JULIA E. EARL

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Education:

Ph.D. Biological Sciences, University of Missouri: Columbia, Missouri
Advisor: Raymond Semlitsch, Graduation Date: July 2012
M.S. Water Science, Murray State University: Murray, Kentucky
Advisor: Howard Whiteman, Graduation Date: May 2007
B.S. Environmental Studies, Emory University: Atlanta, Georgia
Graduation Date: December 2003

Appointments:

September 2017 – present: Assistant Professor, School of Biological Sciences, Louisiana Tech University, Ruston, Louisiana
August 2014 – August 2017: Postdoctoral Fellow, Department of Natural Resources Ecology and Management, Oklahoma State University, Stillwater, Oklahoma
August 2012 – August 2014: Postdoctoral Fellow, National Institute for Mathematical and Biological Synthesis (NIMBioS), University of Tennessee, Knoxville, Tennessee
January – May 2012: Online Instructor: Bio101 Introduction to Biology, Moberly Area Community College, Columbia, Missouri
June 2007 – August 2007: Tiger Salamander Research Assistant, Rocky Mountain Biological Laboratory, Gothic, Colorado
May 2004 – October 2004: Herpetology Technician, United States Geological Survey, Amphibian Research and Monitoring Initiative, Gainesville, Florida
January – April 2004: Wildlife Intern, United States Fish and Wildlife Service, Pocosin Lakes National Wildlife Refuge, Columbia, North Carolina

Funded Proposals

LDWF State Wildlife Grant ($72,000): 2018-2020
"Status of Southern Crawfish Frogs in Louisiana" [PI, with Donald Shepard as co-PI]
NRCS Research Grant ($68,000): 2016-2019
"Effects of the Conservation Reserve Program and anthropogenic features on the long distance movements and mortality risk of lesser prairie-chickens" [PI, with Sam Fuhlendorf as co-PI]
American Society of Ichthyology and Herpetology Symposium Grant ($3,000): 2017
"The Science, Management, and Policy of Amphibian Conservation: Extending the Legacy of Ray Semlitsch" for JMIH 2017 [PI, with Michelle Boone, Katie O'Donnell, and Freya Rowland as co-PIs]
Society for the Study of Amphibians and Reptiles Symposium Grant ($3,000): 2017

Symposium Co-sponsorship (same as above entry)

Herpetologists' League Symposium Grant ($1,675): 2017
Symposium Co-sponsorship (same as above entry)

Morris Animal Foundation Grant ($40,224): 2013-2014
"Determining the extinction probability for the most endangered frog in North America (*Rana sevosa*) following exposure to the emerging pathogen, ranavirus" [Co-PI with Matthew Gray as PI and William Sutton and Debra Miller as Co-PIs]

NIMBioS Postdoctoral Fellowship: ($106,000): 2012-2014
"Subsidies on foot: Using individual-based models of animal movement to predict active subsidies" [PI]

Conservation Biology Fellowship Grant ($2,500): 2011
"Aquatic-terrestrial linkages: How amphibian nutrients affect the forest" [PI]

EPA STAR Fellowship ($111,000): 2010-2012
"The effects of spatial subsidies on amphibians" [PI]

Conservation Biology Fellowship Grant ($3,000): 2009
"The interaction of size at metamorphosis and landuse practices on the fitness of anurans" [PI]

University of Missouri Alumnus Grant ($1,500): 2009
"Habitat induced diet shifts in tadpoles" [Co-PI with Raymond Semlitsch as PI]

KY Water Resources Research Initiative Student Research Grant ($5,000): 2006-2007
"Lethal and sublethal effects of nutrient pollution on amphibians" [PI]

Unfunded Proposals

NSF (Pre-proposal to Population and Community Ecology Cluster): submitted Jan. 2017
"Climate extremes and Thresholds: Effects on vital rates and population dynamics" [PI with Sam Fuhlendorf and Jill Trepanier as co-PIs]

