education Postdoctoral Fellowship, awarded by Mark Kaiser (PI), through the department of Statistics, Iowa State University. (\$90,000 USD)
2001-2003	United States Environmental Protection Agency. Science To Achieve Results (STAR) Graduate Fellowship. (\$73,077 USD)
2000-2003	North Dakota State University Graduate School/ EPSCoR Doctoral Student Assistantship Enhancement. (\$10,800 USD)
1998-2000	North Dakota State University Graduate School/EPSCoR. Masters Student Assistantship Enhancement. (\$2,400 USD)

GRANT DEVELOPMENT

2015	National Science Foundation: RUI: Collaborative Research: Extending phylogenetic comparative
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methods for evaluating within-species trends in a macroevolutionary context. *Pending*

- 2015 National Science Foundation: Preliminary Proposal: RUI: Collaborative Research: Evolution of desert fish communities, inferred from analysis of divergence landscapes. *In Revision..*
- 2014 United States Geological Survey Grand Canyon Monitoring and Research Center: Brown trout natal origins through body pigmentation patterns in the Colorado River. *In Revision.*

PEER-REVIEWED PUBLICATIONS (**STUDENT AUTHOR IN BOLD**, * = UNDERGRADUATE, ** = HIGH SCHOOL)

YEAR	AUTHOR, TITLE, JOURNAL
2015	Collyer, M.L., D.J. Sekora** , D.C. Adams. A method for analysis of phenotypic change for phenotypes described by high-dimensional data. <i>Heredity: In press.</i>
2015	Collyer, M.L., M.E. Hall** , M.D. Smith** , and C.W. Hoagstrom. Habitat-morphotype associations of Pecos pupfish (<i>Cyprinodon pecosensis</i>) in isolated habitat complexes. <i>Copeia</i> 2015: 181-199.
2015	Adams, D.C. and M.L. Collyer. Permutation tests for phylogenetic comparative analyses of high-dimensional shape data: what you shuffle matters. <i>Evolution</i> 63:823-829.
2013	Jesse, L. , M.L. Collyer, K. Moloney, and J.J. Obrycki. Distribution of <i>Megastigmus aculeatus</i> (Hymenoptera: Torymidae) and the levels of seed predation of <i>Rosa multiflora</i> (Rosaceae). <i>Weed Biology and Management</i> 13:79-88.
2013	Collyer, M.L., and D.C. Adams. Phenotypic trajectory analysis: Comparison of shape change patterns in evolution and ecology. <i>Hystrix</i> 24:75-83.
2012	Cotton, T. , D. Saenz, M. Kwiatkowski, and M.L. Collyer. Effects of an invasive plant, Chinese tallow (<i>Triadica sebifera</i>), on development and survival of anuran larvae. <i>Journal of Herpetology</i> 46:186-193.
2011	Stockwell, C.A., K. Purcell, M.L. Collyer, and J. Janovy. Effects of salinity on <i>Physa acuta</i> , the Intermediate Host for the Parasite <i>Posthodiplostomum minimum</i> : Implications for the translocation of the protected White Sands pupfish. <i>Transaction of the American Fisheries Society</i> 140:1370-1374
2011	Collyer, M.L., J.S. Heilveil, and C.A. Stockwell. Pupfish evolutionary divergence in contemporary time exceeds post-Pleistocene divergence. <i>PLoS One</i> 6(8): e22310. doi:10.1371/journal.pone.0022310
2010	Turner, T.F., M.L. Collyer, and T.J. Krabbenhoft . A general framework for analysis of stable isotope ratios in ecological studies. <i>Ecology</i> 91:2227-2233.
2009	Krabbenhoft , T.J., M.L. Collyer, and J. Quattro. Differing evolutionary patterns underlie convergence on elongate morphology in endemic fishes of Lake Waccamaw, North Carolina. <i>Biological Journal of the Linnean Society</i> 98:636-645.
2009	Adams, D.C. and M.L. Collyer. A general framework for the analysis of phenotypic change in evolutionary studies. <i>Evolution</i> 63:1143-1154.
2009	Marsteller, S.* , D.C. Adams, M.L. Collyer, and M. Condon. Six cryptic species on a single species of host plant: morphometric evidence for possible reproductive character displacement. <i>Ecological Entomology</i> : 66-73.
2008	Smith, M.T. , and M.L. Collyer. Regional variation and sexual dimorphism in head form of the prairie rattlesnake (<i>Crotalus viridis viridis</i>): comparisons using new analytical and collection methods. Pages 79-90 in W.K. Hayes, K.R. Beaman, M.D. Caldwell, and S.P. Bush, eds., <i>The biology of rattlesnakes</i> , Loma Linda university Press, California

