Nathan V. Whelan

Lab Address
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Auburn, AL 36849

My pronouns are: he/him/his

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Research Interests

I am broadly interested in the evolution of biodiversity, how genetic diversity is shaped by changing environments, and the conservation of aquatic species. My research program seeks to understand historical relationships of organisms and how contemporary processes like anthropogenic climate change influence spatial genetic structure. Much of my work includes taxonomy and is field- and collections-based. I have experience with marine invertebrates, and my current work mostly focuses on freshwater mollusks and invertebrate parasites of fishes and mollusks.

Education

2013 Ph.D. Biological Sciences—The University of Alabama, Tuscaloosa, AL
Dissertation: Systematics, Life History, and Conservation of *Leptoxis* (Gastropoda: Cerithioidea: Pleuroceridae).
Adviser: Phillip M. Harris.

2008 B.S. Biology. Cum Laude. Chemistry Minor, Spanish Minor—Truman State University, Kirksville, MO.

Current Positions

July 2016-present *Director Southeast Conservation Genetics Lab*
US Fish and Wildlife Service-Auburn, Alabama

- Principal investigator of government research lab.
- My lab studies evolutionary genomics, molecular ecology, and systematics of aquatic organisms with an emphasis on mollusks and other species of conservation concern.

March 2018-present *Assistant Research Professor*
Auburn University-Auburn, Alabama

- Dual appointment with above position.
- Faculty member in the School of Fisheries, Aquaculture, and Aquatic Sciences in the College of Agriculture.
- Educating and advising students and postdocs.

November 2013-present *Research Associate*
Smithsonian Institution, National Museum of Natural History-Washington, DC

- Collection-based research projects involving the systematics and genomics of freshwater mollusks, primarily Pleuroceridae, Semisulcospiridae, and Unionidae.

Previous Positions

February 2014-July 2016 *Postdoctoral Fellow*
Auburn University-Auburn, AL **Adviser:** Kenneth Halanych

- Researched the evolution of non-bilaterian metazoans and other marine invertebrates using genomic tools.

- Explored performance of amino acid substitution models with phylogenomic sized datasets in simulation and with empirical data.
- Instructor of record for graduate-level bioinformatics class.

May 2013-August 2013 *Mollusk Research Assistant*
May 2011-August 2011
Alabama Department of Conservation and Natural Resources-Marion, AL

- Designed and implemented novel captive propagation and conservation protocols for freshwater snails.
- Curated collections from state-wide mollusk surveys.

May 2012-August 2012 *Predoctoral Fellow* **Adviser:** Ellen Strong
Smithsonian Institution; National Museum of Natural History-Washington, DC

- Performed a research project on morphology and genetic diversity of imperiled freshwater gastropods.

Peer-Reviewed Articles (*Undergraduate author, **Graduate student author, ⁑postdoc author, ^Dual first author)

41. **Whelan, N.V.**, P.D. Johnson, J.T. Garner, N.L. Garrison⁑, E.E. Strong. (2022) Prodigious polyphyly in Pleuroceridae (Gastropoda: Cerithioidea). *Bulletin of the Society of Systematic Biologists*. In Press.

40. Gladstone, N.S.**, E.B. Pieper**, B.J. Dinkins, G.R. Dinkins, **N.V. Whelan**. (2022) The land snails and slugs of Tennessee, USA: taxonomic composition, distribution, and an evaluation of state-wide spatial and taxonomic survey bias. *American Malacological Bulletin*. In Press.

39. Gladstone, N.S.**, M.L. Niemiller, B. Hutchins, B. Schwartz, A. Czaja, M.E. Slay, **N.V. Whelan**. (2022) Subterranean freshwater gastropod biodiversity and conservation in the United States and Canada. *Conservation Biology*. In Press. DOI: 10.1111/cobi.13722

38. Gladstone, N.S.**, **N.V. Whelan**. (2022) Pushing barcodes to their limits: phylogenetic placement of Fontigens Pilsbry, 1933 (Caenogastropoda: Littorinimorpha: Truncatelloidea) and elevation of Fontigentidae Taylor, 1966. *Journal of Molluscan Studies*. 88: eyab038. DOI: 10.1093/mollus/eyab038

37. Redak, C.A.**, A.S. Williams, J.T. Garner, K.M. Halanych, **N.V. Whelan**. (2021) Population genomics of the Rough Hornsnail, *Pleurocera foremani*, following river impoundment. *Journal of Heredity*. 112: 635-645. DOI: 10.1093/jhered/esab065

36. **Whelan, N.V.** (2021) Phenotypic plasticity and the endless forms of freshwater gastropod shells. *Freshwater Mollusk Biology and Conservation*. 24: 87-103, DOI: 10.31931/fmbc-d-20-00015

35. Garrison, N.L.⁑, P.D. Johnson, **N.V. Whelan**. (2021) Conservation genomics reveals low genetic diversity and multiple parentage in the threatened freshwater mussel, *Margaritifera hembeli*. *Conservation Genetics*. 22: 217-231. DOI: 10.1007/s10592-020-01329-8

34. Dutton, H.R.**, L.H. Du Preez, O. Verneau, **N.V. Whelan**, S.A. Bullard. (2021) First record of a polystome from the from the alligator snapping turtle, *Macrochelys temminckii* (Cryptodira:

Chelydridae) or Mississippi; with comments on "*Neopolystoma orbiculare* (Stunkard, 1916)" and its junior subjective synonyms. *Journal of Parasitology*. 107: 74-78. DOI: 10.1645/20-96

33. Whelan, N.V., E.E. Strong. (2021) Genetic diversity and historical demography in *Bellamya* gastropods from the Lake Victoria ecoregion reveal early and severe population collapse. *Molecular Ecology*. 30: 361-363. DOI: 10.1111/mec.15711

32. Ksepka, S.P.**, B. Hickson, **N.V. Whelan**, S.A. Bullard. (2020) A new species of *Myxobolus* Bütschli, 1882 (Bivalvulida: Myxobolidae) infecting stratum spongiosum of the cryptic Sicklefin Redhorse, *Moxostoma* sp., (Cypriniformes: Catostomidae) from the Little Tennessee River, North Carolina, USA. *Folia Parasitologica*. 67: 030. DOI: 10.14411/fp.2020.030

31. Wright, A.D.*, N.L. Garrison⁑, A.S. Williams, P.D. Johnson, **N.V. Whelan.** (2020) Range reduction of Oblong Rocksnail, *Leptoxis compacta*, shapes riverscape genetic patterns. *PeerJ.* 8: e9789. DOI: 10.7717/peerj.9789

30. Roop, H.J., **N.V. Whelan**, A.S. Williams, J. Page. (2020) First record of occurrence and genetic characterization of a population of Northern Snakehead *Channa argus* (Cantor 1842) in Georgia, USA. *BioInvasions Records*. 9: 842-852. DOI: 10.3391/bir.2020.9.4.18

