

# ZACHERY D. ZBINDEN

Postdoctoral Research Associate  
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## EDUCATION

- 2022      **Ph.D. in Biology, University of Arkansas, Fayetteville, AR**  
Dissertation – *Riverscape community genomics of Ozark fishes: A comparative framework to infer ecological and evolutionary determinants of genetic diversity.*  
Advisors: Marlis R. Douglas & Michael E. Douglas
- 2016      **M.S. in Biology, University of Oklahoma, Norman, OK**  
Thesis – *Beta diversity of stream fish communities: partitioning variation between abiotic and spatial factors.* Advisor: William J. Matthews
- 2013      **B.S. in Ecology and Evolution, University of Pittsburgh, Pittsburgh, PA**  
Advisor: Rick A. Relyea

## ACADEMIC APPOINTMENTS

- 2022–      Postdoctoral Research Associate, Dept. of Biological Sciences, Univ. of Arkansas
- 2016–2022      Graduate Assistant, Dept. of Biological Sciences, Univ. of Arkansas
- 2013–2016      Graduate Assistant, Dept. of Biology, Univ. of Oklahoma
- 2011–2013      Undergraduate Research Assistant, Pymatuning Lab of Ecology, Univ. of Pittsburgh

## RESEARCH & TEACHING INTERESTS

community ecology; conservation genetics; ichthyology; landscape genetics; metacommunity ecology; molecular ecology; phylogeography; spatial analysis; quantitative biology/statistics

## FELLOWSHIPS & GRANTS

- 2023      State Wildlife Grant (SWG) – Arkansas Game and Fish Commission, \$152,183  
*Habitat associations and population genetic structure of the endemic Beaded Darter*  
*Etheostoma clinton in the upper Ouachita River system.* **Co-PI**

- 2022 USDA & Arkansas Game and Fish Commission, \$135,959  
*Developing genetic Approaches for sustainable long-term monitoring and modeling CWD spread in white-tailed deer.* **Key-Personnel/Project Lead**
- 2021 Arkansas Game and Fish Commission, \$226,139  
*Genomic and Geometric Morphometric Diversity in Smallmouth Bass and their Admixtures Within the Interior Highlands of North America.* **Project Partner/Key-Personnel**
- Kansas Department of Wildlife, Cooperative Endangered Species Conservation Fund, \$36,968  
*Genetic Diversity of the Neosho Madtom (Noturus placidus).* **Key-Personnel/Project Lead**
- 2020 Univ. of Arkansas & AR Game and Fish Commission, Leggett Chancellor's Fellowship, \$48,000
- 2016 Univ. of Arkansas Graduate School, Distinguished Doctoral Fellowship, \$88,000
- 2012 Howard Hughes Medical Institute, Undergraduate Research Fellowship, \$5,000

## PUBLICATIONS

### *Refereed journal articles*

- 2023 **Zbinden**, Douglas, Chafin & Douglas. Riverscape community genomics: A comparative analytical approach to identify common drivers of genetic structure. *Molecular Ecology*, 0(0): 0-0. In press. [Preprint](#)
- 2022 **Zbinden**, Geheber, Lehrter & Matthews. Multifaceted assessment of stream fish alpha and beta diversity using spatial models. *Hydrobiologia*, 849(8): 1795-1820. [PDF](#)
- Zbinden**. A needle in the haystack? Applying species co-occurrence frameworks with fish assemblage data to identify species associations and sharpen ecological hypotheses. *Journal of Fish Biology*, 100(2): 339-351. [PDF](#)
- Zbinden**, Geheber, Matthews & Marsh-Matthews. Fish communities, species of greatest conservation need, and potential protected areas in southeastern Oklahoma, 2014-2016. *Proceedings of the Oklahoma Academy of Science*, 101: 14-32. [PDF](#)
- 2021 Chafin, **Zbinden**, Douglas, Martin, Middaugh, Gray, Ballard & Douglas. Spatial population genetics in heavily managed species: separating patterns of historical translocation from contemporary gene flow in white-tailed deer. *Evolutionary Applications*, 14(6): 1673-1689. [PDF](#)
- 2020 Chafin, Douglas, Martin, **Zbinden**, Middaugh, Ballard, Gray & Douglas. Age structuring and spatial heterogeneity in prion protein gene (*PRNP*) polymorphism in Arkansas white-tailed deer. *Prion*, 14(1): 238-248. [PDF](#)
- Zbinden**. Temporal dynamics of stream fish assemblages and the role of spatial scale in quantifying change. *Ecology and Evolution*, 10(2): 952-961. [PDF](#)