- 2007 Collyer, M.L., C.A. Stockwell, D.C. Adams, and M.H. Reiser. Phenotypic plasticity and contemporary evolution in ecological invasions: evidence from translocated populations of White Sands pupfish. *Ecological Research*: 22:902-910
- 2007 **Chun, Y.J.**, M.L. Collyer, K.A. Maloney, and J.D. Nason. Phenotypic plasticity of native vs. invasive purple loosestrife (*Lythrum salicaria* L., Lythraceae) in varying environments: an application of two-state multivariate analysis. *Ecology* 88:1499-1512.
- 2007 Adams, D.C. and M.L. Collyer. The analysis of character divergence along environmental gradients and other covariates. *Evolution*: 61:510-515. (Cover Acknowledgment)
- 2007 Collyer, M.L. and D.C. Adams. Analysis of two-state multivariate phenotypic change in ecological studies. *Ecology* 88:683-692.
- 2007 Adams, D.C., **M.E. West***, and M.L. Collyer. Location-specific sympatric morphological divergence as a possible response to species interactions in West Virginia *Plethodon* salamander communities. *Journal of Animal Ecology* 76:289-295.
- 2006 **Hollander, J.**, M.L. Collyer, D.C. Adams and K. Johannesson. Phenotypic plasticity in two marine snails: constraints superseding life history. *Journal of Evolutionary Biology* 19:1861-1872.
- 2005 Collyer, M.L., J.M. Novak, and C.A. Stockwell. Morphological divergence of native and recently established populations of White Sands pupfish (*Cyprinodon tularosa*) *Copeia* 2005:1-11.
- 2004 Collyer, M.L. and C.A. Stockwell. Experimental evidence for costs of parasitism in a threatened species, White Sands pupfish. *Journal of Animal Ecology* 73:821-830.

BOOK CONTRIBUTIONS

- 2006 Stockwell, C.A., and M.L. Collyer. Contemporary evolution and conservation. Pages 192-194 In F. W. Allendorf and G. Luikart, eds., *Conservation and the genetics of populations*. Blackwell Science.

SUBMITTED PAPERS

- ACCEPTED* Davis, M.D. M.R. Douglas, C.T. Webb, M.L. Collyer, A.T. Holycross, C.W. Painter, L.K. Kamees, and M.E. Douglas. Nowhere to Go but Up: Impacts of Climate Change on Demography of a Short-Range Endemic in the Sky-Islands of Southwestern North America. *Animal Conservation*.
- IN REVIEW* Turner, T.F., T.J. Krabbenhoft, M.L. Collyer, C.A. Krabbenhoft, M.S. Edwards, and Z.D. Sharp. Retrospective stable isotope analysis reveals ecosystem responses to river regulation over the last century. *Ecology*.
- IN REVIEW* Levis, N.A, M.L. Schooler, J.R. Johnson, and M.L. Collyer. Non-adaptive phenotypic plasticity: morphology, but not swim speed, of spotted salamander larvae is affected by “terrestrial” and “aquatic” herbicides. *Functional Ecology*.
- IN REVISION* Hall, T.L., D. Saenz, M.A. Kwiatkowski, and M. L. Collyer. Predator induced behavioral and morphological plasticity in larval Blanchard’s cricket frogs (*Acris blanchardi*). *Canadian Journal of Zoology*.

