

TYLER D. HOSKINS, Ph.D.

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Education

January, 2019-Present

Post-Doctoral Researcher

Purdue University, Dept. of Forestry and Natural Resources, West Lafayette, IN

Focus: Ecotoxicology of per- and polyfluorinated alkyl substances (PFAS) in aquatic and estuarine systems

January, 2019

Ph.D. in Ecology, Evolution, and Environmental Biology

Miami University, Dept. of Biology, Oxford, OH

Dissertation: "Tracking the legacy of early-life exposure to an endocrine disrupting chemical across time, space, and ecological conditions with a non-model anuran"

May, 2011

Bachelor of Science in Biology (Summa Cum Laude, minors in Chemistry and Spanish)

Butler University, Indianapolis, IN

Publications

*Names with ### indicate undergraduate authors

Citations: 88 *H-Index:* 6 *i-10 Index:* 3

Choi Y.J., Lee L.S., **Hoskins T.D.**, Modiri Gharehveran M., Sepulveda, M.S. 2023. Occurrence and implications of per and polyfluoroalkyl substances in animal feeds used in laboratory toxicity testing. *Science of the Total Environment* 867: 161583. <https://doi.org/10.1016/j.scitotenv.2023.161583>

Hoskins, T.D., Allmon E.B., Flynn R.W., Lee L.S., Choi Y.J., Hoverman J.T., Sepulveda, M.S. 2022. An environmentally relevant mixture of Perfluorooctanesulfonic acid and Perfluorohexanesulfonic acid does not conform to additivity in northern leopard frogs exposed through metamorphosis. *Environmental Toxicology and Chemistry* 41: 3007-3016. 10.1002/etc.5486

Flynn, R.W., **Hoskins, T.D.**, Iacchetta M., de Perre, C., Lee, L.S., Sepúlveda, M.S., Hoverman, J.T. 2021. Dietary exposure and accumulation of per- and polyfluoroalkyl substances alters growth and reduces body condition of post-metamorphic salamanders. *Science of the Total Environment* 765: <https://doi.org/10.1016/j.scitotenv.2020.142730>

Foguth, R.M., **Hoskins, T.D.**, Clark, G.C. ###, Nelson, M., Flynn, R.W., de Perre, C., Hoverman, J.T., Lee, L.S., Sepúlveda, M.S.S., Cannon, J.R. 2020. Single and mixture per- and polyfluoroalkyl substances accumulate in Northern leopard frog brains and produce complex neurotransmission alterations. Special Issue, "Leveraging Non-mammalian Models for Developmental Neurotoxicity Testing" in *Neurotoxicology and Teratology* 81: <https://doi.org/10.1016/j.ntt.2020.106907>

Hoskins, T.D., Dellapina, M. ###, Papoulias D.M., and M.D. Boone. 2019. Effects of larval atrazine exposure in mesocosms on Blanchard's cricket frogs (*Acris blanchardi*) reared through overwintering and to reproductive age. *Chemosphere* 220: 845-857.

Hoskins, T.D. and M.D. Boone. 2018. Atrazine feminizes sex ratio in Blanchard's cricket frogs (*Acris blanchardi*) at concentrations as low as 0.1 µg/L. *Environmental Toxicology and Chemistry* 37: 427-435.

Hoskins, T.D. and M.D. Boone. 2017. Variation in malathion sensitivity among populations of Blanchard's cricket frogs (*Acris blanchardi*) and implications for risk assessment. *Environmental Toxicology and Chemistry* 36: 1917-1923.

Hoskins, T.D., Dellapina, M.^{###}, and M.D. Boone. 2017. Short-term atrazine exposure at breeding has no impact on Blanchard's cricket frog (*Acris blanchardi*) reproductive success. *Environmental Toxicology and Chemistry* 36:3284-3288.

Hoskins, T.D., Gantz, J.D., Chaffee, B.R., Arlinghaus, K., Wiebler, J., Hughes, M., and J.J. Fernandes. 2017. Effectiveness of a low-cost, graduate student-led intervention on study habits and performance in introductory biology. *CBE: Life Sciences Education* 16(3):ar43, DOI: 10.1187/cbe.17-01-0004.