29. Townsend, J.P.**, M.G. Tassia**, A. Damian-Serrano**, **N.V. Whelan**, K.M. Halanych, A.M. Sweeney. (2020) A mesopelagic ctenophore representing a new family, with notes on family-level taxonomy in Ctenophora: *Vampyroctena delmarvensis* gen. nov. sp. nov. (Vampyroctenidae, fam. nov.). *Marine Biodiversity*. 50: 34. DOI: 10.1007/s12526-020-01049-9

28. Kspeka, S.P.**, **N.V. Whelan**, C.M. Whipps, S.A. Bullard. (2020) A new species of *Thelohanellus* Kudo, 1933 (Myxozoa: Bilvalvulida) infecting skeletal muscle of Blacktail Shiner, *Cyprinella venusta* Girard, 1856 (Cypriniformes: Cyprinidae) in the Chattahoochee River Basin, Georgia. *Journal of Parasitology*. 106: 350-359. DOI: 10.1645/19-162

27. Bogantes, V.E.**, **N.V. Whelan**, K. Webster*, A.R. Mahon, K.M. Halanych (2020) Unrecognized diversity of a scale worm, *Polyeunoa laevis* (Annelida: Polynoidae), that feeds on soft coral. *Zoological Scripta*. 48: 236-249. DOI: 10.1111/zsc.12400

26. Ksepka, S.P.**, J.M Rash, **N.V. Whelan**, S.A. Bullard. (2019) A new species of *Myxobolus* (Myxozoa: Bivalvulida) infecting the medulla oblongata and nerve cord of Brook Trout *Salvelinus fontinalis* in southern Appalachia (New River, North Carolina, USA). *Parasitology Research*. 118: 3241-3252. DOI: 10.1007/s00436-019-06472-x

25. Whelan, N.V., M.P. Galaska**, B.N. Sipley**, J.M. Weber*, P. D. Johnson, K.M. Halanych, B.S. Helms. (2019) Riverscape genetic variation, migration patterns, and morphological variation of the threatened Round Rocksnail, *Leptoxis ampla*. *Molecular Ecology*. 28: 1593-1610. DOI: 10.1111/mec.15032

24. Bullard, S.A., J.R. Roberts**, M.B. Warren**, H.R. Dutton**, **N.V. Whelan**, C.F. Ruiz**, T.R. Platt, V.V. Tkach, S.V. Brant, K.M. Halanych. (2019) Neotropical turtle blood flukes: two new genera and species from the Amazon River basin with a key to genera and comments on a marine-derived parasite lineage in South America. *Journal of Parasitology*. 105: 497-523. DOI: 10.1645/19-27

23. Strong, E.E., **N.V. Whelan**. (2019) Assessing the diversity of western North American *Juga* (Semisulcospiridae, Gastropoda). *Molecular Phylogenetics and Evolution*. 136: 87-103. DOI: 10.1016/j.ympev.2019.04.009

22. Warren, M.B.**, H.R. Dutton**, **N.V. Whelan**, R.P.E. Yanong, S.A. Bullard. (2019) First Record of a Species of Mermithidae Braun, 1883 Infecting a Decapod, *Palaemon paludosus* (Palaemonidae). *Journal of Parasitology*. 105: 237-247. DOI: 10.1645/18-168

21. Warren, M.B.**, C.F. Ruiz**, **N.V. Whelan**, D.C. Kritsky, S.A. Bullard. (2019) *Gymnurahemecus bulbosus* gen. et sp. nov. (Digenea: Aporocotylidea) infecting smooth butterfly rays, *Gymnura micrura* (Myliobatiformes: Gymnuridae) in the northern Gulf of Mexico, with a taxonomic key and further evidence for monophyly of chondrichthyan blood flukes. *Parasitology Research.* 118: 751-762. DOI: 10.1007/s00436-018-06202-9

20. Whelan, N.V., K.M. Kocot, T.P. Moroz, K. Mukherjee, P. Williams, G. Paulay, L.L. Moroz, K.M. Halanych. (2017) Ctenophore relationships and their placement as the sister group to all other animals. *Nature Ecology and Evolution*. 1: 1737-1746. DOI: 10.1038/s41559-017-0331-3

19. Whelan, N.V., P.D. Johnson, J.T. Garner, E.E. Strong. (2017) On the identity of *Leptoxis taeniata* – a misapplied name for the federally threatened Painted Rocksnail (Cerithioidea: Pleuroceridae). *Zookeys*. 697: 21-36. DOI: 10.3897/zookeys.697.14060

18. Tassia, M.G.**, **N.V. Whelan,** K.M. Halanych. (2017) Toll-like receptor pathway evolution in deuterostomes. *Proceedings of the National Academy of Sciences*. 114: 7055–7060. DOI: 10.1073/pnas.1617722114

17. Costa-Paiva E.M.*, **N.V. Whelan**, D.S. Waits*, S. Santos, C.G. Schrago, K.M. Halanych. (2017) Discovery and evolution of novel hemerythrin genes in annelid worms. *BMC Evolutionary Biology*. 17: 85. DOI: 10.1186/s12862-017-0933-z

16. Whelan, N.V., K.M. Halanych. (2017) Who let the CAT Out of the Bag? Accurately dealing with substitutional heterogeneity in phylogenomics. *Systematic Biology*. 66: 232-255. DOI: 10.1093/sysbio/syw084

15. Yuanning, L.**, K.M. Kocot, **N.V. Whelan**, S.R. Santos, D.S. Waits, D.J. Thornhill, K.M. Halanych. (2017) Phylogenomics of tubeworms (Siboglinidae, Annelida) and comparative performance of different reconstruction methods. *Zoologica Scripta.* 46: 200-213. DOI: 10.1111/zsc.12201

14. Halanych, K.M.^, **N.V. Whelan^,** K.M. Kocot, A.B. Kohn, L.L. Moroz. (2016) Miscues misplace sponges. *Proceedings of the National Academy of Sciences*. 113: E946-E947. DOI: 10.1073/pnas.1525332113

13. Whelan, N.V., E.E. Strong. (2016) Morphology, molecules and taxonomy: extreme incongruence in pleurocerids (Gastropoda, Cerithioidea, Pleuroceridae). *Zoologica Scripta.* 45: 62-87. DOI: 10.1111/zsc.12139

12. Whelan, N.V. (2016) Radular morphology of extinct pleurocerids (Gastropoda: Cerithioidea: Pleuroceridae). *American Malacological Bulletin*. 33: 221-226. DOI: 10.4003/006.033.0202

11. **Whelan, N.V.,** K.M. Kocot, K.M. Halanych. (2015) Employing phylogenomics to resolve the relationships among cnidarians, ctenophores, sponges, placozoans, and bilaterians. *Integrative and Comparative Biology*. 55: 1084-1095. DOI: 10.1093/icb/icv037

10. **Whelan, N.V.,** K.M. Kocot, L.L. Moroz, K.M. Halanych. (2015) Error, signal, and the placement of Ctenophora sister to all other animals. *Proceedings of the National Academy of Sciences.* 112: 5773-5778. DOI: 10.1073/pnas.1503453112

