

Zachery D. Zbinden

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EDUCATION

- Ph.D., Biology** 2022 (expected)
University of Arkansas, Fayetteville, AR
Dissertation title: "Comparative Methods for Study of Ecology and Evolution of Fish Across a Riverscape"
Committee: Adam Siepielski, Jeremy Beaulieu, Michael Douglas, Marlis Douglas (Chair)
- M.S., Biology** 2016
University of Oklahoma, Norman, OK
Thesis title: "Beta Diversity of Stream Fish Communities: Partitioning Variation Between Abiotic and Spatial Factors"
Committee: Caryn Vaughn, Edith Marsh-Matthews, William Matthews (Chair)
- B.S., Ecology & Evolution** 2013
University of Pittsburgh, Pittsburgh, PA

RESEARCH APPOINTMENTS

- Research Assistant** *White-tailed Deer in Arkansas: Genetic Connectivity & Chronic Wasting Disease* 2019 - current
University of Arkansas, *P.I.s:* Marlis Douglas, Michael Douglas –*Arkansas Game and Fish Commission*
Modelled the spread of a prion pathogen using landscape genetics and resistance surface analysis
- Project Leader** *White River Fish Project* 2017 - current
University of Arkansas, *P.I.s:* Marlis Douglas, Michael Douglas
Collected and genotyped 3,500+ fish across numerous species from 75 locations across the White River Basin
- Research Assistant** *Population Genetics of Prairie Chub* 2016
University of Oklahoma, *P.I.:* Richard Broughton
Led field expeditions to collect Prairie Chub in the Red River, OK
- Research Assistant** *Stream Ecology of Freshwater Mussel and Fish Community Interactions* 2016
Oklahoma Biological Survey, *P.I.s:* Caryn Vaughn, Keith Gido –*National Science Foundation*
Fish biologist for NSF-funded project examining relationship between fish and freshwater mussels
- Project Leader** *Fish Survey of SE Oklahoma Drainages to determine distribution of SGCN species* 2013 - 2016
University of Oklahoma, *P.I.s:* William Matthews, Edith Marsh-Matthews –*Oklahoma State Wildlife Grant*
Fish collecting and environmental surveys at 160 locations across three river drainages
- Research Assistant** *Distribution of the Arkansas River Shiner* 2013
Sam Noble Museum of Natural History, *P.I.:* Edith Marsh-Matthews –*Great Plains Landscape Conservation Coop.*
Scanning archive data and field notes for information regarding the distribution of Arkansas River Shiner
- Research Assistant** *Various projects in ecotoxicology research* 2011 - 2013
Pymatuning Laboratory of Ecology, *P.I.:* Rick Relyea
Sampled aquatic invertebrates and amphibians, and assisted with toxicology experiments

PEER-REVIEWED PUBLICATIONS

- 5.) Chafin, T.K., **Z.D. Zbinden**, B.T. Martin, C.M. Middaugh, C. Gray, J. Ballard, M.E. Douglas, M.R. Douglas. **2020**. Population genomics reveal the genetic footprint of historical translocation and contemporary gene flow in white-tailed deer (*Odocoileus virginianus*). In prep for submission to: *Evolutionary Applications*.
- 4.) Chafin, T.K., M.R. Douglas, B.M. Martin, **Z.D. Zbinden**, C.M. Middaugh, J. Ballard, C. Gray, M.E. Douglas. **2020**. Age structuring and spatial heterogeneity in prion protein gene (*PRNP*) polymorphism in Arkansas white-tailed deer. In prep for submission to: *Prion*.
- 3.) **Zbinden, Z.D.** **2020**. Riverscape frameworks for identifying non-random species associations and statistically deducing mechanisms using spatial and environmental data. In Review: *Freshwater Biology*.
- 2.) **Zbinden, Z.D.** **2020**. Temporal dynamics of stream fish assemblages and the role of spatial scale in quantifying change. *Ecology and Evolution*, 10(2): 952-961. <https://doi.org/10.1002/ece3.5954>