Hoskins, T.D. and M.D. Boone. 2015. Evaluating the need for supplemental shallow water access for amphibians in mesocosms. *Copeia* 103: 369-377.

Manuscripts in Review

*Names with ^{###} indicate undergraduate authors. Drafts available upon request.

Hoskins, T.D., Flynn, R.W., Coogan, G.S., Catlin A.C., de Perre, C., Modiri M., Lee, L.S., Hoverman, J.T., Sepúlveda, M.S. *In Review, Environmental Science & Technology*. Chronic exposure to a PFAS mixture resembling AFFF-impacted surface water decreases body size in northern leopard frogs (*Rana pipiens*).

Burcham L.E.^{###}, Allmon E.B., Scherer M.N., Bushong A.G., Hamilton M.T., Macheri S., Coogan G.S.M., Choi Y.J., Lee L.S., Sepulveda M.S., **Hoskins T.D.** *In Review, Chemosphere*. Salinity mediates the toxicity of perfluorooctanesulfonate (PFOS) in an estuarine fish.

Manuscripts in Preparation

*Names with ^{###} indicate undergraduate authors. Drafts are available upon request.

Barragan E.M., **Hoskins T.D.**, Allmon L.B., McQuigg J., Hamilton, M.T., Coogan G.S.M., Choi Y.J., Searle C.L., Hoverman J.T., Sepúlveda M.S. *In Preparation for Environmental Science and Technology*. Toxicities of legacy and current use PFAS in an anuran: do larval exposures influence responses to a terrestrial pathogen challenge?

Pandelides Z., Conder J., Choi Y.J., Allmon E.B., **Hoskins T.D.**, Lee L.S., Hoverman J.T., Sepulveda, M.S. *In Preparation for Environmental Toxicology and Chemistry*. A Critical Review of the Purdue Amphibian PFAS Ecotoxicity Research Studies (2017-2022): Identification of Screening Levels in Water and Other Useful Resources for Site-specific Ecological Risk Assessments.

Grants

Total: \$2,397,960

Total at Purdue: \$2,382,760

16. United States Geological Survey (USGS) 104G Grant. 2022. "PFAS Precursor Bioaccumulation and Biotransformation in Agriculturally Impacted Wetland Food Webs." \$243,776. PI: Maria Sepulveda, Secondary PI: Tyler Hoskins, Co-PI's: Jason T. Hoverman, Youn J. Choi, Linda S. Lee, Dana Kolpin, Laura E. Hubbard, Carrie E. Givens. Role: Co-wrote original grant, edited proposal.

15. EPA STAR, Development of Innovative Approaches to Assess the Toxicity of Chemical Mixtures, 2022. "Protein Binding Affinity as the Driver for Studying PFAS Mixture Toxicity." PI: Maria Sepulveda, Co-PI's: Tyler Hoskins, J.D. Gantz, Jason T. Hoverman, Linda S. Lee, Jerry Leszczynsky. Role: Co-wrote original proposal, edited proposal. \$725,481

14. AgSeed Grant, 2022. "Establishing Northern leopard frogs as a model for toxicology and the global research community through reference genome assembly and annotation." \$48,853. PI: Maria Sepúlveda, Co-PI's: Amanda Pendleton, Tyler Hoskins, Jason Cannon. Role: Co-wrote original draft, edited proposal.