NSF (Pre-proposal to Population and Community Ecology Cluster): submitted Jan. 2017
"Subsidies on foot: Linking animal movement of active subsidies to spatial distributions of associated top-down and bottom up effects" [Co-PI with Pat Zollner as PI and Rod Williams and Rob Chapman as Senior Personnel]

NSF (Pre-proposal to Ecosystem Studies Cluster): submitted Jan. 2014
"Subsidies on foot: Using dynamic models and stable isotopes to quantify and predict active subsidies" [Co-PI with Pat Zollner as PI and Chris Wikle, Tim Filley, Rod Williams, and Rob Chapman as Senior Personnel]

Publications: (* indicates undergraduate mentee, underlined is a graduate student)

36) **Earl, J.E.** 2019. Evaluating the assumptions of population projection models used for conservation. *Biological Conservation* 237: 145-154.

35) Bampoh, D., **J.E. Earl**, and P.A. Zollner. Social behavior impacts the distribution of animal-transported subsidies. *Movement Ecology* 412:108824.

34) Duffus, A., T. Garner, R. Nichols, J. Standridge, and **J.E. Earl**. 2019. Modelling ranavirus transmission in populations of common frogs (*Rana temporaria*) in the United Kingdom. *Viruses* 11(6): 556.

33) Smith, L.L., A.L. Subalusky, C.L. Atkinson, **J.E. Earl**, D.M. Mushet, D.E. Scott, S.L. Lance, and S.A. Johnson. 2019. Biological connectivity of seasonally ponded wetlands

across spatial and temporal scales. *Journal of the American Water Resources Association* 55(2):334-353.

32) Relyea, R.A., P.R. Stephens, L.N. Barrow, A.R. Blaustein, P.W. Bradley, J.C. Buck, A. Chang, J.P. Collins, B. Crother, **J.E. Earl**, S.S. Gervasi, J.T. Hoverman, O. Hyman, E.M. Lemmon, T.M. Luhring, M. Michelson, C. Murray, S. Price, R.D. Semlitsch, A. Sih, A.B. Stoler, N. VandenBroek, A. Warwick, G. Wengert, and J.I. Hammond. 2018. Phylogenetic patterns of trait and trait plasticity evolution: Insights from amphibian embryos. *Evolution* 73(2):663-678.

31) Sample, C., J. Fryxell, J. Bieri, P. Federico, **J.E. Earl**, R. Wiederholt, B.J. Mattsson, D.T.T. Flockhart, S. Nicol, J.E. Diffendorfer, W.E. Thogmartin, R.A. Erickson, and D.R. Norris. 2018. A general modeling framework for describing spatio-temporal population dynamics. *Ecology and Evolution* 8(1): 493-508.

30) Bieri, J., C. Sample, W.E. Thogmartin, J.E. Diffendorfer, **J.E. Earl**, R.A. Erickson, P. Federico, D.T.T. Flockhart, S. Nicol, D. Semmens, T. Skraber, R. Wiederholt, and B.J. Mattson. 2018. A guide to calculating habitat-quality metrics to inform conservation of highly mobile species. *Natural Resource Modelling* 31(1):e12156.

29) **Earl, J.E.**, S. Nicol, R. Wiederholt, J.E. Diffendorfer, D. Semmens, D.T.T. Flockhart, B.J. Mattsson, G. McCracken, D.R. Norris, W. Thogmartin, and L. Lopez-Hoffman. 2018. Quantitative tools for implementing the new significant portion of the range definition for the Endangered Species Act. *Conservation Biology* 32(1):35-49.

28) **Earl, J.E.**, E. Harper, D.J. Hocking, M.S. Osbourn, T.A.G. Rittenhouse, M. Glennie, and R.D. Semlitsch. 2017. Relative importance of timber harvest and habitat for reptiles in experimental forestry plots. *Forest Ecology and Management* 402:21-28.

27) **Earl, J.E.** and P.A. Zollner. 2017. Advancing research on animal-transported subsidies by integrating animal movement and ecosystem modeling. *Journal of Animal Ecology* 86(5):987-997.