- 1.) **Zbinden, Z.D.** and W.J. Matthews. **2017**. Beta diversity of stream fish assemblages: partitioning variation between environmental and spatial factors. *Freshwater Biology*, 62(8): 1460-1471. <https://doi.org/10.1111/fwb.12960>

OFFICIAL REPORTS

- 2.) Douglas, M.R., T.K. Chafin, **Z.D. Zbinden**, B.T. Martin, and M.E. Douglas. **2019**. White-tailed deer in Arkansas: genetic connectivity and chronic wasting disease susceptibility. *Arkansas Game and Fish Commission Official Report*.
- 1.) Matthews, W.J., E. Marsh-Matthews, and **Z.D. Zbinden**. **2016**. Survey of Clear Boggy, Muddy Boggy, Kiamichi and Little River drainages in Oklahoma to determine current distribution and status of fish species of greatest conservation need and potential change in fish communities. *Oklahoma Department of Wildlife-State Wildlife Grant Official Report*.

ORAL PRESENTATIONS

- 5.) **Zbinden, Z.D.**, M.R. Douglas, T.K. Chafin, M.E. Douglas. **2020**. A comparative population genetic approach for testing traits associated with variation in population connectivity across species in the White River Basin. –Southern Division American Fisheries Society, Little Rock, AR.
- 4.) **Zbinden, Z.D.**, M.R. Douglas, T.K. Chafin, M.E. Douglas. **2019**. Community genomics of stream fish: a framework for multi-species, comparative population genetics spanning the White River Basin. – American Fisheries Society, Reno, NV.
- 3.) **Zbinden, Z.D.**, **2018**. Micro- and macroevolutionary consequences of dispersal differential among species. –EEB Seminar, University of Arkansas, Fayetteville, AR.
- 2.) **Zbinden, Z.D.** and W.J. Matthews. **2017**. Beta diversity of stream fish assemblages: partitioning variation between environmental and spatial factors. – Joint Meeting of Ichthyologists and Herpetologists, Austin, TX.
- 1.) **Zbinden, Z.D.**, W.J. Matthews, and E. Marsh-Matthews. **2016**. A comparison of fish community structure between Clear Boggy and Muddy Boggy Creeks. – Oklahoma Natural Resource Conference, Oklahoma City, Oklahoma.

POSTER PRESENTATIONS

- 3.) **Zbinden, Z.D.** **2019**. Spatiotemporal dynamics of stream fish assemblages over four decades. – American Fisheries Society, Reno, NV.
- 2.) **Zbinden, Z.D. et al.** **2018**. DNA barcoding the Himalayan torrent ichthyofauna of Bhutan. –International Mahseer Conference, Paro, Bhutan
- 1.) **Zbinden, Z.D.**, A. Geheber, W.J. Matthews, and E. Marsh-Matthews. **2015**. A contemporary fish survey of the Muddy Boggy Drainage, southeast Oklahoma, USA. – Joint Meeting of Ichthyologists and Herpetologists, Reno, NV.

TEACHING EXPERIENCE

Conservation Genetics (Computer Lab Instructor) Graduate and upper-level undergrad computer lab focused on application of genetic methods <i>Duties:</i> Lectures, designing exercises	<i>University of Arkansas</i>	2020
Global Change Biology (Recitation Leader) Upper-level seminar with emphasis on debate and argumentative essay writing. <i>Duties:</i> moderating discussion, writing workshops, essay critique and writing development.	<i>University of Arkansas</i>	2017, 2018
Principles of Biology (Lab Instructor) Introductory laboratory course for non-majors. <i>Duties:</i> lectures, monitoring lab activities, grading, exam design	<i>University of Arkansas</i>	2016, 2017
Zoology (Lab Instructor) Introduction to organisms and laboratory practice. <i>Duties:</i> lectures, monitoring experimental design, grading, quiz design.	<i>University of Oklahoma</i>	2016