COMPUTER PROGRAMS AND SCRIPTS

- 2014 Adams, D.C., M.L. Collyer, E. Otarola-Castillo, and E. Sherratt. geomorph: Software for geometric morphometric analyses. R package version 2.1. Available: <http://CRAN.R-project.org/package=geomorph>.
- 2009 Multivariate phenotypic trajectory analysis. Functions (written in R) to quantify and compare attributes of evolutionary phenotypic trajectories. (see Adams and Collyer, 2009. *Evolution*).
- 2007 Multivariate phenotypic change vectors. Functions (written in R) to quantify and compare evolutionary vectors of phenotypic change. (see Collyer and Adams, 2007. *Ecology*).

PROFESSIONAL WORKSHOPS

- 2015 University of Québec. Workshop: An introduction to geometric morphometrics using R.
2014 Instructor, ForBio, University of Tromsø, The Arctic University of Norway. Workshop: An introduction to geometric morphometrics using R.
2012 Instructor, CIBIO, Portugal. Workshop: Multivariate methods in Ecology and Evolution, in R.

UNIVERSITY TEACHING EXPERIENCE

- 2014 – present Instructor, Western Kentucky University. *Animal Biology and Diversity* (BIOL 224)
2013 – present Instructor, Western Kentucky University. *Multivariate Methods in Biology* (BIOL 483)
2012 – present Instructor, Western Kentucky University. *Graduate Research and Study* (BIOL 500)
2012 – present Instructor, Western Kentucky University. *Introductory Biostatistics* (BIOL 283)
2011 – present Instructor, Western Kentucky University. *Biometry* (BIOL 582)
2011 Instructor, Stephen F. Austin State University. *Advanced Ecological Methods* (BIO 414)
2008 – 2011 Instructor, Stephen F. Austin State University. *General Ecology* (BIO 313)
2008 – 2010 Instructor, Stephen F. Austin State University. *Ichthyology/Advanced Ichthyology* (BIO 438/538)
2008 (sum.) Instructor, Stephen F. Austin State University. *Special Topics in Biology: Advanced Quantitative Methods in Ecology* (BIO 571)
2007 – 2011 Instructor, Stephen F. Austin State University. *Principles of Zoology* (BIO 133)
2007 – 2010 Instructor, Stephen F. Austin State University. *Limnology/Advanced Limnology* (BIO 450/550)
2003 – 2007 Instructor, Iowa State University: *Advanced Biostatistics* (EEOB 590 Lab) 2007, *EEB extended fieldtrip* (EEB 585) 2006, *Morphometric Analysis* (EEOB 565 Lab) 2006, *Introduction to Statistics* (Statistics 104) 2004, *Principles of Physiology Laboratory* (Zoology 355) 2004, *Human Anatomy and Physiology Laboratory* (Zoology 255L) 2003.
2000 (fall) Instructor, North Dakota State University. *Ichthyology* (Zoology 462/662).
2000 (sum.) Teaching Assistant, University of Nebraska-Lincoln. *Prairie Ecology*.
1999 – 2000 Teaching Assistant, North Dakota State: *General Zoology* (Zoology 171). 1999 – 2000 (Coordinator in 2000), *Human Anatomy and Physiology* (Zoology 121) 1999.

STUDENT MENTORING (Bold indicates undergraduate student)

- 2014 - present Advisor, Michael Chaise Gilbert, MS in Biology, with thesis.
2014 - present Advisor, Qianna Xu, MS in Biology, with thesis.
2013 – present Advisor, Charity Jackson (Online MS Program in Biology).
2013 – present Advisor, Jody Klann (Online MS Program in Biology).
2013 – present Advisor, Sarah Mortzfeldt (Online MS Program in Biology).
2013 - present Research supervisor for **Saralina Schell** – combining data from different methods of 3D morphometry.
2013 – 2014 Advisor, Mary Ping (Online MS Program in Biology).
2013 Advisor, Caitlin Walsh (Online MS Program in Biology).