26) Erickson, R.A., J.E. Diffendorfer, J.A. Bieri, **J.E. Earl**, P. Federico, J.M. Fryxell, K.R. Long, B.J. Mattsson, D.R. Norris, C. Sample, R. Wiederholt, and W.E. Thogmartin. 2017. Defining and classifying migratory habitats as sources and sinks: the migratory pathway approach. *Journal of Applied Ecology* 55(1):108-117.

25) **Earl, J.E.**, E. Harper, D.J. Hocking, M.S. Osbourn, T.A.G. Rittenhouse, and R.D. Semlitsch. 2016. Effects of timber harvest on small mammals in experimental forestry plots. *Animal Biology* 66: 347-362.

24) **Earl, J.E.**, M. O'Brien, T. Brown, A. West, and H.H. Whiteman. 2016. *Siren intermedia nettingii* (western lesser siren). Oviposition. *Herpetological Review* 47(4):640.

23) **Earl, J.E.** and S. Fuhlendorf. 2016. Relative importance of climate variables to population vital rates: a quantitative synthesis for the lesser prairie-chicken. *PLoS One* 11(9): e0163585.

22) **Earl, J.E.**, J.C. Chaney, W.B. Sutton, C.E. Lillard, A.J. Kouba, C. Langhorne, J. Krebs, R.P. Wilkes, R.D. Hill, D.L. Miller, and M.J. Gray. 2016. Ranavirus could facilitate local extinction of rare amphibian species. *Oecologia* 182(2): 611-623.

21) **Earl, J.E.,** S. Fuhlendorf, D. Haukos, A. Tanner, D. Elmore, and S. Carleton. 2016. Characteristics of lesser prairie-chicken (*Tympanuchus pallidicinctus*) long-distance movements across their distribution. *Ecosphere* 7(8): e01441.

20) Whiteman, H.H., J.M. Doyle, **J.E. Earl**, C. Aubee, R. Brown, S. Thomason, and T. Schoborg. 2016. A PIT tagging technique for ambystomatid salamanders. *Herpetological*

Review 47(1): 32-34.

19) **Earl, J.E.** and R.D. Semlitsch. 2015. Importance of forestry practices relative to microhabitat and microclimate changes for juvenile pond-breeding amphibians. *Forest Ecology and Management* 357: 151-160.

18) **Earl, J.E.** and H.H. Whiteman. 2015. Are commonly used fitness predictors accurate? A meta-analysis of amphibian size and age at metamorphosis. *Copeia* 103(2): 297-309.
****This article received two awards from Copeia: Best Paper in Herpetology and Best Paper by a Young Scholar in Herpetology for the 2015 volume.****

17) Gray, M.J., J.L. Brunner, **J.E. Earl**, and E. Ariel. 2015. Design and analysis of ranavirus studies: surveillance and assessing risk. In: M.J. Gray and V.G. Chinchar, eds. *Ranaviruses: Lethal Pathogens of Ectothermic Vertebrates*. Pg. 209-240. Springer.

16) Anderson, T.L., D.J. Hocking, C.A. Conner, **J.E. Earl**, E.B. Harper, M.S. Osbourn, W.E. Peterman, T.A.G. Rittenhouse, and R.D. Semlitsch. 2015. Abundance and phenology patterns of two pond-breeding salamanders determine species interactions in natural populations. *Oecologia* 177(3): 761-773.

15) **Earl, J.E.** and R.D. Semlitsch. 2015. Effects of tannin source and concentration from tree leaves on two species of tadpoles. *Environmental Toxicology and Chemistry* 34(1): 120-126.

14) Pauley, L.R.*, **J.E. Earl**, and R.D. Semlitsch. 2015. Ecological effects and human use of commercial mosquito insecticides in aquatic communities. *Journal of Herpetology* 49(1): 28-35.