- 13. COVID-19 Research Disruption Grant, 2021.** “Development of Amphibian Poly- and Perfluoroalkyl Substances Toxicity Reference Values for use in Ecological Risk Assessment at Aqueous Film Forming Foam Sites.” \$24,800. PI: Maria Sepúlveda, Co-PI: Tyler Hoskins. Role: edited proposal
- 12. Indiana Water Resources Research Center (IWRRC) 104B Grant, 2021.** “A survey of forever chemicals in Indiana: does agricultural biosolid application contaminate wetland ecosystems with per- and polyfluoroalkyl substances (PFAS)?” \$25,000. Primary PI: Maria Sepúlveda, Secondary PI: Tyler Hoskins, Co-Is: Jason T. Hoverman, Linda S. Lee, Devin K. Jones. Role: wrote grant
- 11. Strategic Environmental Research and Development Program (SERDP), 2020.** “The relative toxicities of current use aqueous film forming foams and next generation alternatives for informing risk assessment.” \$1,300,000. PIs: J.T. Hoverman, M.S. Sepúlveda, L.S. Lee; Investigators: R.W. Flynn and T.D. Hoskins. Role: contributed conceptual diagrams, edited written proposal
- 10. Investments in Excellence Small Grant, Purdue University Dept. of Forestry and Natural Resources, 2019.** “Establishing and African clawed frog (*Xenopus laevis*) colony to enable dose-response studies and to screen for thyroid-mediated toxicity for per- and polyfluoroalkyl substances (PFAS)” \$14,850. PIs: Tyle D. Hoskins and Maria S. Sepúlveda. Role: wrote grant.
- 9. Academic Challenge Grant, Miami University Dept. of Biology, 2016.** “Does the common herbicide atrazine increase parasite infections or co-infections among wild populations of a declining amphibian?” \$1,500. Role: PI, wrote grant.
- 8. Frederick and Helen Gaige Award, The American Society of Ichthyologists and Herpetologists, 2015.** “Single and interactive effects of an endocrine disrupting herbicide, larval competition, and juvenile competition on survival and reproductive potential of an amphibian.” \$500. Role: PI, wrote grant.
- 7. Academic Challenge Grant, Miami University Dept. of Biology, 2015.** “Field prevalence of atrazine-induced gonadal abnormalities in Blanchard’s Cricket Frogs (*Acris blanchardi*): can terrestrial buffers mitigate adverse effects?” \$1,800. Role: PI, wrote grant.
- 6. Academic Challenge Grant, Miami University Dept. of Biology, 2014.** “Single and interactive effects of atrazine exposure and intraspecific competition on terrestrial performance and reproductive potential of a declining amphibian: do traditional approaches underestimate fitness consequences?” \$1,500. Role: PI, wrote grant.
- 5. Institutional Small Grant, Ohio Biological Survey, 2013.** “Fine-scale genetic structure of Blanchard’s cricket frog (*Acris blanchardi*) populations in Southwestern Ohio: can genetic variation explain observed declines?” \$500. Role: PI, wrote grant.
- 4. Grant in Herpetology, Society for the Study of Amphibians and Reptiles, 2012.** “Differential pesticide tolerance among Blanchard’s cricket frog (*Acris blanchardi*) populations: can genetic variation predict susceptibility?” \$500. Role: PI, wrote grant.
- 3. Grant in Aid of Research, Sigma Xi, 2011.** “Variation in pesticide tolerance between diploid and tetraploid treefrogs: does a duplicate genome confer increased resistance?” \$900. Role: PI, wrote grant.
- 2. Undergraduate Student Research Program Grant, 2010.** Holcomb Undergraduate Grants Committee (Butler University), “Does atrazine induce hermaphroditism in American toads (*Bufo americanus*)?” \$4,500. Role: PI, wrote grant
- 1. Butler Summer Institute Grant, 2009.** Holcomb Undergraduate Grants Committee (Butler University), “Does atrazine induce hermaphroditism in American toads (*Bufo americanus*)?” \$3,500. Role: PI, wrote grant.

Awards

- 12. Seed for Success Award, 2020.** Executive Vice President for Research and Partnerships, Purdue University, West Lafayette, IN. \$0.
- 11. Dissertation Scholarship, 2017.** Office for Advancement of Research and Scholarship, Miami University Graduate School, Oxford, OH. \$19,948.
- 10. Graduate Student Teaching Award, 2017.** Miami University College of Arts and Sciences, Oxford, OH. \$500.
- 9. Biology Graduate Student Publication Award, 2017.** Miami University Dept. of Biology, Oxford, OH. \$300.
- 8. Henri Seibert Award: Conservation, 2015.** Society for the Study of Amphibians and Reptiles (SSAR) Annual Meeting, Best Student Paper in Conservation. “Tracking the legacy of larval atrazine exposure throughout the life cycle of Blanchard’s cricket frogs (*Acris blanchardi*).” \$200.
- 7. Graduate Student Achievement Award, 2015.** Office for Advancement of Research and Scholarship, Miami University Graduate School, Oxford, OH. \$200.
- 6. Transforming Nature Fellowship, 2014.** Miami University, Oxford, OH. \$1,200.
- 5. National Science Foundation Graduate Research Fellowship Program (NSF-GRFP) Honorable Mention Award, 2013.** National Science Foundation. “Effects of larval atrazine exposure in the context of the full lifecycle of an amphibian: translating individual-level effects to population-level consequences.”

