

Justin P. Lawrence

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Education

- 2018 University of Mississippi
 Ph.D. in Biology
 Advisor: Brice Noonan
 Impacts and Implications of Polytypism on the Evolution of Aposematic Coloration
- 2011 Michigan State University
 M.S. in Fisheries and Wildlife
 Co-Advisors: Gerald Urquhart and Kelly Millenbah
 The Diversity, Distribution, and Conservation of a Polymorphic Frog (Oophaga pumilio) in Western Panama
- 2006 Michigan State University
 B.S. in Zoology – Magna cum laude

Professional Experience

- 2020 - Present Academic Specialist, Biology
 Lyman Briggs College
 Michigan State University
- 2018 - 2019 Postdoctoral Scholar
 University of California, Irvine
 Advisor: Adriana Briscoe
- 2016 Visiting Research Fellow
 Western Sydney University
 Advisor: Kate Umbers
- 2015 Visiting Research Fellow
 University of Newcastle
 Advisor: Michael Mahony

Peer-Reviewed Publications

10. Gaieck, W., **J.P. Lawrence**, M. Montchal, W. Pandori, and E. Valdez-Ward. 2020. Opinion: Science policy for scientists: A simple task for great effect. *Proceedings of the National Academy of Science* 117 (35): 20977-20981.
9. **Lawrence, J.P.***, B. Rojas*, A. Fouquet, J. Mappes, A. Blanchette, R.A. Saporito, R.J. Bosque, E.A. Courtois, and B. Noonan. 2019. Weak warning signals can persist in the absence of gene flow. *Proceedings of the National Academy of Science*. 116 (38): 19037-19045.
*Equal contributions

8. Umbers, K.D.L., J.L. Riley, M.B.J. Kelly, G. Taylor-Dalton, **J.P. Lawrence**, and P.G. Byrne. 2020. Educating the enemy: Harnessing learned avoidance behaviour in wild predators to increase survival of reintroduced Southern Corroboree Frogs. *Conservation Science and Practice*. 2: e139.
7. **Lawrence, J.P.** 2018. Population estimates and spatial distributions of *Oophaga pumilio* in a forest edge landscape and implications for conservation. *Phyllomedusa* 17: 247-253.
6. Bosque, R.J., **J.P. Lawrence**, R. Buchholz, G.R. Colli, J. Heppard, and B.P. Noonan. 2018. Diversity of warning signal and social interaction influences the evolution of imperfect mimicry. *Ecology and Evolution* 8:7490–7499.
5. **Lawrence, J.P.**, M. Mahony, and B.P. Noonan. 2018. Differential responses of avian and mammalian predators to phenotypic variation in Australian Brood Frogs. *PLoS ONE* 13 (4) e0195446.
4. **Lawrence, J.P.** and B.P. Noonan. 2018. Avian learning favors colorful, not luminous, signals. *PLoS ONE* 13 (3): e0194279.
3. **Lawrence, J.P.** 2017. *Hypsiboas cinerascens* predation. *Herpetological Review* 48 (2): 409.
2. **Lawrence, J.P.** 2017. Ineffectiveness of call surveys for estimating population size in a widespread Neotropical frog, *Oophaga pumilio*. *Journal of Herpetology* 51:52-57.
1. **Lawrence, J.P.** 2011. *Oophaga pumilio* (Strawberry Dart Frog) habitat use. *Herpetological Review* 42: 90.

In Review and In Prep

- Lawrence, J.P.**, B. Rojas, J. Mappes, J. Yeager, and J. Endler. 2021. Polymorphism and polytypism revisited: When phenotype varies across a landscape but terminology does not. *In prep.*
- Lawrence, J.P.** 2021. Variable conservation of morphological features in a polytypic frog (*Oophaga pumilio*). *In prep.*
- Lawrence, J.P.** and G.R. Urquhart. 2021. Demographic responses in a population of the Strawberry Poison Frog (*Oophaga pumilio*) after resource manipulations. *In prep.*

Grants and Fellowships (\$55,181)

2019	American Philosophical Society Franklin Grant, \$6000 Weaving the Future of Animal Behavior Grant, \$2000 Society for the Study of Evolution Congressional Visit Days Grant, \$1194 The Wildlife Society Southern California Chapter Travel Grant, \$962
2016	Endeavour Research Fellowship, \$17910
2015	North American Nature Photography Association College Scholarship, \$1000 National Science Foundation East Asia and Pacific Summer Institutes Fellowship, \$10965
2013	Smithsonian Tropical Research Institute A. Stanley Rand Fellowship, \$3100 Society for the Study of Amphibians and Reptiles Grant in Herpetology, \$500