2013	Advisor, April West (Online MS Program in Biology).
2012 – 2013	Co-advisor for Shilo Felton (MS Program in Biology, with thesis). Thesis topic: Novel applications of multivariate methods for exploring personality in African elephants.
2012 – present	Advisor, Roleiria West (Online MS Program in Biology).
2012 Summer	Advisor, David Sekora – Summer research in investigative biotechnology: Development of statistical methods for analysis of high-dimensional data. (NSF REU supported research)
2012 – 2013	Research supervisor, Meghan Hall, Melissa Smith, Markus Ernst – geometric morphometric analyses in the Collyer Lab, WKU RCAP funding (see above).
2010-2011	Advisor, Lauris Hollis, M. Sc. Student, Environmental Sciences, Stephen F. Austin State University.
2009	Research supervisor, Michael Elder, Jayme Marshall, Natalie Gonsior – informally known as the “Pupfish Pack”, working under the SFA Faculty Research Grant referenced above.
2008-2011	Advisor, Jered Simpson, M. Sc. Student, Environmental Sciences, Stephen F. Austin State University. Thesis topic: Ecological niche models for the Sabine shiner.
2008-2011	Advisor, Sherry Anthony, M. Sc. Student, Biology, Stephen F. Austin State University. Non-thesis.
2007-2008	Co-advisor, Michael Cook, M. Sc. Student, Stephen F. Austin State University. Thesis topic: Unionid mussel diversity in East Texas Rivers.
2004-2006	Faculty Mentor, Iowa State Statistics Graduate Student Association (“Stat-ers”)

INVITED SEMINARS

2014	Collyer, M.L. Contemporary morphological evolution of pupfishes in changing environments, and implications for their conservation. <i>Department of Biological and Environmental Sciences, Texas A & M – Commerce, Commerce, TX.</i>
2013	Collyer, M.L. Contemporary morphological evolution in pupfishes, and implications for their conservation. <i>Department of Biology, Ball State University, Muncie, IN.</i>
2013	Collyer, M.L., and C.H. Hoagstrom. Morphological variation of the Pecos pupfish (<i>Cyprinodon pecosensis</i>) in an altered and ecologically diverse landscape. <i>Invited symposium speaker: “Fish Out of Water” Symposium, of the 2013 Joint Meeting of Ichthyologists and Herpetologists, Albuquerque, NM.</i>
2012	Collyer M.L. Analysis of phenotypic plasticity in high-dimensional data spaces. <i>Symposium on Phenotypic Plasticity, University of Lund, Sweden.</i>
2010	Collyer M.L. Comparison of geometric attributes of morphological change: improved biological insights from new hypothesis tests. <i>Department of Biology, Western Kentucky University, Bowling Green, KY.</i>
2010	Collyer M.L. Comparison of geometric attributes of morphological change: improved biological insights from new hypothesis tests. <i>Department of Biological Sciences, York College of Pennsylvania, York, PA.</i>
2010	Collyer, M.L. A framework for analysis of multivariate trajectories in ecological and evolutionary studies. <i>Department of Mathematics, Stephen F. Austin State University, Nacogdoches, TX.</i>
2010	Collyer, M.L. Geometric attributes of evolutionary and ecological change. <i>Department of Biological Sciences, University of Arkansas, Fayetteville, AR.</i>
2009	Collyer, M.L. Ecological explanations for body shape variation in the Pecos pupfish (<i>Cyprinodon</i>