4. **Best Student Poster, Ohio Valley Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, 2012.** Hoskins, T. D., Robbins, L. R., and M. D. Boone. "Variation in tolerance of insecticides with varying modes of action within a population of Blanchard's cricket frogs," Oxford, OH, \$200.
 3. **Academic Achievement Assistantship, 2011.** Miami University Dept. of Zoology, \$5000.
 2. **Outstanding Senior in Biology, 2011.** Butler University, Dept. of Biological Sciences.
 1. **John Potzger Award for Achievement in Environmental Science, 2010.** Butler University Dept. of Biological Sciences \$500.
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Presentations

Invited Talks

*authors in **bold** delivered presentation

7. **Hoskins, T.D. 2023.** "Critical contributions by amphibians and reptiles to ecotoxicology: Endocrine disruption. Guest Lecture, Herpetology Course, Drew University. Virtual.
6. **Hoskins, T.D.**, and Sepúlveda M.S. 2022. "A survey of forever chemicals in Indiana: Does agricultural biosolids application contaminate wetland ecosystems with per- and polyfluoroalkyl substances (PFAS)?" Indiana Water Resources Symposium, Nashville, IN.
5. **Hoskins, T.D.** 2021. "The Interplay between Wetlands and Pollution in Indiana," Virtual Forum on IN Wetlands II, Where are we now?, Purdue University, Center for the Environment. Virtual.
4. **Hoskins, T.D.** 2019. "Exploring the consequences of early life exposure to endocrine disrupting chemicals across time, space, and ecological conditions with amphibians," EcoLunch Seminar Series, Purdue University, Dept. of Biology.
3. Hoskins, T. D., **Gantz, J. D.**, and J. Fernandes, 2018. "Effectiveness of a low-cost, graduate student-led intervention on performance and study habits in introductory biology," Ohio Project Kaleidoscope Annual Meeting, Association of American Colleges and Universities.
2. **Hoskins, T.D., Strasburg, M., and J.D. Gantz,** 2017. "How to Take Notes Effectively," an interactive workshop on study habits in STEM courses to incoming freshman in the NSF-sponsored LSAMP program at Miami University. Louis Stokes Alliance for Minority Participation (LSAMP) Early Arrival Workshop, Miami University, Oxford, OH. August 2017.
1. **Hoskins, T.D.**, and M. D. Boone, 2015. "Consequences of early-life exposure to an endocrine disrupting chemical in an amphibian." Departmental Seminar, Butler University, Department of Biological Sciences, Indianapolis, IN.