- 2012 University of Mississippi Graduate Student Council Research Grant, \$1000
 American Society of Ichthyologists and Herpetologists Gaige Award, \$500
 University of Mississippi Summer Research Assistantship, \$2600
- 2011 Michigan State University Graduate School Travel Funding Fellowship, \$350
 Michigan State University Fisheries and Wildlife Graduate Student Organization
 Travel Fellowship, \$100
- 2010 Michigan State University Graduate School Research Extension Fellowship,
 \$1000
- 2009 Michigan State University College of Agriculture and Natural Resources Summer
 Research Fellowship, \$6000

Conference Talks

*Speaker

- Lawrence, J.P.***, M. Mahony, and B.P. Noonan. Differential responses of avian and mammalian predators to phenotypic variation in Australian Brood Frogs. Behaviour 2019, Chicago, Illinois.
- Lawrence, J.P.***, M. Mahony, and B.P. Noonan. Differential responses of avian and mammalian predators to phenotypic variation in Australian Brood Frogs. Evolution 2019, Providence, Rhode Island.
- Lawrence, J.P.***, B. Rojas, A. Fouquet, J. Mappes, A. Blanchette, R.A. Saporito, R.J. Bosque, and B. Noonan. Evolution and origin of polymorphism in aposematic species. Evolution 2017, Portland, Oregon.
- Lawrence, J.P.***, B. Rojas, A. Fouquet, R.J. Bosque, E.A. Courtois, J. Mappes, and B. Noonan. 2016. Aposematic signal optimization in a polytypic species. Australian Society of Herpetologists Meeting 2016, Launceston, Tasmania, Australia.
- Lawrence, J.P.***, B. Rojas, A. Fouquet, E.A. Courtois, J. Mappes, and B. Noonan. 2015. Directional Selection on Color in the Dyeing Poison Frog, *Dendrobates tinctorius*. Behaviour 2015, Cairns, Queensland, Australia.
- Lawrence, J.P.***, B. Rojas, A. Fouquet, E.A. Courtois, J. Mappes, and B. Noonan. 2014. Directional Selection on Color in the Dyeing Poison Frog, *Dendrobates tinctorius*. Evolution 2014, Raleigh, North Carolina.
- Lawrence, J.P.*** 2011. The Diversity, Distribution, and Conservation of a Polymorphic Frog (*Oophaga pumilio*) in Western Panama. Michigan Amphibian and Reptile Research Symposium, Central Michigan University.
- Lawrence, J.P.*** 2010. Conservation of a Polymorphic Frog. Michigan Amphibian and Reptile Research Symposium, University of Michigan – Flint.
- Lawrence, J.P.*** 2010. Conservation of a Polymorphic Frog in Western Panama. Michigan State University Fisheries and Wildlife GSO Symposium. Michigan State University.
- Lawrence, J.P.*** 2009. Conservation of a Polymorphic Frog. Michigan Amphibian and Reptile Research Symposium. Michigan State University.

Poster Presentations

*Presenter

- Lawrence, J.P.***, A.G. Rangel Olguín, and A.D. Briscoe. 2019. Unveiling eye molecular evolution by gene-duplication analysis in Lepidoptera. Evolution 2019, Providence, Rhode Island.
- Lawrence, J.P.***, M. Mahony, and B.P. Noonan. 2018. Differential responses of avian and mammalian predators to phenotypic variation in Australian Brood Frogs. Early Career Scientists Symposium. Ann Arbor, Michigan.
- Kelly, M.B.J.*, G. Taylor-Dalton, **J.P. Lawrence**, P.G. Byrne, and K.D.L. Umbers. 2016. Does the spectacular colouration protect the Southern Corroboree Frog, *Pseudophryne corroboree*, from predation? Australasian Society for the Study of Animal Behaviour Meeting. Katoomba, New South Wales, Australia.
- Lawrence, J.P.***, B. Rojas, A. Fouquet, E.A. Courtois, J. Mappes, and B. Noonan. 2014. Directional Selection in the Dyeing Poison Frog (*Dendrobates tinctorius*). University of Mississippi Graduate Research Symposium. Oxford, Mississippi.
- Lawrence, J.P.*** and G.R. Urquhart. 2011. Population Demographic Changes Due to Addition of Artificial Rearing Sites in the Strawberry Poison Dart Frog (*Oophaga pumilio*). Joint Meeting of Ichthyologists and Herpetologists. Minneapolis, Minnesota.
- Lawrence, J.P.*** 2009. Conservation of a Polymorphic Frog (Dendrobatidae: *Oophaga pumilio*) in Western Panama. Michigan State University Fisheries and Wildlife GSO Symposium. East Lansing, Michigan.

