

CURRICULUM VITAE
January 2022

ZACHERY D. ZBINDEN

Leggett Chancellor's Fellow & PhD Candidate
Department of Biological Sciences, University of Arkansas
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RESEARCH INTERESTS

community ecology, community genetics, comparative phylogenetics, conservation biology, evolutionary ecology, ichthyology, molecular ecology, riverscape ecology, spatial modelling

EDUCATION

2022 (exp.) Ph.D. in Biology, University of Arkansas, Fayetteville, AR.
2016 M.S. in Biology, University of Oklahoma, Norman, OK.
2013 B.S. in Ecology and Evolution, University of Pittsburgh, Pittsburgh, PA

PROFESSIONAL HISTORY

2021– Graduate Research Assistant: Genomic diversity & phylogeography of smallmouth bass
PIs: Marlis Douglas & Michael Douglas, UA
2019–2020 Graduate Research Assistant: Genetic connectivity & chronic wasting disease in deer
PIs: Marlis Douglas & Michael Douglas, UA
2017– Project Lead: Multispecies comparative population genomics of stream fish
PIs: Marlis Douglas & Michael Douglas, UA
2016 Graduate Research Assistant: Population genetics of vulnerable prairie chub
PI: Richard Broughton, OU
2016 Graduate Research Assistant: Freshwater mussel and fish community interactions
PI: Caryn Vaughn, OU Biological Survey
2013–2016 Project Lead: Fish survey of SE Oklahoma—species of greatest conservation concern
PIs: William Matthews & Edie Marsh-Matthews, OU
2011–2013 Undergraduate Research Assistant—Ecotoxicology of wetland ecosystems
PI: Rick Relyea, Pymatuning Laboratory of Ecology, Pitt

PEER-REVIEWED PUBLICATIONS

In preparation/In review

13. **Zbinden, Z.D.**, Chafin, T.K., M.R. Douglas B.T. Martin, C.M. Middaugh, C. Gray, J. Ballard, M.E. Douglas. *In prep.* Environmental factors shape patterns of population genetic divergence in white-tailed deer.
12. Regmi, B., M.R. Douglas, D.R. Edds, K. Wangchuk, C. Lu, G. Prasad Khanal, P. Norbu, S. Norbu, S. Dorji, S. Tshering, Z. Angel, T.K. Chafin, **Z.D. Zbinden**, M.E. Douglas. *In prep.* Did the Himalayan uplift drive evolution of aquatic biodiversity across Asia? Snowtrout (Cyprinidae: *Shizothorax*) as a test case.
11. **Zbinden, Z.D.**, Chafin, T.K., M.R. Douglas, M.E. Douglas. *In prep.* Same fish, different stream: riverscape genomic variation of 31 species tested using models of isolation.
10. **Zbinden, Z.D.**, Chafin, T.K., M.R. Douglas, M.E. Douglas. *In prep.* A community genomics approach to natural hybridization.
9. **Zbinden, Z.D.**, Chafin, T.K., M.R. Douglas, M.E. Douglas. *In prep.* Freshwater stream fish community genomic data.
8. Shepherd, N.L., W.J. Matthews, A.D. Geheber, **Z.D. Zbinden**, C.M. Tobler, E. Marsh-Matthews, R.W. Nairn. *In prep.* Recolonization of fish communities in a first order stream following implementation of two ecologically engineered passive treatment systems to remediate mine drainage at a superfund site.

Accepted/In press/Early access

7. **Zbinden, Z.D.**, A.D. Geheber, R.J. Lehrter, W.J. Matthews. *In press.* Multifaceted assessment of stream fish alpha and beta diversity using spatial models. *Hydrobiologia*.
6. **Zbinden, Z.D.** *Early access.* 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*, 2021;00:1-13. <https://doi.org/10.1111/jfb.14752>

Published

5. **Zbinden, Z.D.**, A.D. Geheber, W.J. Matthews, 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, 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, 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.**, 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

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 (NOT PEER-REVIEWED)

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/>

PRESENTATIONS

9. **Zbinden, Z.D.**, M.R. Douglas, T.K. Chafin, M.E. Douglas. 2021. Hybridization between fish species in nature: a multispecies population genomic examination. American Fisheries Society, Baltimore, MD.
8. **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.
7. **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.
6. **Zbinden, Z.D.** 2019. Spatiotemporal dynamics of stream fish assemblages over four decades. American Fisheries Society, Reno, NV.

5. **Zbinden, Z.D. et al.** 2018. DNA barcoding the Himalayan torrent ichthyofauna of Bhutan. International Mahseer Conference, Paro, Bhutan.
4. **Zbinden, Z.D.**, 2018. Micro- and macroevolutionary consequences of dispersal differential among species. EEB Seminar, University of Arkansas, Fayetteville, AR.
3. **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.
2. **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, OK.
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 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, University of Arkansas
2018–2020	Mackenzie L. Reed, Honors Student Biological Sciences, University of Arkansas
2019–2020	Mason N. Flurry, Undergraduate Student Biological Sciences, University of Arkansas
2017–2019	McKenna K. George, Honors Student Biological Sciences, University 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, University of Arkansas, \$88,000
2012-2013 Howard Hughes Medical Institute Undergraduate Research Fellowship, U. Pitt., \$5,000

AWARDS & HONORS

- 2020 Jimmie Pigg Student Achievement Award, S. Div. American Fisheries Society, \$1,500
2017 G.T. Johnson Memorial Scholarship Outstanding 1st Year Student, U. Arkansas, \$2,300
2016 Teaching Excellence Award, University of Oklahoma, \$500
2015 L.G. Hill Graduate Excellence Award, University of Oklahoma, \$500
2014 L.G. Hill Graduate Excellence Award, University of Oklahoma, \$500

VOLUNTEER SERVICE

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

MANUSCRIPT REVIEW

Biological Conservation, Diversity & Distributions, Ecology & Evolution, Journal of Biogeography, PLOS One, The Southwestern Naturalist

PROFESSIONAL SOCIETIES

American Fisheries Society (National, Southern Division, Genetics Section)
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 Douglas	Professor & Endowed Chair, Univ. of Arkansas	mrd1@uark.edu
Dr. William Matthews	Professor Emeritus, Univ. of Oklahoma	wmatthews@ou.edu
Dr. Michael Douglas	Professor & Endowed Chair, Univ. of Arkansas	med1@uark.edu
Dr. Jeremy Beaulieu	Associate Professor, Univ. of Arkansas	jmbeauli@uark.edu
Dr. Adam Siepielski	Associate Professor, Univ. of Arkansas	amsiepie@uark.edu