Conferences

*authors in **bold** delivered presentation

12. **Hoskins, T.D.**, Choi, Y.J., Scherer, M.S., Bushong, A.G., Hamilton, M.T., Hoverman J.T., Lee, L.S., Sepúlveda, M.S. 2022. Agricultural biosolid application contaminates constructed wetlands with per- and polyfluorinated alkyl substances (PFAS). Society of Environmental Toxicology and Chemistry Annual Meeting, Pittsburgh, PA. Poster Presentation.
11. **Hoskins, T.D.**, Flynn R.W., Pérez, E.R., Hoverman, J.T., de Perre, C., Lee, L.S., Sepúlveda, M.S. 2019. Effects of per- and polyfluoroalkyl substance mixtures reflective of aqueous film forming foam (AFFF) sites on Northern leopard frog (*Rana pipiens*) development: is perfluorooctane sulfonate the primary driver? Society of Environmental Toxicology and Chemistry Focused Meeting, "Environmental Risk Assessment of PFAS, Durham, NC. Poster presentation.
10. **Hoskins, T.D.**, Wetsch, O.O., and M.D. Boone. 2017. Does atrazine impact wild populations of Blanchard's cricket frogs? Society of Environmental Toxicology and Chemistry Annual Meeting, Minneapolis, MN. Poster Presentation.
9. **Hoskins, T.D.** and M.D. Boone. 2017. "Effects of ecologically relevant concentrations of atrazine on somatic and gonadal development in Blanchard's cricket frogs (*Acris blanchardi*)." Midwest Ecology and Evolution Conference (MEEC), Oxford, OH. Poster Presentation.
8. **Hoskins, T.D.**, Wetsch, O.O., and M.D. Boone. 2017. Does atrazine impact wild populations of Blanchard's cricket frogs? Midwest Partners in Amphibian and Reptile Conservation (MWPARC) Annual Meeting, Martinsville, IN. Poster presentation.
7. **Hoskins, T.D.** and M.D. Boone. 2016. "Effects of ecologically relevant concentrations of atrazine on somatic and gonadal development in Blanchard's cricket frogs (*Acris blanchardi*)." 3rd Ohio Amphibian Research & Conservation Conference, Columbus, OH. Poster Presentation.
6. **Hoskins, T.D.**, and M.D. Boone. 2015. "Tracking the legacy of larval atrazine exposure throughout the life cycle of Blanchard's cricket frogs (*Acris blanchardi*)." Society for the Study of Amphibians and Reptiles (SSAR) Annual Meeting, Lawrence, KS. Verbal Presentation.

5. **Hoskins, T.D.**, Gantz, J.D., Chaffee, B.R., Arlinghaus, K., Wiebler, J., Hughes, M., and J.J. Fernandes. 2015. "A supplemental study skills course improves study habits and student performance in introductory biology." Lilly Conference on College Teaching, Miami University, Oxford, OH. Poster Presentation.
4. **Hoskins, T.D.**, and M.D. Boone. 2012. "Fine-tuning mesocosms: effects of shallow water access on two anuran species." World Congress of Herpetology 7, Vancouver, BC, Canada. Poster Presentation.
3. **Hoskins, T.D.**, OTHERS. 2012. "Variation in tolerance of insecticides with varying modes of action within a population of Blanchard's cricket frogs," Ohio Valley Chapter of the Society of Environmental Toxicology and Chemistry Annual Meeting, Oxford, OH. Poster Presentation.
2. **Hoskins, T.D.**, and C.M. Hess. 2011. "Does atrazine induce sex-reversal in American toads (*Bufo americanus*)?" Butler University Undergraduate Research Conference, Indianapolis, IN. Verbal Presentation.
1. **Hoskins, T.D.**, and C.M. Hess. 2010. "Does atrazine exposure induce hermaphroditism in American toads (*Bufo americanus*)?" Society for Integrative and Comparative Biology Annual Meeting, Seattle, WA. Poster Presentation.

Teaching Experience

Instructor of Record

4. **Ecotoxicology** (FNR 52700). Spring 2023. Purdue University, West Lafayette, IN.
3. **Pedagogy for Graduate Students** (Biology 689). Fall 2014, Fall 2015, Fall 2016, Fall 2017. Miami University, Oxford, OH.
2. **Environmental Science** (Biology 121). Spring 2016. Miami University, Oxford, OH.
1. **Skills and Approaches for Success in the Sciences** (Biology/Microbiology 104). Spring 2013, Fall 2013, Spring 2014, Fall 2014, Spring 2015. Miami University, Oxford, OH.

Teaching Assistant

1. **Natural Resources Practicum, "Ecological Health of the Iron River,"** (Forestry and Natural Resources 37100, Field Practicum). Summer 2021, 2022. Purdue University, West Lafayette, IN.
1. **Natural Resources Practicum, "Ecological Health of Indian Creek,"** (Forestry and Natural Resources 37100, Field Practicum). Fall 2020. Purdue University, West Lafayette, IN.
2. **Human Anatomy and Physiology**, (Biology 161 Laboratory). Lead TA; Fall 2016, Spring 2017. TA: Fall 2015, Fall 2018. Miami University, Oxford, OH.
3. **Biological Concepts: Ecology, Evolution, Genetics, and Diversity**, (Biology 115 Laboratory). Fall 2011, Spring 2011, Fall 2012, Fall 2013. Miami University, Oxford, OH.
4. **Biological Concepts: Structure, Function, Cellular, and Molecular Biology**, (Biology 116 Laboratory). Spring 2012, Spring 2013. Miami University, Oxford, OH.

