

Janna R. Willoughby

Assistant professor of population and conservation genetics
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EDUCATION

Ph.D., Genetics (August 2015), Purdue University, West Lafayette, IN
M.S., Conservation Biology (August 2012), Central Michigan University, Mt. Pleasant, MI
B.A., Biology (May 2005), Wittenberg University, Springfield, OH

PROFESSIONAL EXPERIENCE

Assistant professor, College of Forestry, Wildlife, and Environment, Auburn (2019-present)
Postdoctoral researcher, Department of Biological Sciences, Purdue (2015-2019)

SELECTED PUBLICATIONS

1. Lamka GL, **Willoughby JR**. Habitat remediation followed by managed connectivity reduces unwanted changes in evolutionary trajectory of high extirpation risk populations. *BioRxiv*. 10.1101/2023.11.03.565519 (preprint).
2. **Willoughby JR**, McKenzie BA, Ahn J, Steury TD, Lepczyk CA, Zohdy S. Mosquito invasion via the global shipping network is slowed in high-risk areas by on-shore and ship-board monitoring. *BioRxiv*. 10.1101/2022.08.29.505734 (preprint).
3. Harder AM, Kirksey KB, Mathur S, **Willoughby JR**. Detectability of runs of homozygosity is influenced by analysis parameters as well as population-specific demographic history. *BioRxiv*. 10.1101/2022.09.29.510155 (preprint).
4. Chalkowski K, Lepczyk C, Wilson A, Valenta K, Siple B, Brownlee J, Morgan A, Santos S, **Willoughby JR**, Zohdy S. Parasite and pathogen prevalence in our closest animal companions is determined by accessibility of sanitation services. *BioRxiv*. 10.1101/2022.03.08.483406 (preprint).
5. Harder AM, Sundaram M, Narine L, **Willoughby JR**. 2023. Individual fitness in a small desert mammal predicted by remotely sensed environmental measures. *Ecology and Evolution*. 13:e10358.
6. DeWoody JA, Jeon JY, Bickham JW, Heenkenda E, Janjua S, Lamka GF*, Mularo AJ, Black AN, Brüniche-Olsen A, **Willoughby JR**. 2022. The Threatened Species Imperative: Conservation assessments would benefit from population genomic insights. *Proceedings of the National Academy of Science*. 119:e2210685119.
7. Miranda Paez A, Chalkowski K, Zohdy S, **Willoughby JR**. 2022. Management of avian malaria in populations of high conservation concern. *Parasites & Vectors*. 15:208.
8. Lamka GL, Harder AM, Sundaram M, Schwartz TS, Christie MR, DeWoody JA, **Willoughby JR**. 2022. Epigenetics in ecology, evolution, and conservation. *Frontiers in Ecology and Evolution*. 10 871791.
9. Dunning K, Johnson G, Wally K, Willoughby JR, Williamson R, Corvey K, Becker M, Moorman T. 2022. Application of the policy regime framework to understand COVID-19 policy response in the southeast U.S.: How RAPID research can provide lessons learned after a public health crisis. *Frontiers in Sociology*.
10. Harder AM, Walden KKO, Marra NJ, **Willoughby JR**. 2022. High-Quality Reference Genome for an Arid-Adapted Mammal, the Banner-Tailed Kangaroo Rat (*Dipodomys spectabilis*). *Genome Biology and Evolution*. 14 evac005.

11. Miranda Paez A, Sundaram M, **Willoughby JR. 2021**. Comparison of minimally invasive monitoring methods and live trapping in mammals. *Genes*. 12 1949.
12. DeWoody JA, Mathur S, Harder AM, **Willoughby JR. 2021**. The long-standing importance of genetic diversity in conservation. *Molecular Ecology*. 30 4147-4154.
13. Black AN, **Willoughby JR**, Brüniche-Olsen A, Pierce B, DeWoody JA. **2021**. The Endangered White Sands pupfish (*Cyprinodon tularosa*) genome reveals low diversity and heterogenous patterns of differentiation. *Molecular Ecology Resources*. DOI: 10.1111/1755-0998.13447.
14. Xiaoshen Y, AS Martinez, A Perkins, MM Sparks, AM Harder, **JR Willoughby**, MS Sepúlveda, MR Christie. **2021**. Incipient resistance to an effective pesticide results from genetic adaptation and the canalization of gene expression. *Evolutionary Applications*. 14:847-859.
15. Harder AM, **Willoughby JR**, Arden WR, Christie MR. **2019**. Among family variation in survival and gene expression uncovers adaptive genetic variation in a threatened fish. *Molecular Ecology*. DOI: 10.1111/mec.15334.
16. **Willoughby JR**, Waser PM, Brüniche-Olsen A, Christie MR. **2019**. Inbreeding load and inbreeding depression estimated from lifetime reproductive success in a small, dispersal-limited population. *Heredity*, 123:192-201.
17. Doyle JM*, **Willoughby JR***, Bell DA, Bloom PH, Bragin EA, Fernandez NB, Katzner TE, Leonard K, DeWoody JA. **2019**. Elevated heterozygosity in adults relative to juveniles provides evidence of viability selection on eagles and falcons. *Journal of Heredity*, 110:696-706. *co-first authors
18. **Willoughby JR**, Christie MR. **2019**. Long-term demographic and genetic effects of releasing captive-born individuals into the wild. *Conservation Biology*, 33:377-388.
19. **Willoughby JR**, Harder AM, Tennessen JA, Scribner KA, Christie MR. **2018**. Rapid genetic adaptation to a novel environment despite a genome-wide reduction in genetic diversity. *Molecular Ecology* 27:4041-4051.
20. **Willoughby JR**, Sundaram M, Wijayawardena B, Lamb MC, Kimble SJ, Ji Y, Fernandez NB, Antonides J, Marra NJ, DeWoody JA. (2015) The reduction of genetic diversity in threatened vertebrates and new recommendations regarding IUCN conservation rankings. *Biological Conservation* 191:495-503.

Data and policy communications

1. R Shiny app: Use of COVID-19 Information Sources in the American Southeast; built to support NSF Grant No. G00013647, *RAPID: A participatory study of how decision makers and marginalized communities in the U.S. Southeast consume and act on scientific information to mitigate COVID-19*; Harder AM*, **Willoughby JR**, Dunning KH https://avrilmharder.shinyapps.io/multitabbed_app/

EXTENSION, OUTREACH, AND SERVICE

1. Co-advisor for the Auburn Student Chapter of The Wildlife Society (2021-present). This group of undergraduate students are interested in wildlife and the group seeks to increase their knowledge and skills through events, networking, and annual competitions.
2. Jr Minorities in Agriculture, Natural Resources, and Related Sciences (MANRRS) conference contributor; developed and lead ~80 middle and high school students through a hands-on DNA extraction activity (2023) and coding/foraging activity (2024)
3. *Heredity*, Associate Editor; Serve as editor for the journal handling papers through review and publication (2023-present)
4. *Alabama Chapter of The Wildlife Society*, at-large board member; Perform various chapter-level functions including assisting with conference organization and execution, filling the oversight/conflict resolution role in our mentoring program, and acting as one over several liaisons between the chapter and Auburn (2023-2026)