

## CURRICULUM VITAE

### ZACHERY D. ZBINDEN

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Distinguished Doctoral Fellow, Leggett Chancellor's Fellow, & PhD Candidate  
Department of Biological Sciences, University of Arkansas, Fayetteville

## EDUCATION

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- Ph.D., Biology** 2022 (exp.)  
University of Arkansas, Fayetteville  
Dissertation title: "Comparative methods to study 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  
Thesis title: "Beta diversity of stream fish communities: partitioning variation between abiotic and spatial factors"  
Committee: Caryn Vaughn, Edie Marsh-Matthews, William Matthews (Chair)
- B.S., Ecology & Evolution** 2013  
University of Pittsburgh, Pittsburgh

## RESEARCH APPOINTMENTS

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- Research Assistant**—White-tailed Deer in Arkansas: Genetic Connectivity & Chronic Wasting Disease 2019 -  
P.I.s: Marlis Douglas & Michael Douglas (Univ. of Arkansas)  
Funding: Arkansas Game and Fish Commission  
Role: RAD-seq, landscape genetics, multivariate and resistance surface analysis
- Project Leader**—White River Fish Comparative Population Genetics 2017 -  
P.I.s: Marlis Douglas & Michael Douglas (Univ. of Arkansas)  
Funding: 21<sup>st</sup> Century Chair in Global Change Biology Endowment  
Role: Fish collecting expeditions, RAD-seq, bioinformatics, population genetics, & comparative phylogenetics
- Research Assistant**—Population Genetics of Prairie Chub 2016  
P.I.: Richard Broughton (Univ. of Oklahoma)  
Role: Targeted fish collecting expeditions
- Research Assistant**—Stream Ecology of Freshwater Mussel and Fish Community Interactions 2016  
PI: Caryn Vaughn (Oklahoma Biological Survey)  
Funding: National Science Foundation  
Role: Fish and freshwater mussel collecting expeditions, & environmental surveys of streams
- Project Leader**—Fish Survey of SE Oklahoma Drainages to determine distribution of SGCN species 2013 - 2016  
P.I.s: William Matthews & Edie Marsh-Matthews (Univ. of Oklahoma)  
Funding: Oklahoma Dept. of Wildlife Conservation State Wildlife Grant  
Fish collecting expeditions; environmental surveys, fish identification, & multivariate analyses
- Research Assistant**—Distribution of the Arkansas River Shiner 2013  
P.I.: Edie Marsh-Matthews (Sam Noble Museum of Natural History, Univ. of Oklahoma)  
Funding: Great Plains Landscape Conservation Cooperative  
Data retrieval from museum archives
- Research Assistant**—Ecotoxicology of wetland ecosystems 2011 - 2013  
P.I.: Rick Relyea (Pymatuning Laboratory of Ecology, Univ. of Pittsburgh)  
Pond community sampling, toxicology experiments, & animal care and husbandry

## PEER-REVIEWED PUBLICATIONS

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- 6) **Zbinden, Z.D.**, A.D. Geheber, R.J. Lehrter, E. Marsh-Matthews, and W.J. Matthews. **2020**. Multi-faceted spatial biodiversity of fish assemblages: the role of space, environment, and components of beta-diversity. In review: *Journal of Biogeography*.
- 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 review: *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 Review: *Prion*.
- 3) **Zbinden, Z.D.** **2020**. Co-occurrence of species across stream fish assemblages and applying decision tree frameworks for inferring underlying ecological mechanisms. In Review: *Ecology of Freshwater Fish*.
- 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>

## TECHNICAL REPORTS

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- 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 Conservation Official Report*.

## ORAL PRESENTATIONS

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- 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: 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

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- 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

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<b>Conservation Genetics–Computer Lab Instructor</b> (Univ. of Arkansas) Graduate and upper-level undergrad computer lab focused on applied genetic methods Duties: lectures, designing exercises	2020
<b>Global Change Biology–Recitation Leader</b> (Univ. of Arkansas) Upper-level seminar with emphasis on debate and argumentative essay writing Duties: moderating discussion, writing workshops, essay critique and writing development	2017, '18
<b>Principles of Biology–Lab Instructor</b> (Univ. of Arkansas) Introductory laboratory course for non-majors Duties: lectures, monitoring lab activities, exam design	2016, '17, '20
<b>Zoology–Lab Instructor</b> (Univ. of Oklahoma) Introduction to organisms and laboratory practice Duties: lectures, monitoring experimental design, quiz design	2016
<b>Ichthyology–Lab Instructor</b> (Univ. Oklahoma/Univ. of Arkansas) Introduction to fish systematics, biology, and ecology Duties: curriculum design, lectures, monitoring lab activities, field expeditions, exam design	2015, '19
<b>Quantitative Biology–Teaching Assistant</b> (University of Oklahoma) Introductory statistics for Biology majors Duties: grading, homework design, computer lab activities	2015
<b>Evolution, Ecology and Diversity–Lab Instructor</b> (University of Oklahoma) Second semester, Introductory Biology laboratory course Duties: lectures, monitoring lab activities	2014
<b>Molecules, Cells and Physiology–Lab Instructor</b> (University of Oklahoma) First semester, Introductory Biology laboratory course Duties: lectures, monitoring lab activities	2013, '14