9. **Whelan, N.V.,** P.D. Johnson, P.M. Harris. (2015) Life-history traits and shell morphology in the genus *Leptoxis* Rafinesque, 1819 (Gastropoda: Cerithioidea: Pleuroceridae). *Journal of Molluscan Studies*. 81: 85-95. DOI: 10.1093/mollus/EYU058

8. **Whelan, N.V.,** K.M. Kocot, S.R. Santos, K.M. Halanych. (2014) Transcriptome sequencing of nemerteans reveals a diverse suite of toxin genes. *Genome Biology and Evolution*. 6: 3314-3325. DOI: 10.1093/gbe/evu258

7. **Whelan, N.V.,** E.E. Strong. (2014) Seasonal reproductive anatomy and sperm storage in pleurocerid gastropods (Cerithioidea: Pleuroceridae). *Canadian Journal of Zoology*. 92: 989-995. DOI: 10.1139/cjz-2014-0165

6. Benstead, J.P., J.M. Hood, **N.V. Whelan,** M.R. Kendrick, D. Nelson, A.F. Hanninen, L.M. Demi. (2014) Dietary P-growth coupling across diverse fish taxa: a meta-analysis of experimental aquaculture studies. *Ecology*. 95: 2768-2777. DOI: 10.1890/13-1859.1

5. Johnson, P.D., A.E. Bogan, K.M. Brown, N.M. Burkhead, J.R. Cordeiro, J.T. Garner, P.D. Hartfield, D.A. Lepitzki, G.L. Mackie, E. Pip, T.A. Tarpley, J.S. Tiemann, **N.V. Whelan,** E.E. Strong. (2013) Conservation status of freshwater gastropods of Canada and the United States. *Fisheries*. 38: 247-282. DOI: 10.1080/03632415.2013.785396

4. **Whelan N.V.,** P.D. Johnson, P.M. Harris. (2012) Rediscovery of *Leptoxis compacta* (Anthony, 1854) (Gastropoda: Cerithioidea: Pleuroceridae). *PLoS One*. 7: e42499. DOI: 10.1371/journal.pone.0042499

3. **Whelan, N.V.,** P.D. Johnson, P.M. Harris. (2012) Presence or absence of carinae between closely related populations of *Leptoxis ampla* (Anthony, 1854) (Gastropoda: Pleuroceridae) is not the result of ecophenotypic plasticity. *Journal of Molluscan Studies*. 78: 231-233. DOI: 10.1093/mollus/eys005

2. **Whelan, N.V.** (2011) Species tree inference in the age of genomics. *Trends in Evolutionary Biology*. 3: e5. DOI: 10.4081/eb.2011.e5

1. **Whelan, N.V.,** A. Geneva, D.L. Graf. (2011) Molecular phylogenetic analysis of tropical freshwater mussels (Mollusca: Bivalvia: Unionoida) resolves the position of *Coelatura* and supports a monophyletic Unionidae. *Molecular Phylogenetics and Evolution*. 61: 504-514. DOI: 10.1016/j.ympev.2011.07.016

Articles in Review or Revision (**Graduate student author, ⁂Postdoc author)

2. **Whelan. N.V.**, K.M. Halanych. Available data support Ctenophora as the sister group to all other Metazoa. In review at *Nature Communications*.

1. Gladstone, N.S.**, N.L. Garrison‡, T. Lane, P.D. Johnson, J.T. Garner, **N.V. Whelan**. Population genomics reveal low differentiation and complex demographic histories in a highly fragmented and endangered freshwater mussel. In revision for invited resubmission to *Aquatic Conservation: Marine and Freshwater Ecosystems*.

Government Reports, Newsletter Articles, and Scientific Blogs (**Graduate student author)

21. Gladstone, N.S., **N.V. Whelan**. (2021) Protecting the living jewels hidden underground: conservation needs of groundwater-restricted snails. *Current Conservation*. April 2021. Available at https://www.currentconservation.org/protecting-the-living-jewels-hidden-underground-conservation-needs-of-groundwater-restricted-snails/

20. Williams, A.S., **N.V. Whelan.** (2021) Molecular confirmation of Gopher Frog (*Lithobates capito*) eggs from South Carolina. Report submitted to USFWS and Bears Bluff National Fish Hatchery.

19. Whelan, N.V., N.S. Gladstone**, A.S. Williams. (2021) Initial phylogenetic analyses support *Patera clarki nantahala* (Helicoidea: Polygyridae) as a valid subspecies. Report submitted to USFWS and Asheville Ecological Services Offices.

18. Gladstone, N.S.**, **N.V. Whelan**. (2021) Assessment of genetic diversity, effective population size, and population connectivity of the threatened Painted Rocksnail (*Leptoxis coosaensis*) and Lacy Elimia (*Elimia crenatella*) in the Mobile River Basin, Alabama.

17. Williams, A.S., **N.V. Whelan.** (2020) Assessment of hatchery contribution and genetic diversity of American shad (*Alosa sapidissima*) in the Edisto River, SC, an update. Report submitted to USFWS and Bears Bluff National Fish Hatchery.

16. Whelan, N.V., N.L. Garrison, J.T. Garner, P.D. Johnson. (2020) Conservation genetics of listed and candidate freshwater snails in the Mobile and Tennessee River drainages, final report. Report submitted to Alabama Department of Conservation and Natural Resources.

15. Williams, A.S., **N.V. Whelan.** (2019) Molecular identification of Gopher Frog (*Rana capito*) raised at Bears Bluff National Fish Hatchery. Report submitted to USFWS and Bears Bluff National Fish Hatchery.

14. Whelan, N.V., N.L. Garrison, J.T. Garner, P.D. Johnson. (2019) Conservation genetics of listed and candidate freshwater snails in the Mobile and Tennessee River drainages, interim report. Report submitted to Alabama Department of Conservation and Natural Resources.

13. Williams, A.S., **N.V. Whelan.** (2019) Assessment of hatchery contribution and genetic diversity of American shad (*Alosa sapidissima*) in the Edisto River, SC, an update. Report submitted to USFWS and Bears Bluff National Fish Hatchery.

12. Williams, A.S., **N.V. Whelan**. (2019) Genetic evaluation of Lake Sturgeon reintroduction program in the Tennessee River, 2019 Annual Report. Report submitted to USFWS and Tennessee River Lake Sturgeon Reintroduction Working Group.

11. Williams, A.S., **N.V. Whelan.** (2018) Assessment of hatchery contribution and genetic diversity of American shad (*Alosa sapidissima*) in the Edisto River, SC. Report submitted to USFWS and Bears Bluff National Fish Hatchery

10. Williams, A.S., **N.V. Whelan**. (2018) Genetic assessment of Striped Bass (*Morone saxatilis*) brood stock repository lakes in the Apalachicola-Chattahoochee-Flint (ACF) River Systems. Report submitted to USFWS and Gulf Strain Striped Bass Recovery Committee.