Professional Activities and Service

Graduate Student Committees

Anna Bushong, M.S. Student, Purdue University, Dept. of Forestry and Natural Resources. Expected graduation: August 2023. Thesis: Evaluating Effects of Perfluorinated Alkyl Substances (PFAS) on Anuran Lipid Homeostasis through *Xenopus laevis* Body Condition.

Meredith Scherer, M.S. Student, Purdue University, Dept. of Forestry and Natural Resources. Expected Graduation: May 2023. Thesis: Developmental Toxicokinetics and Effects of Per- and Polyfluoroalkyl Substances (PFAS) in *Xenopus laevis*.

Graduate Students Mentored

Evelyn Barragan, M.S. (August 2019-May 2022). Thesis: Toxicities of Legacy and Current Use PFAS in an Anuran: Do Larval Exposures Influence Responses to a Terrestrial Pathogen Challenge?

Undergraduates Mentored

Sophia Horn (Summer 2022-Present), Summer Brown (Fall 2023-Present), Jenna Schoonmaker (Winter 2023-Present), Hallie Jackson (Winter 2023-Present), Claire Fisher (Fall 2022-Present), Trip Newton (Spring 2022-Summer 2022), Emma Engel (Spring 2022-Present), Lucy Burcham (Fall 2019-Spring 2022), Emily Musenbrock (Winter-Spring 2019), Olivia Wetsch (Fall 2015-Fall 2018), Hannah Vollmer (Fall 2016-Fall 2017), Maria Dellapina (Fall 2014-Spring 2016), Abigail Wilson (Fall 2014-Winter 2016), Braiam Rosado (Summer 2015), LaShay Robbins (Summer 2012).

Outreach

5. **Transforming Nature Fellowship, Public Exhibition**, 2014. Oxford Community Arts Center, Oxford, OH
4. **McGuffey Montessori Amphibian Education, Volunteer**, 2014. McGuffey Montessori School, Oxford OH.
3. **Talawanda Schools Science Week Amphibian Module, Volunteer**, 2013. Miami University, Oxford, OH
2. **Miami BRIDGES Academic Module, Volunteer**, 2013. Miami University, Oxford, OH
1. **Talawanda Schools Science Week Amphibian Module, Volunteer**, 2012. Miami University, Oxford, OH

Service

6. **Lafayette Regional Science Fair Judge**, 2019. Lafayette Regional Science Fair, West Lafayette, IN
5. **Professional Development Panel Leader**, 2016. Midwest Ecology and Evolution Conference, Oxford, OH.
4. **Mock Client for Statistics Data Practicum Course**, 2016. Miami University, Oxford, OH
3. **Secretary, Miami University Biology Graduate Student Association**, Spring 2015-2016. Miami University, Oxford, OH.
2. **Faculty Advisor, Miami University Fishing Club**, Spring 2014-2016. Miami University, Oxford, OH.
1. **Scientific Consultant for Sculpture Course**, 2014. Miami University, Hamilton Campus, Hamilton, OH.

Other Professional Activity

Societies: Sigma Xi, Herpetologists' League, Society for the Study of Amphibians and Reptiles, American Society of Ichthyologists and Herpetologists, Society of Environmental Toxicology and Chemistry

Ad Hoc Reviewer for Journals: *Aquatic Toxicology*, *Environmental Pollution*, *Hydrobiologia*, *Urban Ecosystems*, *Ecotoxicology*, *Chemosphere*, *Science of the Total Environment*, *Ecotoxicology and Environmental Safety*, *Herpetological Review*

Public Interest

Featured quote in, "Healthy frogs can mysteriously reverse their sex," Douglas Main, National Geographic Online, March 21, 2019: <https://www.nationalgeographic.com/animals/2019/03/frogs-reverse-sex-more-often-than-thought/?cmpid=org=ngp::mc=social::src=twitter::cmp=editorial::add=tw20190321animals-frogsexreversal::rid=&sf209705675=1>