- pecosensis*) and other pupfishes. *Invited symposium speaker: Ecology, Conservation, and Management of Fishes in the Pecos River Drainage Symposium, of the 2009 Western Division of the American Fisheries Society, Albuquerque, NM.*
- 2009 Collyer M.L. A general framework for analysis of phenotypic trajectories in ecological and evolutionary studies. *College of Science and Mathematics Faculty Series, Stephen F. Austin State University, Nacogdoches, TX.*
- 2008 Collyer, M.L. Contemporary evolution and ecological morphology of pupfishes in North American deserts. *Department of Fisheries and Wildlife, Oregon State University, Corvallis, OR.*
- 2007 Collyer, M.L. Procrustes methods for evaluating attributes of morphological change. *Department of Biology, University of Wisconsin – Whitewater, WI.*
- 2006 Collyer, M.L. Conservation and contemporary morphological evolution in pupfish refuge populations. *Department of Biology, University of Arkansas – Little Rock, AR.*
- 2006 Collyer, M.L. Procrustes methods for evaluating attributes of complex morphological change. *Life Sciences Colloquium, Colorado State University, Fort Collins, CO.*
- 2006 Collyer, M.L. Contemporary morphological evolution in pupfish refuge populations. *Department of Fisheries, Wildlife, and Conservation Biology, Colorado State University, fort Collins, CO.*
- 2006 Collyer, M.L. Procrustes methods for evaluating attributes of complex phenotypic change. *Department of Plant Biology, Universität Tübingen, Germany.*
- 2006 Collyer, M.L. Contemporary morphological evolution in pupfish refuge populations. *Department of Biology, University of Saint Thomas, Minneapolis, MN.*
- 2006 Collyer, M.L. Conservation and contemporary morphological evolution in pupfish refuge populations. *Department of Biological Sciences, Northern Illinois University, Dekalb, IL.*
- 2005 Collyer, M.L. Evaluating attributes of phenotypic change for complex phenotypes. *Department of Biological Sciences, University of South Carolina, Columbia, SC.*
- 2004 Collyer, M.L., and D.C. Adams. A method for analyzing multivariate reaction norms using morphometric data. *Department of Ecology, Evolution, and Organismal Biology, Iowa State University, Ames, IA.*
- 2004 Collyer, M.L. Rapid evolution of body shape in a pupfish species. *Department of Zoology, Oklahoma State University, Stillwater, OK.*
- 2003 Collyer, M.L. Ecological morphology of the White Sands pupfish (*Cyprinodon tularosa*). *Department of Ecology, Evolution, and Organismal Biology, Iowa State University, Ames, IA.*
- 2003 Collyer, M.L. On the use of multivariate reaction norms. *First Annual Northern Plains Biological Symposium, North Dakota State University, Fargo, ND.*
- CONTRIBUTED PRESENTATIONS (STUDENT AUTHOR IN BOLD, * = UNDERGRADUATE)**
- 2014 Davis, M.A., M.L. Collyer, M.R. Douglas, and M.E. Douglas. Morphological evidence for an adaptive radiation in Western Rattlesnake (*Crotalus viridis*). *Joint Meeting of Ichthyologists and Herpetologists, Chattanooga, TN.*
- 2014 Collyer, M.L. Sexual dimorphism of a pupfish species in varied desert sinkhole communities. *Joint Meeting of Ichthyologists and Herpetologists, Chattanooga, TN.*
- 2013 Davis, M.A., M.R. Douglas, C.T. Webb, M.L. Collyer, A.T. Holycross, C.W. Painter, and M.E. Douglas. A rattlesnake on the brink: global change and its Impacts on short-range biodiversity endemics. *Joint Meeting of Ichthyologists and Herpetologists, Albuquerque, NM.*