Ichthyology (Lab Instructor)	<i>Univ. Oklahoma/Univ. Arkansas</i>	2015, 2019
Introduction to fish systematics, biology, and ecology.		
<i>Duties:</i> curriculum design, lectures, monitoring lab activities, exam design, grading.		
Quantitative Biology (Teaching Assistant)	<i>University of Oklahoma</i>	2015
Introductory statistics for Biology majors.		
<i>Duties:</i> grading, homework design, led computer lab activities.		
Evolution, Ecology and Diversity (Lab Instructor)	<i>University of Oklahoma</i>	2014
Second semester, Introductory Biology laboratory course.		
<i>Duties:</i> lectures, monitoring lab activities, grading.		
Molecules, Cells and Physiology (Lab Instructor)	<i>University of Oklahoma</i>	2013, 2014
First semester, Introductory Biology laboratory course.		
<i>Duties:</i> lectures, monitoring lab activities, grading.		

STUDENTS MENTORED

• Kevin Hollar, <i>Honors Thesis</i> : Demographic History of White River Stream Fish	2019 -current
• Mackenzie Reed, <i>Honors Thesis</i> : Population genetics of common Ozark minnows	2018 – current
• Mason Flurry, Undergraduate Intern	2019
• McKenna George, <i>Honors Thesis</i> : Phylogeography of Ozark darters	2017 - 2018

FELLOWSHIPS, GRANTS & AWARDS

• <i>Distinguished Doctoral Fellowship</i> (\$88,000) Univ. Arkansas Graduate College	2016 - 2020
• Jimmie Pigg Memorial Outstanding Student Achievement Award (\$275) Southern Div. American Fisheries Society	2020
• Doctoral Student Travel Grant (\$1,000) Univ. Arkansas Graduate College	2019
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• G.T. Johnson Memorial Scholarship in Biological Sciences (\$1,300) Univ. Arkansas, Dept. Biology	2017
• Doctoral Student Travel Grant (\$1,000) Univ. Arkansas Graduate College	2017
• Teaching Excellence Award (\$500) Univ. Oklahoma, Dept. Biology	2016
• L.G. Hill Graduate Excellence Award (\$500) Univ. Oklahoma, Dept. Biology	2015
• L.G. Hill Graduate Excellence Award (\$500) Univ. Oklahoma, Dept. Biology	2014
• <i>HHMI</i> Undergraduate Research Fellowship (\$5,000), Univ. of Pittsburgh, Dept Biology	2012

PROFESSIONAL SERVICE & SYNERGISTIC ACTIVITIES

• Instructor, Programming & Bioinformatics Workshop, The American Society of Naturalists Graduate Council	2020
• Graduate Representative, Committee for Graduate Studies, Dept. of Biology, Univ. Arkansas	2020
• Peer-review: <i>Southwestern Naturalist</i> (1); <i>PLOS ONE</i> (7); <i>Journal of Biogeography</i> (1)	2015- current

PROFESSIONAL SOCIETIES

• The American Society of Naturalists	2020 – current
• Society for the Study of Evolution	2020 - current
• American Fisheries Society	2019 - current
• American Society of Ichthyologists & Herpetologists	2013 - current

REFERENCES

• Dr. Marlis Douglas	Professor, Bruker Professorship in Life Sciences Chair, Univ. Arkansas	mrd1@uark.edu
• Dr. William Matthews	Professor Emeritus, Univ. Oklahoma	wmatthews@ou.edu
• Dr. Michael Douglas	Professor, 21 st Century Chair in Global Change Biology, Univ. Arkansas	med1@uark.edu
• Dr. Jeremy Beaulieu	Assistant Professor, Univ. Arkansas	jmbeauli@uark.edu
• Dr. Adam Siepielski	Associate Professor, Univ. Arkansas	amsiepie@uark.edu