## STUDENTS MENTORED

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• Kevin Hollar, honors thesis: "Regional phylogeography of rainbow darter ( <i>Etheostoma caeruleum</i> )"	2019 -
• Mackenzie Reed, honors thesis: "Population genetics of common Ozark minnows"	2018 - 2020
• Mason Flurry, undergraduate intern	2019
• McKenna George, honors thesis: "Phylogeography of Ozark darters"	2017 - 2018

## FELLOWSHIPS, GRANTS & AWARDS

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• Harry & Jo Leggett Chancellor's Fellowship (\$48,000) Univ. of Arkansas Graduate College	2020 -
• Distinguished Doctoral Fellowship (\$88,000) Univ. of Arkansas Graduate College	2016 - 2020
• Jimmie Pigg Memorial Student Achievement Award (\$275) American Fisheries Society	2020
• Doctoral Student Travel Grant (\$1,000) Univ. of Arkansas Graduate College	2019
• Doctoral Student Travel Grant (\$1,000) Univ. of Arkansas Graduate College	2018
• G.T. Johnson Memorial Scholarship in Biological Sciences (\$1,300) Univ. of Arkansas, Dept. Biology	2017
• Doctoral Student Travel Grant (\$1,000) Univ. of Arkansas Graduate College	2017

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| • Teaching Excellence Award (\$500) Univ. of Oklahoma, Dept. Biology                  | 2016 |
| • L.G. Hill Graduate Excellence Award (\$500) Univ. of Oklahoma, Dept. Biology        | 2015 |
| • L.G. Hill Graduate Excellence Award (\$500) Univ. of Oklahoma, Dept. Biology        | 2014 |
| • HHMI Undergraduate Research Fellowship (\$5,000), Univ. of Pittsburgh, Dept Biology | 2012 |

## PROFESSIONAL SERVICE & SYNERGISTIC ACTIVITIES

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| • Graduate Representative, Committee for Graduate Studies, Dept. of Biology, Univ. of Arkansas | 2020 |
| • Museum Student Council, Univ. of Arkansas Museum   | 2020 |

## PEER-REVIEW

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- *PLOS One* (7)
- *Southwestern Naturalist* (1)
- *Journal of Biogeography* (1)
- *Diversity & Distributions* (1)

## PROFESSIONAL SOCIETY MEMBERSHIPS

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

## REFERENCES

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|---------------------------|--|--|
| • Dr. Marlis Douglas      | Professor & Endowed Chair, Univ. of Arkansas | <a href="mailto:mrd1@uark.edu">mrd1@uark.edu</a>         |
| • Dr. William Matthews    | Professor Emeritus, Univ. of Oklahoma        | <a href="mailto:wmatthews@ou.edu">wmatthews@ou.edu</a>   |
| • Dr. Michael Douglas     | Professor & Endowed Chair, Univ. of Arkansas | <a href="mailto:med1@uark.edu">med1@uark.edu</a>         |
| • Dr. Jeremy Beaulieu     | Assistant Professor, Univ. of Arkansas       | <a href="mailto:jmbeauli@uark.edu">jmbeauli@uark.edu</a> |
| • Dr. Adam Siepielski     | Associate Professor, Univ. of Arkansas       | <a href="mailto:amsiepie@uark.edu">amsiepie@uark.edu</a> |
| • Dr. Edie Marsh-Matthews | Professor Emeritus, Univ. of Oklahoma        | <a href="mailto:emarsh@ou.edu">emarsh@ou.edu</a>         |
| • Dr. Caryn Vaughn        | Presidential Professor, Univ. of Oklahoma    | <a href="mailto:cvaughn@ou.edu">cvaughn@ou.edu</a>       |
| • Dr. Richard Broughton   | Professor & Chair, Univ. of Oklahoma         | <a href="mailto:rbroughton@ou.edu">rbroughton@ou.edu</a> |
| • Dr. Rick Relyea         | Professor & Endowed Chair, Rensselaer Poly   | <a href="mailto:relyer@rpi.edu">relyer@rpi.edu</a>       |