- 2013 **Smith, M.D.***, **M.E. Hall***, and M.L. Collyer. Does ecology promote sexual dimorphism in the Pecos pupfish (*Cyprinodon pecosensis*)? *2013 Posters at the Capitol, Frankfort, KY.*
- 2012 **Hall, M.E.***, and M.L. Collyer. Does ecology or phylogeny explain fish morphological diversity in a mosaic of desert aquatic habitats? *Annual Meeting of the Kentucky Academy of Science, Eastern Kentucky University, Richmond, KY.*
- 2012 **Smith, M.D.***, and M.L. Collyer. Does ecology promote sexual dimorphism in the Pecos pupfish (*Cyprinodon pecosensis*)? *Annual Meeting of the Kentucky Academy of Science, Eastern Kentucky University, Richmond, KY.*
- 2012 Stockwell, C.A., M.L. Collyer, and J.S. Heilveil. Ecological replication and evolutionary trajectories: managing for evolutionary past, present & future. *The 44th Annual meeting of the Desert Fishes Council, Death Valley National Park, CA.*
- 2012 Davis, M.A., M.L. Collyer, M.R. Douglas, M.E. Douglas. Morphometrics, molecules, and ecology define the evolutionary history of the Western rattlesnake (*Crotalus viridis*) complex. *World Congress of Herpetology, University of British Columbia, Vancouver, BC.*
- 2011 Davis, M.A., M.L. Collyer, M.E. Douglas, and M.R. Douglas. Examining the influences on head shape in the Western Rattlesnake Complex (*Crotalus viridis* and *C. oreganus*). *Joint Meeting of Ichthyologists and Herpetologists, Minneapolis, MN.*
- 2010 Turner T.F., **T.J. Krabbenhoft**, M.L. Collyer, **C.A. Love**. A new hypothesis testing framework for stable isotope ratios in ecological studies with examples from the Rio Grande. *Joint meeting with the American Society of Limnology and Oceanography and the North American Benthological Society, Santa Fe, NM.*
- 2010 Collyer, M.L. A nonparametric permutational MANOVA procedure for GM data. *Geometric Morphometrics Laboratory for Systematics and Evolutionary Research, University of Molise, Pesche, Isernia, Italy.*
- 2009 Turner, T. F., **T.J. Krabbenhoft**, M.L. Collyer, and **M.S. Edwards**. Effects of river regulation on Rio Grande fish communities revealed by stable isotope analysis of historical and contemporary samples. *Organized Symposium: Toward a Sustainable Future for the Middle Rio Grande Ecosystem. 94th Annual Meeting of the Ecological Society of America, Albuquerque, NM.*
- 2008 Collyer, M.L. Adaptive radiations in *Cyprinodon* body shape explained by salinity and other ecological factors. *The 40th Annual meeting of the Desert Fishes Council, Cuatro Ciénegas, Coahuilla, Mexico.*
- 2008 Collyer, M.L. Adaptive body shape divergence of various species of pupfish. *Joint Annual Meeting of the American Society of Naturalists, Society for the Study of Evolution, and the Society of Systematic Biologists, Minneapolis, MN.*
- 2006 Adams D.C., and M.L. Collyer. Phenotypic evolution and diversification in the *Plethodon cinereus* species complex. *Joint Annual Meeting of the American Society of Naturalists, Society for the Study of Evolution, and the Society of Systematic Biology, Stony Brook, NY.*
- 2005 Collyer, M.L., D.C. Adams, and **M.T. Smith**. A method for comparing alternative models for the analysis of multivariate morphological data: an example with the prairie rattlesnake (*Crotalus viridis viridis*). *Joint Meeting of Ichthyologists and Herpetologists, Tampa, FL.*
- 2005 Collyer, M.L. and D.C. Adams. A multivariate method of model selection for evolutionary data. *Joint Annual Meeting of the American Society of Naturalists, Society for the Study of Evolution, and the Society of Systematic Biologists, Fairbanks, AK.*
- 2005 Collyer, M.L. and D.C. Adams. A multivariate method of model selection for evolutionary data. *Joint Annual Meeting of the American Society of Naturalists, Society for the Study of Evolution, and the*

Society of Systematic Biologists, Fairbanks, AK.

