ZACHERY D. ZBINDEN

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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

APPOINTMENTS

2022–   Postdoctoral Research Associate, Dept. of Biological Sciences, Univ. of Arkansas
2020–2022   Chancellor's Fellow, Dept. of Biological Sciences, Univ. of Arkansas
2016–2020   Distinguished Doctoral Fellow, 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

Ecology   →   aquatic – community – spatial – molecular
Evolution   →   community genetics – landscape genetics – phylogeography
Conservation   →   fisheries management – global change – conservation genetics
Zoology   →   ichthyology – taxonomy – systematics
Quantitative bio   →   spatial analysis – GIS – programming – bioinformatics

GRANTS & FELLOWSHIPS

* Grant submitted while a student

2023   State Wildlife Grant (SWG) – Arkansas Game and Fish Commission, $164,736
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. Major Contributor *****

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. Major Contributor *****

Kansas Dept. of Wildlife, Cooperative Endangered Species Conservation Fund, $36,968
Genetic Diversity of the Neosho Madtom (Noturus placidus). Major Contributor *****

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

Scholar Profile

Refereed journal articles

2023   **Zbinden**, Douglas, Chafin & Douglas. A community genomics approach to natural hybridization. *Proceedings of the Royal Society B: Biological Sciences*, 290: 20230768. PDF

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. PDF

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*, 0(0): 0–0. In press. 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

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.

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

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

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

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

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.

SEMINARS & CONFERENCE PRESENTATIONS

As presenting author

2023 A community genomics approach to natural hybridization. *Joint Meeting of Ichthyologists and Herpetologists,* Norfolk, VA.

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 & MENTORING

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)

Undergraduate/ graduate mentees

* Completed Thesis / Dissertation

*P*Published

2023–	Carson Neal, Undergraduate Biological Sciences, Univ. of Arkansas
2023–	Carter White, Graduate Biological Sciences, Univ. of Arkansas
2023–	Lane Laroche, Honors Biological Sciences, Univ. of Arkansas
2023–2023	Hyatt Fox, Undergraduate Biological Sciences, Univ. of Arkansas
2022–2023	Timothy Goodhart, Graduate Biological Sciences, Univ. of Arkansas
2019–2021	Kevin Hollar, Honors Biological Sciences, Univ. of Arkansas *****
2018–2020	Mackenzie Reed, Honors Biological Sciences, Univ. of Arkansas *****
2017–2019	McKenna George, Honors Biological Sciences, Univ. of Arkansas *****
2014–2016	Richard Lehrter, Undergraduate Biological Sciences, Univ. of Oklahoma *P*

AWARDS & HONORS

2022	James E. Wright Graduate Award, American Fisheries Society
2020	Jimmie Pigg Student Achievement Award, Southern Division of 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	Equity 101: Building Understanding/ Engaging in Action, IDEALS Institute, Univ. of Arkansas
2022	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, Multicultural Center, 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	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 referee

Aquatic Sciences (1) – *Biological Conservation* (1) – *Diversity & Distributions* (1) –
Ecology & Evolution (2) – *Freshwater Biology* (1) – *Journal of Biogeography* (1) – *PLOS One* (5) –
The Southwestern Naturalist (1)

PROFESSIONAL SOCIETIES

American Fisheries Society – American Society of Ichthyologists & Herpetologists – American Society of Naturalists – Society for Conservation Biology – Society for the Study of Evolution

REFERENCES

Dr. Marlis R. Douglas   Ph.D. Co-advisor
                           Professor & Endowed Chair, University of Arkansas
                           mrd1@uark.edu

Dr. Michael E. Douglas   Ph.D. Co-advisor
                           Professor & Endowed Chair, University of Arkansas
                           med1@uark.edu

Dr. William J. Matthews   M.S. Advisor
                           Professor Emeritus, University of Oklahoma
                           wmatthews@ou.edu

Dr. Jeremy M. Beaulieu   Ph.D. Committee member
                           Associate Professor, University of Arkansas
                           jmbeauli@uark.edu

Dr. Adam M. Siepielski   Ph.D. Committee member
                           Associate Professor, University of Arkansas
                           amsiepie@uark.edu