

CURRICULUM VITAE
MAY 2022

ZACHERY D. ZBINDEN

Leggett Chancellor's Fellow & Ph.D. Candidate
Department of Biological Sciences, University of Arkansas
Science and Engineering Hall – 850 W. Dickson St., Room 601, Fayetteville, AR 72701
email: zdzbinde@uark.edu – website: <https://zdzbinden.github.io>

RESEARCH INTERESTS

biogeography, community ecology, conservation genetics, comparative phylogeography, ichthyology, molecular ecology, riverscape community genetics, riverscape ecology, spatial modeling

EDUCATION

- 2022 Ph.D. in Biology, University of Arkansas, Fayetteville, AR.
Dissertation – *Riverscape community genomics of Ozark fish: hybridization, hierarchical structure, and heritability*. 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 HISTORY

- 2016–2021 Graduate Assistant, Dept. of Biological Sciences, University of Arkansas
- 2013–2016 Graduate Assistant, Dept. of Biology, University of Oklahoma
- 2011–2013 Undergraduate Research Assistant, Pymatuning Lab of Ecology, Univ. of Pittsburgh

PEER-REVIEWED PUBLICATIONS

7. **Zbinden, Z.D.**, A.D. Geheber, R.J. Lehrter, and W.J. Matthews. 2022. Multifaceted assessment of stream fish alpha and beta diversity using spatial models. *Hydrobiologia*, 849: 1795-1820.
<https://doi.org/10.1007/s10750-022-04824-w>

6. **Zbinden, Z.D.** 2022. 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. <https://doi.org/10.1111/jfb.14752>
5. **Zbinden, Z.D.**, A.D. Geheber, W.J. Matthews, and E. Marsh-Matthews. 2022. 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. <https://ojs.library.okstate.edu/osu/index.php/OAS/article/view/8468>
4. Chafin, T.K., **Z.D. Zbinden**, M.R. Douglas, B.T. Martin, C.M. Middaugh, C. Gray, J. Ballard, and M.E. Douglas. 2021. 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. <https://doi.org/10.1111/eva.13233>
3. Chafin, T.K., M.R. Douglas, B.T. Martin, **Z.D. Zbinden**, C.M. Middaugh, J. Ballard, C. Gray, and M.E. Douglas. 2020. Age structuring and spatial heterogeneity in prion protein gene (*PRNP*) polymorphism in Arkansas white-tailed deer. *Prion*, 14(1): 238-248. <https://doi.org/10.1080/19336896.2020.1832947>
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. Cover article. <https://doi.org/10.1111/fwb.12960>

Manuscripts Submitted/In-preparation (available upon request)

6. Wangchuk, K., **Z.D. Zbinden**, S. Tshering. Fish species richness and its relationship with elevation in the eastern Himalayas of Bhutan. In preparation.
5. **Zbinden, Z.D.**, M.R. Douglas, T.K. Chafin, and M.E. Douglas. Traits and relatedness associated with variability of genetic diversity among freshwater fish species of the Ozarks. In preparation.
4. **Zbinden, Z.D.**, M.R. Douglas, T.K. Chafin, and M.E. Douglas. Riverscape community genomics: Intraspecific genetic structure driven by common processes. In preparation.
3. **Zbinden, Z.D.**, M.R. Douglas, T.K. Chafin, and M.E. Douglas. A community genomics approach to natural hybridization. In review.
2. Regmi, B., M.R. Douglas, D.R. Edds, K. Wangchuk, ChangLu, G.P. Khanal, P. Norbu, S. Norbu, S. Dorji, S. Tshering, Z. Angel, T.K. Chafin, **Z.D. Zbinden**, and M.E. Douglas. Did the Himalayan

uplift drive evolution of aquatic biodiversity across Asia? Snowtrout (Cyprinidae: *Shizothorax*) as a test case. In review.

1. Shepherd, N.L., W.J. Matthews, A.D. Geheber, **Z.D. Zbinden**, C.M. Tobler, E. Marsh-Matthews, and R.W. Nairn. Re-establishment of fish communities following implementation of ecologically engineered passive treatment systems to remediate mine drainage. In review.

TECHNICAL 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 Conservation Official Report*.

GENERAL AUDIENCE ARTICLES

1. **Zbinden, Z.D.** 2021. With great diversity comes great responsibility: what we can do to better archive the rich biodiversity of Arkansas. *University of Arkansas Museum Campus Contributors*. <https://uamuseum.uark.edu/with-great-diversity-comes-great-responsibility/>

SELECT PRESENTATIONS

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| Upcoming | 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: multi-species, comparative population genetics spanning the White River Basin. American Fisheries Society, Reno, NV. |
| 2019 | 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.
- 2018 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 APPOINTMENTS

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

FELLOWSHIPS & GRANTS

- 2020-2024 Leggett Chancellor's Fellowship, Arkansas Game and Fish Commission, \$48,000
2016-2020 Distinguished Doctoral Fellowship, Univ. of Arkansas, \$88,000
2012-2013 Howard Hughes Medical Institute Undergraduate Research Fellowship, U. Pitt., \$5,000

AWARDS & HONORS

- 2022 Nominated to serve on Board of Governors, American Soc. Ichthyologists and Herpetologists
2020 Jimmie Pigg Student Achievement Award, S. Div. American Fisheries Society, \$250
2017 G.T. Johnson Memorial Scholarship Outstanding 1st Year Student, Univ. of Arkansas, \$2,300
2016 Teaching Excellence Award, Univ. of Oklahoma, \$500
2015 L.G. Hill Graduate Excellence Award, Univ. of Oklahoma, \$500
2014 L.G. Hill Graduate Excellence Award, Univ. of Oklahoma, \$500

SERVICE

- 2022 Judge, Undergraduate Research Competition, Univ. of Arkansas
2021-2022 Planning Committee, Univ. of Arkansas, Dept. Biological Sciences
2020-2021 Museum Advisory Council, Univ. of Arkansas
2020-2021 Fundraising Committee Chair, Museum Advisory Council, Univ. of Arkansas
2020-2021 Graduate Studies Committee, Univ. of Arkansas, Dept. Biological Sciences
2012-2013 Founder and President of Ecology Club, Univ. of Pittsburgh

MANUSCRIPT REVIEW

Biological Conservation (1), *Diversity & Distributions* (1), *Ecology & Evolution* (1), *Journal of Biogeography* (1), *PLOS One* (7), *The Southwestern Naturalist* (1)

PROFESSIONAL SOCIETIES

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. 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. 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 |