13) **Earl, J.E.** and M.J. Gray. 2014. Introduction of *Ranavirus* to isolated Wood Frog populations could cause local extinction. *EcoHealth* 11: 581-592.
****This study has had popular press coverage in the United States and two other countries in the Huffington Post and science news outlets, including Live Science and Science News Daily.****

12) **Earl, J.E.** and P.A. Zollner. 2014. Effects of animal movement strategies and costs on the distribution of active subsidies across simple landscapes. *Ecological Modelling* 283: 45-52.

11) **Earl, J.E.**, P.O. Castello*, K.E. Cohagen*, and R.D. Semlitsch. 2014. Effects of subsidy quality on reciprocal subsidies: how leaf litter species changes frog biomass export. *Oecologia* 175(1): 209-218.

10) **Earl, J.E.** and R.D. Semlitsch. 2013. Carryover effects in amphibians: How much complexity is needed to predict survival? *Ecological Applications* 23(6): 1429-1442.

9) Peterman, W.E., T.A.G. Rittenhouse, **J.E. Earl**, and R.D. Semlitsch. 2013. Demographic network and multi-season occupancy modeling of *Rana sylvatica* reveal spatial and temporal patterns of connectivity. *Landscape Ecology* 28(8):1601-1613.

8) **Earl, J.E.** and R.D. Semlitsch. 2013. Spatial subsidies, trophic state, and community structure: Examining the effects of leaf litter input on ponds. *Ecosystems* 16:639-651.

7) **Earl, J.E.** and R.D. Semlitsch. 2012. Reciprocal subsidies in ponds: Does leaf input increase frog biomass export? *Oecologia* 170(4): 1077-1087.

6) **Earl, J.E.**, K.E. Cohagen*, and R.D. Semlitsch. 2012. Effects of leachate from different species of tree leaves and grass litter on tadpoles. *Environmental Toxicology and Chemistry* 31(7):1511-1517.
••*This study was featured in the Environmental Toxicology and Chemistry research spotlight. http://globe.setac.org/2012/july/etc-spotlight.html* ••

5) **Earl, J.E.**, T.M. Luhring, B.K. Williams, and R.D. Semlitsch. 2011. Biomass export of

salamanders and anurans is affected differentially by changes in canopy cover. *Freshwater Biology* 56(12): 2473-2482.

4) **Earl, J.E.** and H.H. Whiteman. 2010. Evaluation of phosphate toxicity in Cope's Gray Treefrog (*Hyla chrysoscelis*) tadpoles. *Journal of Herpetology* 44(2): 201-208.

3) **Earl, J.E.** and H.H. Whiteman. 2010. Measurement error in image analysis of fluctuating asymmetry. *Herpetological Review* 41(3): 301-304.

2) **Earl, J.E.** and H.H. Whiteman. 2009. Effects of pulsed nitrate exposure on amphibian development. *Environmental Toxicology and Chemistry* 28: 1331-1337.

1) Casey, L.I., **J.E. Earl**, and S.A. Johnson. 2005. Attempted predation of a Pileated Woodpecker nest by a Gray Ratsnake. *Florida Field Naturalist* 33(2): 55-56.

Scholarships/Fellowships

TWA Scholarship Recipient, 2009-2011
Life Sciences Fellowship, University of Missouri, 2007-2010
Dr. Morgan Emery Sisk, Jr. Memorial Scholarship, 2006-2007

Awards

Best Paper in Herpetology for Copeia's 2015 volume (received July 2016)
Best Paper in Herpetology by a Young Scholar for Copeia's 2015 volume (received July 2016)
Best Life Sciences Fellow Seminar, Spring 2011
First Place in the Missouri Life Sciences Week Poster Competition, April 2010
Murray State University Sigma Xi Research Award, April 2007
Honorable Mention in Murray State University Sigma Xi Poster Competition, April 2007

Professional Working Groups

2014 – 2016: National Institute for Mathematical and Biological Synthesis working group on developing methods to determine the contribution of habitat patches to population dynamics and spatial subsidies for migratory species

Invited Oral Presentations

Earl, J.E. 2017. Amphibians as connectors between wetland and terrestrial ecosystems. Symposium on Biotic Connectivity in Wetlands at the American Water Resources Association Spring Specialty Meeting in Snowbird, UT.

