

CURRICULUM VITAE
May 2021

ZACHERY D. ZBINDEN

Distinguished Doctoral Fellow, Leggett Chancellor's Fellow, & PhD Candidate
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RESEARCH INTERESTS

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

EDUCATION

Ph.D., Biology, University of Arkansas, Fayetteville, AR (exp) 2022
Committee: Adam Siepielski, Jeremy Beaulieu, Michael Douglas, Marlis Douglas (Chair)

M.S., Biology, University of Oklahoma, Norman, OK 2016
Committee: Caryn Vaughn, Edie Marsh-Matthews, William Matthews (Chair)

B.S., Ecology & Evolution, University of Pittsburgh, Pittsburgh, PA 2013

RESEARCH APPOINTMENTS

Graduate Research Assistant—Genetic Connectivity & Chronic Wasting Disease in Deer 2019-2020
PIs: Marlis Douglas & Michael Douglas (Univ. of Arkansas)
Role: DNA extraction and RAD-seq library prep, data analysis

Project Leader—White River Fish Comparative Population Genetics 2017-2022
PIs: Marlis Douglas & Michael Douglas (Univ. of Arkansas)
Role: Fish collecting, RAD-seq library prep, bioinformatics, data analysis

Graduate Research Assistant—Population Genetics of Prairie Chub 2016
PI: Richard Broughton (Univ. of Oklahoma)
Role: Targeted fish collecting expeditions

Graduate Research Assistant—Freshwater Mussel and Fish Community Interactions 2016
PI: Caryn Vaughn (Oklahoma Biological Survey)
Role: Fish and freshwater mussel collecting, environmental surveys of streams

Project Leader—Fish Survey of SE Oklahoma 2013-2016
PIs: William Matthews & Edie Marsh-Matthews (Univ. of Oklahoma)
Fish collecting; environmental surveys, fish identification, multivariate analyses

Undergraduate Research Assistant—Ecotoxicology of wetland ecosystems 2011-2013
 PI: Rick Relyea (Pymatuning Laboratory of Ecology, Univ. of Pittsburgh)
 Pond community sampling, toxicology experiments, animal care and husbandry

PEER-REVIEWED PUBLICATIONS

- 8) 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. 2021. Did the Himalayan uplift drive evolution of aquatic biodiversity across Asia? Snowtrout (Cyprinidae: *Shizothorax*) as a test case. In review: *Freshwater Biology*.
- 7) **Zbinden, Z.D.**, A.D. Geheber, R.J. Lehrter, W.J. Matthews. 2021. Analysis of stream fish alpha and beta diversity across a riverscape using multifaceted approach coupled with comparison of spatial models supports the riverine ecosystem synthesis. In review: *Freshwater Biology*.
- 6) **Zbinden, Z.D.**, A.D. Geheber, W.J. Matthews, E. Marsh-Matthews. 2021. Fish communities, species of greatest conservation need, and potential protected areas in southeastern Oklahoma, 2014-2016. In review: *Proceedings of the Oklahoma Academy of Sciences*.
- 5) Chafin, T.K., **Z.D. Zbinden**, B.T. Martin, C.M. Middaugh, C. Gray, J. Ballard, M.E. Douglas, M.R. Douglas. 2021. Spatial population genetics in heavily managed species: separating patterns of historical translocation from contemporary gene flow in white-tailed deer. *Evolutionary Applications*, 2021;00:1-17. <https://doi.org/10.1111/eva.13233>
- 4) **Zbinden, Z.D.** 2021. 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>
- 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/fw.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/>