Awards and Honors

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| 2018 | Science Communication Workshop Award Recipient
<i>International Wildlife Film Festival, Missoula, Montana</i> |
| 2017 | Hamilton Symposium Award Finalist
<i>Evolution 2017 Conference</i>
Graduate Student Achievement Award
<i>University of Mississippi</i> |
| 2016 | Runner-up for Talk Given by PhD Student
<i>2016 Australian Society of Herpetologists Meeting</i> |
| 2014 | First Place Poster
<i>University of Mississippi Research Symposium</i> |

Teaching Experience

Michigan State University

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| 2020-
Present | <i>Instructor, Biology II: Cell and Molecular Biology (LB 145) – 3 Semesters</i>
Created course material for lectures and labs. Designed course activities, honors options, and methods to evaluate student progress and retention for 330 students. Supervised 2 graduate teaching assistant and 25 undergraduate learning assistants. |
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University of Mississippi

- 2011-2018 *Lab Coordinator, Genetics (BISC 336) – 2 Semesters*
Created lab modules, exams, quizzes, syllabi, and assignments for ~430 students while supervising 5 graduate teaching assistants. Designed barcoding lab to explore concepts of sequencing and phylogenetic trees.
- Teaching Assistant, Genetics (BISC 336) – 10 Semesters*
Sophomore-Junior level course teaching Mendelian, Molecular, and Population genetics.
- Teaching Assistant, Biological Science I Laboratory (BISC 161) – 1 Semester*
Freshmen level course for introductory biology including statistics, ecology, and genetics. Created presentations and graded material.

Michigan State University

- 2005-2012 *Course Instructor, Environmental Studies in Costa Rica (NSC 475, NSC 491, ZOL 490, ZOL 494) – 2 Programs*
Junior-Senior level study abroad program that covered tropical ecology and biodiversity and the environmental issues facing tropical countries with a particular focus on Costa Rica. Created syllabus and graded material.
- Course Instructor, Wild Borneo! Biodiversity in Southeast Asia (NSC 490, NSC 491) – 1 Program*
Junior-Senior level study abroad program that covered tropical ecology and biodiversity of southeast Asia, focusing on Borneo. Responsible for creating syllabus and graded material.
- Teaching Assistant, Wild Borneo! Biodiversity in Southeast Asia (NSC 490, NSC 491) – 1 Program*
Junior-Senior level study abroad program that covered tropical ecology and biodiversity of southeast Asia, focusing on Borneo.
- Teaching Assistant, Environmental Studies in Costa Rica (NSC 490, NSC 491) – 2 Programs*
Junior-Senior level study abroad program that covered tropical ecology and biodiversity and the environmental issues facing tropical countries with a particular focus on Costa Rica.
- Teaching Assistant, Tropical Biodiversity and Conservation in Panama (LB 493) – 2 Programs*
Upperclassmen study abroad program that used scientific observation to teach tropical biology in lowland tropical rainforest and high elevation cloud forest.
- Teaching Assistant, Biology of Amphibians and Reptiles (ZOL 384) – 4 Semesters*
Junior-Senior level course for biology of amphibians and reptiles, which included taxonomy, evolutionary history, and species identification.
- Teaching Assistant, Introductory Biology (LB 144) – 7 Semesters*
Freshmen level course for introductory biology including ecology, genetics, evolution, and comparative biology.