9. Williams, A.S., **N.V. Whelan**. (2018) Genetic evaluation of Lake Sturgeon reintroduction program in the Tennessee River, 2018 Annual Report. Report submitted to USFWS and Tennessee River Lake Sturgeon Reintroduction Working Group.

8. Helms, B.S., **N.V. Whelan,** L. Tolley-Jordan, K.M. Halanych, B.N. Sipley, D. Wicker, J. Weber, M.P. Galaska. (2017) Population structure of the Round Rocksnail (*Leptoxis ampla*) in the Cahaba River. Report submitted to Alabama Department of Conservation and Natural Resources.

7. Strong, E.E., **N.V. Whelan,** J.T. Garner, P.D. Johnson. (2015) Genetic diversity of the Black Mudalia, *Elimia melanoides* (Conrad 1834) (Caenogastropoda, Pleuroceridae). Report submitted to U.S. Fish and Wildlife Service.

6. **Whelan, N.V.** (2014) Classical methods shed new light on freshwater snail reproduction, with conservation implications. *No Bones About It: NMNH's Invertebrate Biology Blog*. http://nmnh.typepad.com/no_bones/2014/11/classical-methods-shed-new-light-on-freshwater-snail-reproduction-with-conservation-implications.html

5. Evans, R., **N.V. Whelan.** (2014) Recent observation of *Leptoxis* from the Rockcastle River, Kentucky. *Ellipsaria*. 16: 4.

4. **Whelan, N.V.** (2014) Contemporary surveys and new explorations. *Cracking the Collections*. https://crackingthecollections.wordpress.com/2014/07/10/new-explorations/

3. **Whelan, N.V.** (2012) *Leptoxis compacta* (Gastropoda: Pleuroceridae) found for the first time in over 75 years. *Ellipsaria* (cover article). 14: 3.

2. **Whelan, N.V.** (2010) Preliminary results of life history strategies of the freshwater snail genus *Leptoxis* (Cerithioidea: Pleuroceridae) from the southeastern United States. *American Malacological Society Newsletter*. 41: 2.

1. **Whelan, N.V.**, P.M. Harris, P.D. Johnson. (2010) Microsatellite DNA loci primers for *Leptoxis ampla* (Gastropoda: Pleuroceridae). Report submitted to Alabama Department of Conservation and Natural Resources.

Grants and Fellowships **Over $4,021,0179 awarded since 2008**

2021 **Competitive State Wildlife Grant, U.S. Fish and Wildlife Service.** *Advancing Conservation and Restoration of Brook Floater and Associated Freshwater Mussels*. (Co-PI/Auburn University component PI). $1,332,306.43 (Auburn University Component for Genetics: $96,112.29).

2020 **Competitive 1311 funds for Fisheries and Aquatic Conservation, U.S. Fish and Wildlife Service.** *Infrastructure and Standard Operating Procedure for Genetics Data Storage.* (PI). $30,356.

2020 **Competitive 1311 funds for Fisheries and Aquatic Conservation, U.S. Fish and Wildlife Service.** *Genetic Technology Sharing Among Regions*. (PI). $45,417.

2019 **Sea Grant, National Oceanic and Atmospheric Administration.** *Pelagic Ecosystem Research Consortium (PERC) for highly migratory species (HMS) in the Gulf of Mexico and NW Atlantic Ocean*. (Co-PI). $1,600,000 (Auburn University Component: $400,000).

2019 **Competitive 1311 funds for Fisheries and Aquatic Conservation, U.S. Fish and Wildlife Service.** *Systematics and phylogenetics of* Myxobolus*: a needed tool for preventing invasion and controlling spread of disease causing fish parasites*. (PI). $102,000.

2019 **Competitive 1311 funds for Fisheries and Aquatic Conservation, U.S. Fish and Wildlife Service.** *Whole nuclear genome sequencing of a freshwater mussel and two fish*. (PI) $59,000

2018 **Aquatic Nuisance Species Grant, Gulf States Marine Fisheries Commission.** *Novel tools to detect, track, and trace* Myxobolus cerebralis*, (causative agent of whirling disease) in the southeastern United States*. (Co-PI). $25,000.

2018 **Endangered Species Research Funding, Ecological Services, U.S. Fish and Wildlife Service.** *Conservation genomics of Spotfin Chub* Cyprinella monacha *(Cypriniformes: Cyprinidae: Leuciscinae)*. (PI) $20,000.

2017 **Competitive 1311 funds for Fisheries and Aquatic Conservation, U.S. Fish and Wildlife Service.** *Development of genetics management plans for six federally listed animal species*. (PI) $372,151.

2017 **Alabama Department of Conservation Section 6 Grant.** *Conservation genetics of listed and candidate freshwater snails in the Mobile and Tennessee River drainages.* (PI) $62,067

2016 **Smithsonian Institution Global Genome Initiative Research Grant.** *Targeted sequencing and phylogenomics of the critically imperiled Pleuroceridae*. (Co-PI) $29,973

2016 **Alabama Department of Conservation Section 6 Grant.** *Population structure of the Round Rocksnail (*Leptoxis ampla*) in the Cahaba River.* (PI) $33,244

2014 **Alabama Department of Conservation Section 6 Grant.** *Development of Nuclear Molecular Markers for Pleuroceridae Systematics and Conservation Assessment.* (Co-PI) $21,143

2013 **The University of Alabama Graduate Student Travel Award.** $800

2012 **Smithsonian Institution Predoctoral Fellowship.** *Do extreme genetic differences translate to internal morphological differences within "species" of Pleuroceridae (Gastropoda: Cerithioidea)?* $7,650

2012 **American Malacological Society Student Travel Award.** $770

2012 **The University of Alabama Graduate Student Travel Award.** $1150

2011 **National Science Foundation Doctoral Dissertation Improvement Grant**. *Remnants of a diverse past: assessing the phylogenetic position of recently extinct pleurocerid snails (Gastropoda: Pleuroceridae).* DEB-1110638. $14,996

2011 **The University of Alabama Graduate Council Fellowship.** $36,356

2011 **The University of Alabama Graduate School Student Research Grant.** $600

2010 **Alabama Department of Conservation and Natural Resources.** *Microsatellite Development Grant.* (Listed as subcontractor) $5,000

2010 **The University of Alabama Graduate Student Travel Award and International Travel Supplement.** $900

2010 **Conchologists of America Student Research Award.** $1,400

2010 **The University of Alabama Graduate Student Association Travel Grant.** $400

2010 **The University of Alabama Graduate School Travel Grant.** $600

2009 **Birmingham Audubon Society Walter F. Coxe Research Grant.** $1,000

2009 **American Malacological Society Melbourne R. Carriker Student Research Award.** $800

2008 **The University of Alabama, Ecology, Evolution and Systematics 2-year enhancement fellowship.** $55,000

Teaching Experience

2021 *Guest Lecturer*. Limnology. Auburn University

2021 *Guest Lecturer.* Conservation Ecology of Freshwater Invertebrates. Auburn University.

2021 *Guest Lecturer.* Principles of Systematics. The University of Alabama.

