

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

PROFESSIONAL EXPERIENCE

- 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

- 2022 USDA & Arkansas Game and Fish Commission, Key-Personnel (PI: Marlis Douglas), \$99,639
- 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

- 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 (available upon request)

Zbinden, Douglas, Chafin & Douglas. Riverscape community genomics: A comparative analytical framework to identify common drivers of genetic structure. *Molecular Ecology*. Accepted. [Preprint](#)

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
- 2022 Nominated to serve on Board of Governors, American Soc. Ichthyologists and Herpetologists
- 2020 Jimmie Pigg Student Achievement Award, S. Div. American Fisheries Society
- 2017 G.T. Johnson Memorial Scholarship Outstanding 1st 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 Sexual Orientation and Gender Identity, IDEALS Institute, 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 (National, Southern Division, Genetics Section, Arkansas Chapter)
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

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| 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 |