Earl, J.E. 2015. Subsidies and wildlife: Connections between ecosystems. Seminar at Purdue University in the Forestry and Natural Resources Department.

Earl, J.E. and P.A. Zollner. 2015. Wildlife as Ecosystem Connectors: Importance of Movement Ecology. Symposium on Individual Based Models at the Midwest Fisheries and Wildlife Meeting, Indianapolis, IN.

Earl, J.E. 2014. Animals as Ecosystem Connectors: Does their movement path matter? Seminar at Fisk University, Nashville, TN.

Earl, J.E. 2014. Moving resources between systems: reciprocal and active subsidies. Seminar at Oak Ridge National Laboratory, Oak Ridge, TN.

Earl, J.E. and R.D. Semlitsch. 2012. Habitat-induced diet shifts in tadpoles: using stable isotopes in replicated experiments. Oral Presentation as part of the Symposium on Biogeochemical Methods in Ecology at the World Herpetology Congress in Vancouver, BC, Canada.

Earl, J.E. 2011. Leaves in, Frogs out? Spatial Subsidies in Ponds. Seminar at Murray State University, Murray, KY.

Selected Oral and Poster Presentations

Earl, J.E., S. Paudel, S.D. Fuhlendorf, and C. Davis. 2017. Potential effects of climate change on aquatic-terrestrial linkages and characterization of wetland water temperature for future experiments. Poster Presentation at the American Water Resources Association Spring Specialty Meeting in Snowbird, UT.

Earl, J.E., S. Paudel, S.D. Fuhlendorf, and C. Davis. 2017. Effects of climate variability and wetland characteristics on water temperature. Poster Presentation at the Oklahoma EPSCoR Meeting in Oklahoma City, OK.

Earl, J.E., L.R. Pauley, and R.D. Semlitsch. 2016. Frogs as Fertilizer? Effects of Metamorph Amphibians on Plant Growth. Oral Presentation at the Joint Meeting of Ichthyology and Herpetology in New Orleans, LA.

Earl, J.E. and R.D. Semlitsch. 2016. High variability in metamorph leg length and relationships to resource level. Poster Presentation at the Joint Meeting of Ichthyology and Herpetology in New Orleans, LA.

Earl, J.E., and S. Fuhlendorf. 2015. Effects of climate variables on Lesser Prairie Chicken vital rates: a meta-analysis. Oral Presentation at the Annual meeting of the American Ornithological Union, Norman, OK.

Earl, J.E., Sean Blomquist, Christopher A. Conner, Elizabeth Harper, Daniel J. Hocking, Malcolm Hunter, Michael S. Osbourn, David A. Patrick, Viorel Popescu, Tracy A.G. Rittenhouse, and Raymond D. Semlitsch. 2014. Estimates of Amphibian Biomass Export from Ponds in Maine and Missouri, USA. Oral Presentation at the Joint Meeting of Ichthyology and Herpetology in Chattanooga, TN.

Earl, J.E., M.J. Gray, and W.B. Sutton. 2013. Ranavirus could speed up extinction for the endangered frog, *Rana Sevosa.* Oral Presentation at the Ranavirus Symposium in Knoxville, TN.

Earl, J.E. and M.J. Gray. 2013. Capability of ranavirus to cause extinction in local populations of wood frogs. Oral Presentation at the Wildlife Disease Association meeting in Knoxville, TN.

Earl, J.E. 2013. Effects of animal movement ecology on the spatial distribution of active subsidies. Poster Presentation at the Systems Theory Symposium at the University of Georgia, Athens, GA.

Earl, J.E. and R.D. Semlitsch. 2012. Carryover effects in amphibians: How much complexity is needed to predict survival? Oral Presentation at the World Herpetology Congress in Vancouver, BC, Canada.