2019 *Instructor*. Bioinformatics and Genome Assembly for Conservation Genetics week-long workshop. Auburn University.

2019 *Guest Lecturer*. Agriculture Genetics. Auburn University.

2019 *Guest Lecturer*. Conservation Ecology of Freshwater Invertebrates. Auburn University.

2018 *Instructor.* Gastropod Classification and Identification Workshop. Freshwater Mollusk Conservation Society.

2018 *Instructor.* Phylogenetics Crash Course Workshop. Auburn University.

2017 *Guest Lecturer*. Conservation Biology Learning Community. Auburn University.

2017 *Guest Lecturer*. Agriculture Genetics. Auburn University.

2017 *Guest Lecturer*. Conservation Ecology of Freshwater Invertebrates. Auburn University.

2016 *Guest Lecturer*. Conservation Biology Learning Community. Auburn University.

2016 *Guest Lecturer*. Agriculture Genetics. Auburn University.

2016 *Guest Lecturer*. Introduction to Bioinformatics. Auburn University.

2014 *Instructor*. Python for Bioinformatics. Auburn University.

2014 *Guest Lecturer.* Phylogenetics. Auburn University.

2014 *Guest Lecturer*. Invertebrate Biology. Auburn University.

2013 *Graduate Teaching Assistant*. Anatomy and Physiology II Lab. The University of Alabama.

2013 *Guest Lecturer*. Conservation Biology. The University of Alabama.

2012 *Graduate Teaching Assistant*. Vertebrate Zoology. The University of Alabama.

2012 *Guest Lecturer*. Principles of Systematics. The University of Alabama.

2012 *Guest Lecturer*. Genomics. The University of Alabama.

2011 *Graduate Teaching Assistant*. Introductory Biology II Lab. The University of Alabama.

2007-2008 *Undergraduate Teaching Assistant*. Chemistry for Non-Majors I & II. Truman State University.

2006 *Undergraduate Teaching Assistant*. Introductory Biology II. Truman State University.

2005 *Undergraduate Teaching Assistant*. Introductory Biology I. Truman State University.

Student and Postdoctoral Mentoring

2020-present **Systematics and conservation of Pleuroceridae**
I advise a masters student, Nicholas Gladstone, who is working on mollusk conservation and landscape genomics. As a student in my lab, Nick has received three student research grants from different scientific organizations and a best talk award from the American Malacological Society.

2019-2021 **Conservation genomics of freshwater gastropods.**
I co-advised a PhD student, Caitlin Redak, on a conservation genetics project for the federally endangered freshwater gastropod *Pleurocera foremani*.

2019 **NSF Research Experience for Undergraduates**
I advised an undergraduate researcher, Aaliyah Wright, as a part of the NSF funded REU warm-water aquatic ecology site at Auburn University. The student-led an independent research project focused on conservation genomics of the critically imperiled freshwater gastropod *Leptoxis compacta*, which was published in *PeerJ* with the student as lead author.

2018-2020 **Conservation genomics of freshwater mussels**
I advised a post-doctoral researcher, Nicole Garrison, on a variety of projects that focused on conservation genomics of freshwater mussels. This work had a large policy component as it included development of US Fish and Wildlife Service genetics management plans for threatened and endangered species.

2016-2018 **Population genomics of Round Rocksnail.**
I co-advised a graduate student, Breanna Sipley, on her project on conservation and landscape genomics of a federally threatened freshwater snail.

2014-2015 **Biogeography and population genetics of Antarctic *Thouarella* Octocorals.**
I mentored an undergraduate researcher, Katelynn Webster, on DNA extraction, PCR, sequence analysis, and composing a scientific manuscript.

Invited Talks

11. Whelan, N.V. Systematics and conservation of freshwater gastropods. **Smithsonian Institution National Museum of Natural History, No Bones About It Seminar Series.** March 2021.

10. Whelan, N.V. Genomics as an essential tool for freshwater mussel conservation. **National Conservation Training Center Freshwater Mussel Webinar Series.** July 2020. Recorded at https://training.fws.gov/topic/online-training/webinars/freshwater-mussel-conservation.html

9. Whelan, N.V. Modeling substitutional heterogeneity and its impact on inferring relationships. **www.phyloseminar.org.** October 2016. Recorded at https://www.youtube.com/watch?v=VLcn-jQq5CQ

8. Whelan, N.V. Gastropod and ctenophore phylogenetics: difficult questions require fresh perspectives. **Academy of Natural Sciences Research Seminar Series.** Philadelphia, Pennsylvania. September 2016.

7. Whelan, N.V. Is everything we think we know about animal phylogeny and snail life history wrong? **Auburn University Fisheries and Aquaculture Seminar Series.** Auburn, Alabama. August 2016.

6. **Whelan, N.V.** (speaker), K.M. Kocot, A.B. Kohn, T.P. Tatiana, K. Mukherjee, P. Williams, C. Mills, G. Paulay, L.L. Moroz, K.M. Halanych. Body plan and lifestyle evolution of ctenophores. **Ctenopalooza**. St. Augustine, Florida. March 2016.

5. **Whelan, N.V.** Utilizing genomics to understand aquatic invertebrate evolution. **Field Museum, A. Watson Armour Seminar Series .** Chicago, Illinois. December 2015.

4. **Whelan, N.V.** (speaker), K.M. Kocot, K.M. Halanych. Resolving the metazoan tree of life with advanced bioinformatics pipelines and phylogenetic methods. *Society for Integrative and Comparative Biology Annual Meeting.* **Origins of neurons and parallel evolution of nervous systems: the dawn of neuronal evolution symposium.** West Palm Beach, Florida. January 2015.

3. Halanych, K.M. (speaker), K.M. Kocot, **N.V. Whelan.** Early animal relationships: alternative hypotheses and character inference. *Society for Integrative and Comparative Biology Annual Meeting.* **Origins of neurons and parallel evolution of nervous systems: the dawn of neuronal evolution symposium.** West Palm Beach, Florida. January 2015.

2. **Whelan, N.V.** Systematics and Life History Evolution of Pleurocerid Snails (Cerithioidea: Pleuroceridae). **Truman State University Biology Seminar Series.** Kirksville, Missouri. April 2014.

1. **Whelan, N.V.** Systematics and egg laying evolution of Pleuroceridae (Gastropoda: Cerithioidea). *Annual Meeting of the American Malacological Society.* **Conchologists of America grant winners symposium**. Philadelphia, Pennsylvania. June 2012.

Oral Presentations (*Undergraduate author, **Graduate student author, ‡postdoc author

30. Whelan, N.V. (speaker), N.S. Gladstone, A.S. Williams, J. Mays. Morphological divergence corresponds to genome-wide genetic variation in a terrestrial snail. *Society for Integrative and Comparative Biology Annual Symposium +*. Online. January 2022.

38. Gladstone, N.S. (speaker), M.L. Niemiller, B. Hutchins, B. Schwartz, A. Czaja, M.E. Slay, **N.V. Whelan**. Groundwater snail biodiversity and conservation in the United States and Mexico. *National Cave and Karst Symposium*. San Marcos, Texas. November 2021.