- 2017 **Zbinden** & Matthews. Beta diversity of stream fish assemblages: partitioning variation between environmental and spatial factors. *Freshwater Biology*, 62(8): 1460-1471. Cover article. [PDF](#)

#### *Manuscripts in submission*

Shepherd, Matthews, Geheber, **Zbinden**, Tobler, Marsh-Matthews & Nairn. Re-establishment of fish communities following implementation of ecologically engineered passive treatment systems to remediate mine drainage. *Freshwater Biology*. In revision.

**Zbinden**, Douglas, Chafin & Douglas. A community genomics approach to natural hybridization. *Proceedings of the Royal Society B: Biological Sciences*. In revision. [Preprint](#)

**Zbinden**, Douglas, Chafin & Douglas. Traits and relatedness associated with variability of genetic diversity among freshwater fish across an Ozark riverscape. *Molecular Ecology*. In revision. [Preprint](#)

Regmi, Douglas, Wangchuk, Chafin, **Zbinden**, Edds, Tshering & Douglas. The Himalayan uplift and evolution of aquatic biodiversity across Asia: Snowtrout (Cyprininae: Schizothorax) as a test case. *PLOS ONE*. In revision. [Preprint](#)

#### *Technical reports and non-refereed publications*

- 2022 Douglas, **Zbinden**, Chafin, Martin & Douglas. Screening SNP variation to model deer dispersal in Arkansas. [Final Report](#) (1 July 2022). Arkansas Game and Fish Commission, Little Rock, AR.
- 2021 **Zbinden**. With great diversity comes great responsibility: what we can do to better archive the rich biodiversity of Arkansas. [University of Arkansas Museum Campus Contributions](#).
- 2020 Douglas, Chafin, **Zbinden**, Martin & Douglas. White-tailed deer in Arkansas: genetic connectivity and chronic wasting disease susceptibility. [Final Report](#) (10 February 2020). Arkansas Game and Fish Commission, Little Rock, AR.
- 2016 Matthews, Marsh-Matthews & **Zbinden**. 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. [Final Report](#) (30 June 2016). Oklahoma Department of Wildlife Conservation, Oklahoma City, OK.

#### SELECT PRESENTATIONS

- 2022 Riverscape community genomics: Intraspecific genetic structure driven by common processes. *American Fisheries Society*, Spokane, WA.
- 2021 Hybridization between fish species in nature: a multispecies population genomic examination. *American Fisheries Society*, Baltimore, MD.

- 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.
- 2019 Community genomics of stream fish: multispecies, comparative population genetics spanning the White River Basin. *American Fisheries Society*, Reno, NV.
- Spatiotemporal dynamics of stream fish assemblages over four decades. *American Fisheries Society*, Reno, NV.
- 2018 DNA barcoding the Himalayan torrent ichthyofauna of Bhutan. *International Mahseer Conference*, Paro, Bhutan.
- Micro- and macroevolutionary consequences of dispersal differential among species. *EEB Seminar*, University of Arkansas, Fayetteville, AR.
- 2017 Beta diversity of stream fish assemblages: partitioning variation between environmental and spatial factors. *Joint Meeting of Ichthyologists and Herpetologists*, Austin, TX.
- 2016 A comparison of fish community structure between Clear Boggy and Muddy Boggy Creeks. *Oklahoma Natural Resource Conference*, Oklahoma City, OK.
- 2015 A contemporary fish survey of the Muddy Boggy Drainage, southeast Oklahoma, USA. *Joint Meeting of Ichthyologists and Herpetologists*, Reno, NV.