Mentor Experience

- André Smith – University of Mississippi (2017 – 2020). Dietary specialization in the Dyeing Poison Frog (*Dendrobates tinctorius*). University of Mississippi Track-1 Summer Research Fellowship. 2020 Graduate, current student at Meharry Medical College.
- Alex Oliveri – University of Mississippi (2018 – 2020). Predator learning of automimicry signals. Currently an undergraduate.
- Peter Andes – University of Mississippi (2017 – 2020). Invertebrate response to alkaloid toxins in the Dyeing Poison Frog (*Dendrobates tinctorius*). 2018 graduate.
- Matthew McPherson – University of Mississippi (2018 – 2020). Predator learning of automimicry signals. 2019 graduate
- Matthew Amann – University of Mississippi (2015 – 2016). Toxin variation in the Dyeing Poison Frog (*Dendrobates tinctorius*). 2017 graduate.
- Winston Wolters – University of Mississippi (2015 – 2016). Toxin variation in the Dyeing Poison Frog (*Dendrobates tinctorius*). 2016 graduate.
- Michael Kelly – Western Sydney University (2016). Conservation of the southern corroboree frog (*Pseudophryne corroboree*). 2016 graduate of University of Sydney.
- Griffin Taylor-Dalton – Western Sydney University (2016). Conservation of the southern corroboree frog (*Pseudophryne corroboree*). 2017 graduate.
- John Constan – Michigan State University (2013). Predator responses to known and novel phenotypes in the Dyeing Poison Frog (*Dendrobates tinctorius*). 2013 graduate, currently pursuing medical degree at Michigan State University.
- Tim Muhich – Michigan State University (2011 – 2013). Demographic responses to resource manipulations in the Strawberry Poison Frog (*Oophaga pumilio*). 2012 graduate, currently teaching high school.
- Keith Erickson – Michigan State University (2010). Population dynamics of the Strawberry Poison Frog (*Oophaga pumilio*). 2012 graduate of Arapahoe Community College.
- Isaac Standish – Michigan State University (2010). Population dynamics of the Strawberry Poison Frog (*Oophaga pumilio*). 2011 B.S. graduate and 2016 Ph.D. graduate from Michigan State University.

Guest Lectures

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| 2020 | <i>Aposematism: A review</i>
Invited seminar, Ecology and Evolution of Color Signals and Related Phenomena, Universidade Federal do Paraná, Brazil |
| 2019 | <i>Predators, Prey, and Perception: How Warning Signals Diversify and Proliferate</i>
Invited seminar, Loyola University Chicago
<i>Aposematism: What it is and how does it evolve?</i>
Animal Coloration and Vision (E145), University of California, Irvine |
| 2018 | <i>Population and Evolutionary Genetics</i>
Genetics (BISC 336), University of Mississippi |

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- 2011 *Introduction to Ecology and Biomes*
Introductory Biology (LB 144), Michigan State University
- 2010 *Neotropical Herpetofauna Trends and Threats*
Biology of Amphibians and Reptiles (ZOL 384), Michigan State University
- 2009 *Neotropical Herpetofauna Trends and Threats*
Biology of Amphibians and Reptiles (ZOL 384), Michigan State University
Conservation Biology and Restoration Ecology
Introductory Biology (LB 144), Michigan State University
Threats to Amphibian Diversity
Introductory Biology (LB 144), Michigan State University
- 2008 *Neotropical Herpetofauna Trends and Threats*
Biology of Amphibians and Reptiles (ZOL 384), Michigan State University
- 2007 *Neotropical Herpetofauna Trends and Threats*
Biology of Amphibians and Reptiles (ZOL 384), Michigan State University

Service and Outreach

- Outreach Presentations *Tracking Snow*. 2018. Science communication film for the U.S. Forest Service and the International Wildlife Film Festival. Missoula, Montana.
- Meet Your Neighbours Photography Techniques*. 2017. North American Nature Photography Association High School Scholarship Program. Great Smoky Mountains National Park, Tennessee.
- The Overlooked Majority: Highlighting Salamander Diversity in the U.S.* 2017. North American Nature Photography Association Summit, Jacksonville, Florida.
- Conservation of a Polymorphic Frog*. 2010. Smithsonian Tropical Research Institute, Bocas del Toro, Panama.
- Conservation of a Polymorphic Frog*. 2009. Smithsonian Tropical Research Institute, Bocas del Toro, Panama.
- Amphibian Conservation: The Global Amphibian Crisis*. 2008. Potter Park Zoo, Lansing, Michigan.
- Reviewer Amphibia-Reptilia, Copeia, Evolution, Herpetological Conservation and Biology, Herpetological Review, Hydrobiologia, Integrative Organismal Biology, Journal of Natural History, Phyllomedusa
- Editor Phyllomedusa

Professional Organizations

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| Australian Society of Herpetologists | Society for the Study of Evolution |
| American Society of Ichthyologists and Herpetologists | Society for the Study of Amphibians and Reptiles |
| Herpetologists' League | American Genetics Association |
| Animal Behavior Society | |

References

Brice Noonan
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PhD Advisor

Doug Luckie
Lyman Briggs College
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Colleague at Lyman Briggs

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Lyman Briggs College
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urquhart@msu.edu
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Masters Advisor

Bibiana Rojas
Centre of Excellence in Biological
Interactions
University of Jyväskylä, Finland
bibiana.rojas@jyu.fi
Collaborator with *D. tinctorius* projects