

CURRICULUM VITAE  
MARCH 2022

**ZACHERY D. ZBINDEN**

Leggett Chancellor's Fellow & Ph.D. Candidate  
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**RESEARCH INTERESTS**

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

**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  
Marlis Douglas & Michael Douglas, Univ. of Arkansas  
2019–2020 Graduate Research Assistant: Genetic connectivity & chronic wasting disease in deer  
Marlis Douglas & Michael Douglas, Univ. of Arkansas  
2017–2022 Project Lead: Multispecies comparative population genomics of stream fish  
Marlis Douglas & Michael Douglas, Univ. of Arkansas  
2016 Graduate Research Assistant: Population genetics of vulnerable prairie chub  
Richard Broughton, Univ. of Oklahoma  
2016 Graduate Research Assistant: Freshwater mussel and fish community interactions  
Caryn Vaughn, Univ. of Oklahoma Biological Survey  
2013–2016 Project Lead: Fish survey of SE Oklahoma—species of greatest conservation concern  
William Matthews & Edie Marsh-Matthews, Univ. of Oklahoma  
2011–2013 Undergraduate Research Assistant: Ecotoxicology of wetland ecosystems  
Rick Relyea, Pymatuning Laboratory 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*, Early access. <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. <https://doi.org/10.1111/fwb.12960>

*Manuscripts Submitted (available upon request)*

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. 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. 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 (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

14. **Zbinden, Z.D.**, M.R. Douglas, T.K. Chafin, and M.E. Douglas. 2021. Hybridization between fish species in nature: a multispecies population genomic examination. American Fisheries Society, Baltimore, MD.
13. Chafin T.K., **Z.D. Zbinden**, M.R. Douglas, B.T. Martin, C.M. Middaugh, J.R., Ballard, and M.E. Douglas. 2021. "Knowing where you've been:" Genetic signatures of historic translocation in contemporary white-tailed deer. 44<sup>th</sup> Annual Meeting, Southeast Deer Group (virtual).
12. Douglas, M.R., T.K. Chafin, **Z.D. Zbinden**, B.T. Martin, C.M. Middaugh, J.R., Ballard, and M.E. Douglas. 2021. Prion protein gene variation reveals age structure and spatial heterogeneity in Arkansas white-tailed deer. 44<sup>th</sup> Annual Meeting, Southeast Deer Group (virtual).
11. Douglas, M.E., M.R. Douglas, T.K. Chafin, **Z.D. Zbinden**, B.T. Martin, C.M. Middaugh, and J.R. Ballard. 2021. Genetic signatures of historic translocation in contemporary North American white-tailed deer. 150th Jubilee Conference, Kovalevsky Institute, Biology of the Southern Seas, Sevastopol, Crimea (Virtual).

10. Chafin T.K., **Z.D. Zbinden**, M.R. Douglas, B.T. Martin, C.M. Middaugh, J.R., Ballard, and M.E. Douglas. 2021. Genetic tools for invasive species management: Identifying translocation source and subsequent dispersals. 6th International Symposium: "Alien Species in the Holarctic," Borok, Russia (Virtual).
9. Douglas, M.E., M.R. Douglas, B. Regmi, D.R. Edds, K. Wangchuk, ChangLu, S. Dorji, G.P. Khanal, P. Norbu, S. Norbu, S. Tshering, Z. Angel, T.K. Chafin, and **Z.D. Zbinden**. 2021. The Himalayan uplift and the evolution of aquatic biodiversity across Asia: Snowtrout (Cyprininae: *Schizothorax*) as a test case. 6th Annual Research Symposium, Bhutan Ecological Society, Thimphu. (Virtual).
8. **Zbinden, Z.D.**, M.R. Douglas, T.K. Chafin, and 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, and 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.D. 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, 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

- 2020 Jimmie Pigg Student Achievement Award, S. Div. American Fisheries Society, \$250
- 2017 G.T. Johnson Memorial Scholarship Outstanding 1<sup>st</sup> 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

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

## 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

Dr. Marlis Douglas	Professor & Endowed Chair, Univ. of Arkansas	<a href="mailto:mrd1@uark.edu">mrd1@uark.edu</a>
Dr. William Matthews	Professor Emeritus, Univ. of Oklahoma	<a href="mailto:wmatthews@ou.edu">wmatthews@ou.edu</a>
Dr. Michael Douglas	Professor & Endowed Chair, Univ. of Arkansas	<a href="mailto:med1@uark.edu">med1@uark.edu</a>
Dr. Jeremy Beaulieu	Associate Professor, Univ. of Arkansas	<a href="mailto:jmbeauli@uark.edu">jmbeauli@uark.edu</a>
Dr. Adam Siepielski	Associate Professor, Univ. of Arkansas	<a href="mailto:amsiepie@uark.edu">amsiepie@uark.edu</a>