37. Gladstone, N.S. (speaker), P.D. Johnson, **N.V. Whelan**. Evolution of interspecific egg-laying strategies in the freshwater gastropod family Pleuroceridae (Caenogastropoda: Cerithioidea). *Freshwater Mollusk Conservation Society Biennial Symposium.* Online. April 2021.

36. Whelan, N.V., P.D. Johnson, J.T. Garner, N. Garrison, E.E. Strong (speaker). Insights into the biology, biogeography, conservation and systematics of Pleuroceridae (Gastropoda: Cerithioidea) within a new phylogenomic framework. *Freshwater Mollusk Conservation Society Biennial Symposium.* Online. April 2021.

35. Whelan, N.V. Phenotypic plasticity in freshwater gastropods influences shell shape less than you think. *Freshwater Mollusk Conservation Society Biennial Symposium*. Online. April 2021.

34. Whelan, N.V. (speaker), W. Daniel. Roles and activities of the gastropod status and distribution committee. *Freshwater Mollusk Conservation Society Biennial Symposium*. Online. April 2021.

33. Ksepka, S. P.** (speaker), B. H. Hickson, **N. V. Whelan**, & S. A. Bullard. A new species of *Myxobolus* Bütschli, 1882 (Bivalvulida: Myxobolidae) infecting stratum spongiosum of the imperiled sicklefin redhorse, *Moxostoma* sp. (Cypriniformes: Catostomidae) from the Little Tennessee

River, North Carolina, USA. *Auburn Student Research Symposium*. Auburn, Alabama. March 2021.

32. Whelan, N.V. (speaker). Is phenotypic plasticity a common driver of shell shape variation in freshwater gastropods? *Society for Integrative and Comparative Biology Annual Meeting*. Online. January 2021.

31. Gladstone, N.G. (speaker)**, P.D. Johnson, **N.V. Whelan**. Evolution of egg laying behavior in a critically imperiled freshwater gastropod family (Cerithioidea: Pleuroceridae). *Society for Integrative and Comparative Biology Annual Meeting*. Online. January 2021.

30. Whelan, N.V. (speaker)**,** A.S. Williams, C. Redak**, A.A. Wright*, N.L. Garrison⁑, K.M. Halanych, P.D. Johnson, J.T. Garner. Migration patterns and fragmentation drive landscape genomic patterns in freshwater snails. *Society for Integrative and Comparative Biology Annual Meeting*. Austin, Texas. January 2020.

29. Strong, EE. (speaker), **N.V. Whelan**, N.L. Garrison⁑, P.D. Johnson, J.T. Garner. Targeted sequencing and phylogenomics of the critically imperiled Pleuroceridae (Gastropoda: Cerithioidea). *World Congress of Malacology*. Pacific Grove, California. August 2019.

28. Whelan, N.V. (speaker)**,** N.L. Garrison⁑, J.T. Garner, P.D. Johnson, E.E. Strong. Phylogenomics reveals relationships and biogeographic patterns of a critically imperiled group of freshwater snails (Cerithioidea: Pleuroceridae). *Evolution*. Providence, Rhode Island. June 2019.

27. Whelan, N.V. (speaker), P.D. Johnson, J.T. Garner, E.E. Strong. More is better: hundreds of nuclear genes improve understanding of Pleuroceridae (Gastropoda: Cerithioidea) relationships. *Freshwater Mollusk Conservation Society Biennial Symposium*. San Antonio, Texas. April 2019.

26. Garrison, N.L. (speaker)⁑, P.D. Johnson, **N.V. Whelan**. Conservation genomic assessment of wild and captive populations of the Louisiana Pearlshell, *Margaritifera hembeli* (Conrad), using RADSEQ. *Freshwater Mollusk Conservation Society Biennial Symposium*. San Antonio, Texas. April 2019.

25. Warren, M.B.** (speaker), **N.V. Whelan,** S.A. Bullard. Systematics of two species of elasmobranch blood flukes (Digenea: Aporocotylidae) suggest both host-switching and cophyly. *Southeastern Society of Parasitologists*. Starkville, Mississippi. April 2018.

24. Warren, M.B.** (speaker), **N.V. Whelan**, R. Yanong, S.A. Bullard. When something seemingly simple turns out to be not simple: Mermithid-infected eastern grass shrimp (*Palaemonetes paludosus*) (Decapoda: Palaemonidae). *43rd Annual Eastern Fish Health Workshop*. Chattanooga, Tennessee. April 2018

23. Warren, M.B.** (speaker), **N.V. Whelan,** S.A. Bullard. Host-switching and cophyly among blood parasites of early branching gnathostomes. *This is Research Student Symposium.* Auburn Alabama. March 2018

22. Whelan, N.V. (speaker), B.N. Sipley**, M.P. Galaska**, B.S. Helms, P.D. Johnson, K.M. Halanych. Populations of *Leptoxis ampla*, a federally threatened snail species, are surprisingly distinct. *Society for Integrative and Comparative Biology*. San Francisco, California. January 2018.

21. Whelan, N.V. (speaker), A. Maloy, M.Curtis, M. Bartron. Mitochondrial genome sequencing and phylogenetic placement of the functionally extinct Alabama Sturgeon. *Southeastern Fishes Council Annual Meeting*. Chattanooga, Tennessee. November 2017.

20. Johnson, P.D (speaker), **N.V. Whelan**, J. Archambault. Identification of research priorities for North American freshwater gastropods. *Society for Freshwater Science Annual Meeting*. Raleigh, North Carolina. June 2017.

19. Abdelrahman, H.A. (speaker), M. Clay*, C. Figiel, **N.V. Whelan**, B.S. Helms, J. Stoeckel. Use of environmental DNA (eDNA) and the electron transport system (ETS) assay to assess current and future spread of invasive *Orconectes virilis* in the southeastern United States. *Society for Freshwater Science Annual Meeting*. Raleigh, North Carolina. June 2017.

18. Whelan, N.V. (speaker), P.D. Johnson, J.T. Garner, K.M. Halanych, B.S. Helms, E.S. Strong. Applying genomics to advance our understanding of freshwater mollusks. *Freshwater Mollusk Conservation Society Biennial Symposium*. Cleveland, Ohio. March 2017.

17. Strong, E.S. (speaker), **N.V. Whelan**. Filling the gaps: the importance of dense geographic sampling for assessing the diversity of western North American *Juga* (Gastropoda: Semisulcospiridae). *Freshwater Mollusk Conservation Society Biennial Symposium*. Cleveland, Ohio. March 2017.

16. Whelan, N.V. (speaker), K.M. Halanych. Who Let the CAT Out of the Bag? Handling substitutional heterogeneity with data partitioning results in more accurate phylogenies. *Evolution*. Austin, Texas. June 2016.

15. Whelan, N.V. (speaker), K.M. Kocot, A.B. Kohn, T.P. Tatiana, K. Mukherjee, P. Williams, C. Mills, G. Paulay, L.L. Moroz, K.M. Halanych. Phylogenomics resolves relationships among major Ctenophora lineages. *Society for Integrative and Comparative Biology.* Portland, Oregon. January 2016.