- 2005 Adams, D.C. and M.L. Collyer. A generalized framework for the analysis of phenotypic change. *Joint Annual Meeting of the American Society of Naturalists, Society for the Study of Evolution, and the Society of Systematic Biologists, Fairbanks, AK.*
- 2005 **Krabbenhoft, T.J.**, M.L. Collyer, and J.M. Quattro. Morphological divergence of endemic fishes of Lake Waccamaw, North Carolina. *Joint Annual Meeting of the American Society of Naturalists, Society for the Study of Evolution, and the Society of Systematic Biologists, Fairbanks, AK.*
- 2004 Collyer, M.L. Ecomorphological diversification among *Cyprinodon*. *The 36th Annual meeting of the Desert Fishes Council, Tuscon, AZ.*
- 2004 Collyer, M.L. and D.C. Adams. A method for analyzing multivariate reaction norms. *Joint Annual Meeting of the American Society of Naturalists, Society for the Study of Evolution, and the Society of Systematic Biologists, Fort Collins, CO.*
- 2004 Collyer, M.L. A comparison of morphological differentiation among species of pupfish (*Cyprinodon*). *Joint Meeting of Ichthyologists and Herpetologists, Norman, OK.*
- 2003 Collyer, M.L., C.A. Stockwell, and D.C. Adams. Adaptive morphological divergence of a pupfish species in as little as three decades. *The 35th Annual meeting of the Desert Fishes Council, Death Valley National Park, CA.*
- 2003 **Collyer, M.L.** and C.A. Stockwell. Conservation implications for populations of a threatened fish species that are morphologically adapted to local environments. *Annual Meeting for the Society for Conservation Biology, Duluth, MN.*
- 2002 **Collyer, M.L.** and C.A. Stockwell. A case of rapid evolution of body shape for the White Sands pupfish? *The 34th Annual meeting of the Desert Fishes Council, San Luis Potosí, Mexico.*
- 2002 **Collyer, M.L., T.J. Krabbenhoft**, and C.A. Stockwell. Shape allometries and growth rates for experimental populations of White Sands pupfish. *The 34th Annual meeting of the Desert Fishes Council, San Luis Potosí, Mexico.*
- 2002 **Collyer, M.L.** Analysis of morphological variation among White Sands pupfish (*Cyprinodon tularosa*) populations using geometric morphometric techniques. *Seminario laboratorio di morfometria geometria (Geometric morphometrics workshop), Museo Civico di Zoologica, Rome, Italy.*
- 2001 Stockwell, C.A., **K.M. Miller**, and **M.L. Collyer**. Ecological genetics and conservation of the White Sands pupfish. *Annual Meeting for the American Fisheries Society, Phoenix, AZ.*
- 2000 **Collyer, M.L.** Translocations and costs of parasitism for White sands pupfish (*Cyprinodon tularosa*). *The 33rd Annual meeting of the Desert Fishes Council, Death Valley, CA.*
- 2000 **Collyer, M.L.** and C.A. Stockwell. The costs of parasitism for White Sands pupfish, infected by white grubs. *Annual Meeting for the Society for Conservation Biology, Missoula, MT. (First Place, student competition.)*
- 2000 Stockwell, C.A. and **M.L. Collyer**. Translocations alter the parasite community of a rare species, the White Sands pupfish. *Annual Meeting for the Society for Conservation Biology, Missoula, MT.*
- 2000 **Collyer, M.L.** and C.A. Stockwell. Costs of parasitism in a threatened species. *Annual Meeting of the North Dakota Academy of Sciences, Moorhead, MN.*
- 1999 **Collyer, M.L.** and C.A. Stockwell. Population history and parasitism of the White Sands pupfish (*Cyprinodon tularosa*). *Joint Annual Meeting of the American Society of Naturalists, Society for the Study of Evolution, and the Society of Systematic Biologists, Madison, WI.*