CONFERENCE PRESENTATIONS

- 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

<i>Conservation Genetics</i> –Computer Lab Instructor, Univ. of Arkansas	2020
Graduate/undergraduate computer lab focused on applied genetics methods	
Duties: lectures, designing exercises	
<i>Global Change Biology</i> –Recitation Leader, Univ. of Arkansas	2017, '18
Upper-level seminar with emphasis on debate and argumentative essay writing	
Duties: moderating discussion, essay critique and writing development	
<i>Principles of Biology</i> –Lab Instructor, Univ. of Arkansas	2016, '17, '20
Introductory laboratory course for non-majors	
Duties: lectures, monitoring lab activities, exam design	
<i>Zoology</i> –Lab Instructor, Univ. of Oklahoma	2016
Introduction to organisms and laboratory practice	
Duties: lectures, monitoring experimental design, quiz design	
<i>Ichthyology</i> –Lab Instructor, Univ. Oklahoma/Univ. of Arkansas	2015, '19, '21
Introduction to fish systematics, biology, and ecology	
Duties: curriculum design, lectures, monitoring lab activities, field expeditions	
<i>Quantitative Biology</i> –Teaching Assistant, University of Oklahoma	2015
Introductory statistics for Biology majors	
Duties: grading, homework design, computer lab activities	
<i>Evolution, Ecology and Diversity</i> –Lab Instructor, University of Oklahoma	2014
Second semester, Introductory Biology laboratory course	
Duties: lectures, monitoring lab activities	
<i>Molecules, Cells and Physiology</i> –Lab Instructor, University of Oklahoma	2013, '14
First semester, Introductory Biology laboratory course	
Duties: lectures, monitoring lab activities	

UNDERGRADUATE STUDENTS MENTORED

- Kevin Hollar, honors thesis: Population structure of rainbow darter (*Etheostoma caeruleum*)
- Mackenzie Reed, honors thesis: Population genetics of common Ozark minnows
- Mason Flurry, undergraduate intern
- McKenna George, honors thesis: Phylogeography of Ozark darters

FELLOWSHIPS, GRANTS & AWARDS

• Leggett Chancellor's Fellowship (\$48,000) Univ. of Arkansas Graduate College	2020
• Jimmie Pigg Student Achievement Award (\$275) American Fisheries Society	2020
• G.T. Johnson Memorial Scholarship (\$2,300) Univ. of Arkansas, Dept. Biology	2017

- Distinguished Doctoral Fellowship (\$88,000) Univ. of Arkansas Graduate College 2016
- Teaching Excellence Award (\$500) Univ. of Oklahoma, Dept. Biology 2016
- L.G. Hill Graduate Excellence Award (\$500) Univ. of Oklahoma, Dept. Biology 2015
- L.G. Hill Graduate Excellence Award (\$500) Univ. of Oklahoma, Dept. Biology 2014
- HHMI Research Fellowship (\$5,000), Univ. of Pittsburgh, Dept. Biology 2012

PROFESSIONAL SERVICE

- Committee for Graduate Studies, Univ. of Arkansas, Dept. Biology 2020
- Museum Advisory Council, Univ. of Arkansas 2020-2021
- Fundraising sub-committee Chair, Museum Advisory Council, Univ. of Arkansas 2020-2021
- Reviewer for: *Diversity & Distributions*, *Ecology & Evolution*, *Journal of Biogeography*, *PLOS One*, *Southwestern Naturalist*

PROFESSIONAL SOCIETIES

- Ecological Society of America
- Society for Conservation Biology
- The American Society of Naturalists
- Society for the Study of Evolution
- American Fisheries Society
- American Society of Ichthyologists & Herpetologists

REFERENCES

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|------------------------|--|--|
| • Dr. Marlis Douglas | Professor & Endowed Chair, Univ. of Arkansas | mrd1@uark.edu |
| • Dr. William Matthews | Professor Emeritus, Univ. of Oklahoma | wmatthews@ou.edu |
| • Dr. Jeremy Beaulieu | Associate Professor, Univ. of Arkansas | jmbeauli@uark.edu |
| • Dr. Adam Siepielski | Associate Professor, Univ. of Arkansas | amsiepie@uark.edu |
| • Dr. Michael Douglas | Professor & Endowed Chair, Univ. of Arkansas | med1@uark.edu |