14. Whelan, N.V. (speaker), K.M. Halanych. Model choice and metazoan phylogenomics: model complexity does not ensure accurate phylogenetic hypotheses. *The Origins of Metazoa International Workshop*. Giens, France. October 2015.

13. Johnson, P.D. (speaker), A.E. Bogan, K.M. Brown, N.M Burkhead, J.R. Cordeiro, J.T. Garner, P.D. Hartfield, D.A.W. Lepitzki, G.R. Mackie, E. Pip, T.A. Tarpley, J.R. Tiemann, **N.V. Whelan,** E.E. Strong. Update to the conservation status of freshwater gastropods of Canada and the United States. *American Malacological Society Annual Meeting.* Pellston, Michigan. August 2015.

12. Whelan, N.V. (speaker)**,** K.M. Kocot, L.L. Moroz, K.M. Halanych. Error, signal, and the placement of Ctenophora sister to all other animals. *Evolution*. Guarujá, Brazil. June 2015.

11. Whelan, N.V. (speaker)**,** P.D. Johnson, E.E. Strong. Draft genome assembly of *Leptoxis ampla* (Pleuroceridae): a resource for conservation studies. *Freshwater Mollusk Conservation Society Biennial Symposium and Joint Meeting with the Upper Mississippi River Conservation Committee.* St. Charles, Missouri. March 2015

10. Johnson, P.D. (speaker), A.E. Bogan, K.M. Brown, N.M Burkhead, J.R. Cordeiro, J.T. Garner, P.D. Hartfield, D.A.W. Lepitzki, G.R. Mackie, E. Pip, T.A. Tarpley, J.R. Tiemann, **N.V. Whelan,** E.E. Strong. Update to the conservation status of freshwater gastropods of Canada and the United

States. *Freshwater Mollusk Conservation Society Symposium and Joint Meeting with the Upper Mississippi River Conservation Committee.* St. Charles, Missouri. March 2015.

9. **Whelan, N.V.** Modeling life history evolution of a critically imperiled family of freshwater gastropods. *Evolution.* Snowbird, Utah. June 2013.

8. **Whelan, N.V.** (speaker), E.E. Strong, P.D. Johnson. Morphology, molecules, and taxonomy: the pleurocerid problem. *Freshwater Mollusk Conservation Society Symposium.* Guntersville, Alabama. March 2013.

7. Strong, E.E. (speaker), J.T. Garner, P.D. Johnson, **N.V. Whelan**. Divergent haplotypes and implications for phylogeny of the Pleuroceridae using mitochondrial markers. *Freshwater Mollusk Conservation Society Biennial Symposium*. Guntersville, Alabama. March 2013.

6. **Whelan, N.V.** Systematics of *Leptoxis* (Gastropoda: Pleuroceridae). *American Malacological Society Annual Meeting.* Pittsburgh, Pennsylvania. July 2011.

5. **Whelan, N.V.** (speaker), P.M. Harris, P.D. Johnson. Conservation and systematics of *Leptoxis* (Gastropoda: Pleuroceridae). *Freshwater Mollusk Conservation Society Biennial Symposium.* Louisville, Kentucky. April 2011.

4. **Whelan, N.V.** Life history evolution of *Leptoxis* (Gastropoda: Pleuroceridae). *Young Systematists Forum.* London, United Kingdom. December 2010.

3. **Whelan, N.V.** Life history of *Leptoxis* (Gastropoda: Pleuroceridae). *Joint Meeting of the American Malacological Society and the Western Society of Malacologists.* San Diego, California. July 2010.

2. **Whelan, N.V.** (speaker), B. Hartwig, T. Blasingame, D.R. DeCock, J.C. Gering. Advances in the statistical methodology of phylogenetic community ecology. *Association of Southeastern Biologists Annual Meeting.* Birmingham, Alabama. April 2009.

1. **Whelan, N.V.** Team katydid: the math-bio experience. *21st Annual Student Research Conference*. Truman State University, Kirksville, Missouri. April 2008.

Poster Presentations (*Undergraduate student author; **Graduate Student Author)

8. Wright, A.D.*, A.S. Williams, N.L. Garrison, **N.V. Whelan**. Conservation Genetics of *Leptoxis compacta*. *Society for Integrative and Comparative Biology Annual Meeting*. Austin, Texas. January 2020.

7. Redak, C.**, A.S. Williams, K.M. Halanych, **N.V. Whelan**. Genetic diversity and gene flow of an endangered freshwater snail, *Pleurocera foremani*. *Society for Integrative and Comparative Biology Annual Meeting*. Austin, Texas. January 2020.

6. Williams, A.S., **N.V. Whelan**. Assessment of hatchery contribution and genetic diversity of American shad (*Alosa sapidissima*) in the Edisto River, South Carolina. *Southeastern Fishes Council Annual Meeting*. Knoxville, Tennessee. November 2019.

5. Townsend, J.P.**, M.G. Tassia**, A. Damian-Serrano, **N.V. Whelan**, K.M. Halanych, A.M. Sweeney. A colorful, deep sea ctenophore species from the northwest Atlantic Ocean. *Society for Integrative and Comparative Biology Annual Meeting*. San Francisco, California. January 2018.

4. Webster, K.J.*, **N.V. Whelan**, K.M. Halanych. A molecular investigation into the biodiversity and biogeography of Antarctic *Thouarella* (Cnidaria: Octocorallia: Primnoidae). *Society for Integrative and Comparative Biology Annual Meeting.* West Palm Beach, Florida. January 2015.

3. **Whelan, N.V.,** E.E. Strong. Extreme mitochondrial and nuclear phylogenetic discordance in Pleuroceridae (Gastropoda: Cerithioidea). *Evolution.* Snowbird, Utah. June 2013.

2. **Whelan, N.V.**, A. Geneva, D.L. Graf. What if anything is a Unionid? *Ceolatura* Conrad 1852 and the monophyly of the Unionidae (Mollusca: Bivalvia: Unionoida). *London Malacological Society's Malacology Forum.* London, United Kingdom. November 2010.

1. **Whelan, N.V.**, B. Hartwig, T. Blasingame, D.R. DeCock, J.C. Gering. Effects of phylogenetic tree topology and local and regional species richness on NRI and NTI distributions. *Annual Conference for the Society of Mathematical Biology*. San Jose, California. August 2007.

Professional Service

2022 **Invited Panel Reviewer.** National Science Foundation. Graduate Research Fellowship Program.

2021 **Session Moderator.** Freshwater Mollusk Conservation Society Symposium.

2021 **Invited Panel Reviewer.** National Science Foundation. Systematics and Biodiversity Science Cluster

2021 **Invited Panel Reviewer.** National Science Foundation. Graduate Research Fellowship Program.

2020 **Invited Proposal Reviewer.** Society of Systematic Biologists Annual Student Research Grants.