## TEACHING EXPERIENCE

### *University of Arkansas*

- 2020 Conservation Genetics – Computer Lab Instructor (senior/graduate-level)
- 2019-2021 Ichthyology – Lab Instructor (senior/graduate-level)
- 2017-2018 Global Change Biology – Recitation Leader (senior-level)
- 2016-2020 Principles of Biology – Lab Instructor (freshman-level, non-majors)

### *University of Oklahoma*

- 2016 Zoology – Lab Instructor (freshman-level, non-majors)
- 2015 Ichthyology – Lab Instructor (senior/graduate level)
- 2015 Quantitative Biology – Teaching Assistant (junior/senior-level)
- 2014 Evolution, Ecology, and Diversity – Lab Instructor (freshman/sophomore-level)
- 2013-2014 Molecules, Cells, and Physiology – Lab Instructor (freshman/sophomore-level)

## MENTORED UNDERGRADUATES

- 2019-2021 Kevin L. Hollar, Honors Student Biological Sciences, Univ. of Arkansas
- 2018-2020 Mackenzie L. Reed, Honors Student Biological Sciences, Univ. of Arkansas
- 2019-2020 Mason N. Flurry, Undergraduate Student Biological Sciences, Univ. of Arkansas

2017-2019 McKenna K. George, Honors Student Biological Sciences, Univ. of Arkansas  
2014-2016 Richard J. Lehrter II, Undergraduate Student Biological Sciences, Univ. of Oklahoma

## AWARDS & HONORS

2022 James E. Wright Graduate Award, American Fisheries Society  
2020 Jimmie Pigg Student Achievement Award, S. Div. American Fisheries Society  
2017 G.T. Johnson Memorial Scholarship Outstanding 1<sup>st</sup> Year Student, Univ. of Arkansas  
2016 Teaching Excellence Award, Univ. of Oklahoma  
2015 L.G. Hill Graduate Excellence Award, Univ. of Oklahoma  
2014 L.G. Hill Graduate Excellence Award, Univ. of Oklahoma

## ADDITIONAL TRAINING

2022 Faculty Peer Mentoring Program, Univ. of Arkansas  
2022 Equity 101: Building Understanding / Engaging in Action, IDEALS Institute, Univ. of Arkansas  
2022 UARKiLearn: Writing a Land Acknowledgement, Multicultural Center, Univ. of Arkansas  
2022 Gender Bias: Building Understanding / Creating Allies, IDEALS Institute, Univ. of Arkansas  
2022 Safe Zone Allies Training, Center for Multicultural and Diversity Education, Univ. of Arkansas  
2022 OUCH! That Stereotype Hurts Training, Division of DEI, Univ. of Arkansas  
2022 Facing Bias: Exposing Blind Spots / Engaging in Action, IDEALS Institute, Univ. of Arkansas  
2022 UARKiLearn: Diversity & Inclusion, Employee Development Program, Univ. of Arkansas  
2022 Principles of Diversity, Equity, & Inclusion, IDEALS Institute, Univ. of Arkansas

## SERVICE

2022 Project Judge, Undergraduate Research Competition, Univ. of Arkansas  
2021 Planning Committee, Univ. of Arkansas, Dept. Biological Sciences  
2020 Museum Advisory Council, Univ. of Arkansas  
2020 Fundraising Committee Chair, Museum Advisory Council, Univ. of Arkansas  
2020 Graduate Studies Committee, Univ. of Arkansas, Dept. Biological Sciences  
2018 Rapporteur, International Mahseer Conference

## *Manuscript review*

*Aquatic Sciences* (1), *Biological Conservation* (1), *Diversity & Distributions* (1), *Ecology & Evolution* (1),  
*Journal of Biogeography* (1), *PLOS One* (5), *The Southwestern Naturalist* (1)

## PROFESSIONAL MEMBERSHIPS

American Fisheries Society  
American Society of Ichthyologists & Herpetologists

Ecological Society of America  
Society for Conservation Biology  
Society for the Study of Evolution  
The American Society of Naturalists

## REFERENCES

Dr. Marlis R. Douglas	Ph.D. Co-advisor Professor & Endowed Chair, University of Arkansas mrd1@uark.edu
Dr. William J. Matthews	M.S. Advisor Professor Emeritus, University of Oklahoma wmatthews@ou.edu
Dr. Michael E. Douglas	Ph.D. Co-advisor Professor & Endowed Chair, University of Arkansas med1@uark.edu
Dr. Jeremy M. Beaulieu	Ph.D. Committee member Associate Professor, University of Arkansas jmbeauli@uark.edu