

## Zachery D. Zbinden

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### EDUCATION

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- 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

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- 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

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- 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>

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## 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*.

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## 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.

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## 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.

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## TEACHING EXPERIENCE

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

<b>Ichthyology (Lab Instructor)</b>	<i>Univ. Oklahoma/Univ. Arkansas</i>	<b>2015, 2019</b>
Introduction to fish systematics, biology, and ecology.		
<i>Duties:</i> curriculum design, lectures, monitoring lab activities, exam design, grading.		
<b>Quantitative Biology (Teaching Assistant)</b>	<i>University of Oklahoma</i>	<b>2015</b>
Introductory statistics for Biology majors.		
<i>Duties:</i> grading, homework design, led computer lab activities.		
<b>Evolution, Ecology and Diversity (Lab Instructor)</b>	<i>University of Oklahoma</i>	<b>2014</b>
Second semester, Introductory Biology laboratory course.		
<i>Duties:</i> lectures, monitoring lab activities, grading.		
<b>Molecules, Cells and Physiology (Lab Instructor)</b>	<i>University of Oklahoma</i>	<b>2013, 2014</b>
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	<b>2019 -current</b>
• Mackenzie Reed, <i>Honors Thesis</i> : Population genetics of common Ozark minnows	<b>2018 – current</b>
• Mason Flurry, Undergraduate Intern	<b>2019</b>
• McKenna George, <i>Honors Thesis</i> : Phylogeography of Ozark darters	<b>2017 - 2018</b>

## FELLOWSHIPS, GRANTS & AWARDS

• Harry & Jo Leggett Chancellor's Fellowship (\$48,000) Univ. Arkansas Graduate College	<b>2020 - current</b>
• <i>Distinguished Doctoral Fellowship</i> (\$88,000) Univ. Arkansas Graduate College	<b>2016 - 2020</b>
• Jimmie Pigg Memorial Outstanding Student Achievement Award (\$275) Southern Div. American Fisheries Society	<b>2020</b>
• Doctoral Student Travel Grant (\$1,000) Univ. Arkansas Graduate College	<b>2019</b>
• Doctoral Student Travel Grant (\$1,000) Univ. Arkansas Graduate College	<b>2018</b>
• G.T. Johnson Memorial Scholarship in Biological Sciences (\$1,300) Univ. Arkansas, Dept. Biology	<b>2017</b>
• Doctoral Student Travel Grant (\$1,000) Univ. Arkansas Graduate College	<b>2017</b>
• Teaching Excellence Award (\$500) Univ. Oklahoma, Dept. Biology	<b>2016</b>
• L.G. Hill Graduate Excellence Award (\$500) Univ. Oklahoma, Dept. Biology	<b>2015</b>
• L.G. Hill Graduate Excellence Award (\$500) Univ. Oklahoma, Dept. Biology	<b>2014</b>
• <i>HHMI</i> Undergraduate Research Fellowship (\$5,000), Univ. of Pittsburgh, Dept Biology	<b>2012</b>

## PROFESSIONAL SERVICE & SYNERGISTIC ACTIVITIES

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

## PROFESSIONAL SOCIETIES

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

## REFERENCES

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

- Dr. Edie Marsh-Matthews
- Dr. Caryn Vaugh
- Dr. Richard Broughton
- Dr. Rick Relyea

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Presidential Professor, Univ. Oklahoma  
Professor & Chair, Univ. Oklahoma  
Endowed Chair, Rensselaer Poly

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