2018-present **Voting Member.** Gastropod Names Subcommittee, Freshwater Mollusk Conservation Society.

2017 **Invited Panel Reviewer.** National Science Foundation. Systematics and Biodiversity Science Cluster

2017 **Invited Expert Reviewer.** Red Wolf Recovery Committee, United States Fish and Wildlife Service.

2017-present **Invited Internal Reviewer for Species Status Assessments.** U.S. Fish and Wildlife Service.

2017-2018 **Invited Proposal Reviewer.** Society of Systematic Biologists Annual Student Research Grants.

2016-present **Editorial Board Member.** *Systematic Biology*

2016-present **Lead Geneticist.** Tennessee River Lake Sturgeon Recovery Committee.

2016-present **Lead Geneticist.** Sicklefin Redhorse Candidate Conservation Agreement.

2016-present **Lead Geneticist.** Gulf Striped Bass Recovery Committee.

2016-2018 **Member.** Snail Darter Recover Committee.

2013-2021 **Chair.** Gastropod Distribution and Status Committee, Freshwater Mollusk Conservation Society.

2012-present **Appointed Member.** Alabama State Gastropod Conservation Priority Committee.

2012-present **Invited Reviewer.** *American Malacological Bulletin, Biological Invasions*, *Conservation Genetics, Ecology and Evolution*, *Freshwater Mollusk Biology and Conservation*, *Freshwater Science*, *Journal of Heredity*, *Heredity*, *Hydrobiologia*, *Invertebrate Systematics, Journal of Molluscan Studies*, *Molecular Biology and Evolution, Molecular Ecology*, *Molecular Ecology Resources, North American Journal of Fisheries Management, Northeastern Naturalist, PLoS One*, *Polar Biology, PeerJ, Proceedings of the Royal Society B*, *Scientific Reports*, *Southwestern Naturalist*, *Systematic Biology, Toxicon*, US Fish and Wildlife Service Mollusk Recovery Plans and Threat Assessments, *Zoological Journal of the Linnean* Society, Zoological *Studies*.

2011-2014 **Appointed Member.** Endangered Species Committee, American Fisheries Society.

2011-2013 **Student Councilor at Large.** American Malacological Society Executive Council.

Awards and Honors

2020 **Science Achievement Award**. Smithsonian Institution National Museum of Natural History.

2018 **Against All Odds Award for commitment to freshwater mollusk conservation in the Cahaba River.** Cahaba River Society.

2016 **30 under 30 award for exceptional young professionals.** Pi Kappa Phi.

2014 **Annual Award for Outstanding Initial Contribution to Malacology.** London Malacological Society.

2012 **Ralph L. Chermock Prize for Most Outstanding Graduate Student**. The University of Alabama, Department of Biological Sciences.

2010 **2nd Prize, Best Student Talk**. The Systematics Association.

2010 **Best Student Oral Presentation**. American Malacological Society.

2009 **Honorable Mention, Best Oral Presentation**. Association of Southeastern Biologists.

2008 **Presidents Academic Achievement Award.** Truman State University.

2004 **President's Combined Ability Scholarship**. Truman State University.

2004 **Foreign Language Scholarship.** Truman State University.

2004 **Missouri Bright Flight Scholarship.**

2004 **National Eagle Scout Association Scholarship.**

Outreach

2021 **Invited professional speaker for Tri-Beta honor society at Columbus State University.**

2021 **Virtual lesson to 9th grade students at Babcock High School in Punta Gordo Florida.**

2019 **Staff training for the Cahaba Environmental Center.** One day training on freshwater mollusk biodiversity and identification in the Cahaba River in central Alabama.

2019-present **Warm Springs National Fish Hatchery Kids-Go-Fish Day.** Annual program to educate kids about recreational fishing and teach basic fishing skills.

2019 **Auburn University School of Fisheries, Aquaculture, and Aquatic Sciences Open House.** Day-long exhibit on freshwater invertebrate ecology with live animal exhibits.

2016-present **Warm Springs National Fish Hatchery Open Houses.** Annual open house and educational event at Warm Springs National Fish Hatchery.

2016 **Greater East Alabama Science and Engineering Fair Judge.**

Judged science fair projects of middle school students from across eastern Alabama.

2015 **NPR's Science Friday video feature.**
I was interviewed for the weekly national broadcast. A video produced by Science Friday about my research was featured on their website: http://www.sciencefriday.com/video/08/03/2015/the-unlikely-tale-of-a-tenacious-snail.html

2014-2016 **Icy Invertebrates Outreach Team.** Auburn University.
Made presentations to K-12 students in Alabama about Antarctic invertebrate biology.

2014-2016 **AU Explore.**
Annual science outreach program to middle school students in eastern Alabama.

2008-2012 **Volunteer Elementary School Science Tutor.** Tuscaloosa's One Place.

Bioinformatics Repositories Available from http://github.com/nathanwhelan

9. **AHE-data-processing** Pipeline and associated scripts for analysis of anchored hybrid enrichment data
8. **population_genomics_scripts** R scripts for population and landscape genomic analyses.
7. **2bRAD-procesing** Bash scripts for pre-processing of 2bRAD population genetic data.
6. **Generate-Sequences** Python and bash scripts for simulating phylogenomic-like datasets using known trees and Indel-Seq-Gen.
5. **Order-Genes-by-Evolutionary-Rate** Python script for ranking evolutionary rate of a set of genes using single-gene trees.
4. **Post-HaMStR-Orthology-Script** Shell script for initial orthology determination using homologous amino acid sequences inferred by HaMStR
3. **Split-Supermatrix-Into-Partitions** R script for splitting a sequence super matrix into individual genes; used primarily to aid analyses on published datasets that require alignments of each gene.
2. **Make-gene-list** Bash script to make a partition list for programs like PartitionFinder and BaCoCa from many single gene alignments.
1. **Automate-PAML-codeml** Python script that automates evolutionary rate analyses for hundreds or thousands of genes using the PAML package codeml.

Field Experience and Research Cruises

2017-present *Freshwater mussel sampling*. Since 2017 I have worked on population genomics projects for freshwater mussels, which has included fieldwork. I have experience sampling threatened and endangered freshwater mussel species, including *Margaritifera hembeli*, *Epioblasma brevidens*, and *Hamiota altilus*.

2008-present *Freshwater gastropod sampling*. Since 2008 I have done frequent sampling for population genetics and systematics studies on freshwater gastropods. I have also done full drainage qualitative surveys, in collaboration with the Alabama Department of Conservation and Natural Resources. Sampling has included threatened and endangered species (e.g., *Leptoxis plicata*, *Athearnia anthonyi*, *Lioplax cyclostomaformis*).

2016 *Research Vessel Sharp*. Chief Scientist: Alison Sweeny. Atlantic Ocean
Midwater sampling of invertebrates with an emphasis on ctenophores and mollusks.

2014 *Research Vessel Oceanus*. Chief Scientist: Craig R. Smith. Pacific Ocean
Recovery of deep-sea landers and processing of samples, particularly *Xylophaga* bivalves and *Osedax* annelids.