UNIVERSITY AND PROFESSIONAL SERVICE, AND OUTREACH

- 2014 – present Western Kentucky University Distance Learning Advisory Council, full member
- 2014 – present Western Kentucky Graduate Recruitment Council, Alternate
- 2014 – present Western Kentucky Graduate Council, Alternate
- 2014 Workshop: An introduction to geometric morphometrics using R, ForBio, University of Tromsø - The Arctic University of Norway
- 2013 - present Supervisor, student statistical consulting, Applied Statistics Center, Western Kentucky University
- 2013 – present Editorial Board, Copeia
- 2012 Workshop: Multivariate methods in ecology and evolution, in R, CIBIO, Portugal
- 2012 – 2013 WKU Biopreserve Research Initiatives Workgroup
- 2012 – 2013 WKU Biopreserve Teaching Initiatives Workgroup
- 2012 Judge: World Congress of Herpetology, Storer Ichthyology Student Competition
- 2012 - 2014 American Society for Ichthyology and Herpetology Raney Award Committee
- 2011 – present WKU Biology Graduate Committee
- 2011 – present WKU Graduate Faculty
- 2009 Earth Day Exhibit, Stephen F Austin State University, WET Center representative, Nacogdoches, Texas
- 2009 Panel Speaker: Sharing experience with graduate students. American Fisheries Society - Western Division, Albuquerque, NM
- 2008 – 2011 Animal Welfare Committee, SFA Biology
- 2008 – 2011 Graduate Committee, SFA Biology
- 2008 – 2011 Principles of Zoology Core Committee, SFA Biology

PROFESSIONAL SOCIETIES (CURRENT MEMBERSHIP BOLDED)

American Society of Ichthyologists and Herpetologists, American Fisheries Society, Desert Fishes Council, **Ecological Society of America**, **Kentucky Academy of Science**, Society for Conservation Biology, Society for Integrative and Comparative Biology, Society for the Study of Evolution, American Statistical Association

REVIEWER OF MANUSCRIPTS AND BOOKS FOR

American Naturalist, Auk, Basic and Applied Herpetology, Behavioral Ecology, Behavioral Ecology and Sociobiology, Belgian Journal of Zoology, Biological Conservation, Biological Journal of the Linnaean Society, Biology letters, BMC Evolutionary Biology, BMC Physiology, Brooks/Cole – Duxbury – Thompson Higher Education (Book), Copeia, Ecology and Evolution, Ecology of Freshwater Fish, Evolution, Evolution and Development, Experimental Marine Biology, Herpetologica, Journal of Animal Ecology, Journal of Archaeological Science, Journal of Fish Biology, Journal of Herpetology, Journal of Morphology, Journal of Sea Research, Journal of Wildlife Management, Landscape Ecology, Proceedings of the Royal Society A, Proceedings of the Royal Society B, Public Library of Science, Southwestern Naturalist, Systematic Biology, Transactions of the American Fisheries Society, W. H. Freeman (Book), Zoology of the Middle East, Zoological Science, Zoologischer Anzeiger, Zoomorphology

REVIEWER OF GRANTS FOR

National Science Foundation, Centre de Synthèse et d'Analyse de la Biodiversité

HONORS AND AWARDS

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| 2014 | Nominated for WKU Ogden College of Science and Engineering Faculty Award in Teaching Excellence |
| 2014 | Nominated for WKU Ogden College of Science and Engineering Faculty Award in Advising Excellence |
| 2005 | Voted "Best Professor at ISU", dorm survey at Iowa State University |
| 2003 | North Dakota State University Biological Sciences Graduate Student Association Sheila Kath Award (for outstanding service to graduate students). |
| 2000 | Society for Conservation Biology. First Place Student Presentation, 2000. Missoula, Montana. |