Earl, J.E. and R.D. Semlitsch. 2011. Effects of spatial subsidies and canopy cover on pond ecosystems. Oral Presentation at the meeting of the Ecological Society of America in Austin, TX.

Earl, J.E. and R.D. Semlitsch. 2011. Reciprocal subsidies in ponds: does leaf input increase frog biomass export? Oral Presentation at the Joint Meeting of Ichthyology and Herpetology in Minneapolis, MN.

Earl, J.E. and R.D. Semlitsch. 2011. Effects of land use on flows between ecosystems: a story of leaves and frogs. Oral Presentation at the Missouri Natural Resources Conference in Lake of the Ozarks, MO.

Earl, J.E. and R.D. Semlitsch. 2010. Carryover effects of forestry practices on wood frogs. Oral Presentation at the annual meeting of the Ecological Society of America in Pittsburgh, PA.

Teaching:

Instructor

Spring 2019: BISC 450C/516C Freshwater Ecology with lab, (3 credits, undergraduate and graduate students), Louisiana Tech University

Spring 2019: BISC 450A/516A Amphibian Declines (1 credit, undergraduate and graduate students), Louisiana Tech University

Fall 2018, 2019: BISC 255C Environmental Sustainability (3 credits, undergraduates), Louisiana Tech University

Fall 2018: BISC 535 Statistical Model Ranking (1 credit, graduate students), Louisiana Tech University

Spring 2018: BISC 450C/516C Global Change Ecology (3 credits, undergraduate and graduate students), Louisiana Tech University

Winter 2017, 2018: BISC/ENSC 212 Conservation and Management of Natural Resources (3 credits, undergraduates), Louisiana Tech University

Fall Semester 2015: NREM 4990/5030 Introduction to Practical Statistics and Experimental Design, Oklahoma State University (2 credits, graduate students)

Spring Semester 2012: Bio101 Introduction to Biology, Moberly Area Community College, Columbia, Missouri (4 credits, Online Introductory course for undergraduates)

Guest Lectures

January 2017: "Amphibian Diversity," Introduction to Natural History for undergraduate non-science majors, Oklahoma State University

March 2016: "Can Ranavirus Alter Host Extinction Probabilities? Use of Stage-Structured Population Models," Ranaviruses: Emerging Pathogens of Ectothermic Vertebrates, Online graduate course, University of Tennessee Center for Wildlife Health

November 2015: "Amphibian Declines and Conservation," Applied Ecology (undergraduate course in Natural Resource Ecology and Management) Oklahoma State University

June 2015: "Effects of Climate Change on Wetlands and Aquatic Organisms," Lecture and field trip as part of the Climate Science Center Internship for underrepresented minority undergraduates. Also helped with reviewing applications, planning, and coordination of other activities on climate and forestry for three day portion at OSU field station

March 2014: "Metapopulations and Movement Ecology, " Amphibian Ecology and Conservation (Cross-listed undergraduate/graduate course in Fisheries and Wildlife; I also provided test questions.) University of Tennessee

April 2013: "Conservation Strategies," Amphibian Ecology and Conservation (Cross-listed

undergraduate/graduate course in Fisheries and Wildlife; I also provided test questions.) University of Tennessee

March 2013: "Amphibian Declines," Amphibian Ecology and Conservation (Cross-listed undergraduate/graduate course in Fisheries and Wildlife; I also provided test questions.) University of Tennessee

Mentoring Experience:

Graduate Students:

Simon Boycott, M.S. Louisiana Tech University. Advisor, 2018- present

Rebekah Magee, M.S. Louisiana Tech University. Advisor, 2017-2019

Daniel Bampoh, Ph.D. Purdue University: Committee member and unofficial co-advisor, 2016-2019

Jacob Peterson, M.S. Oklahoma State University: Committee member and unofficial co-advisor, 2016-2018

Undergraduate Students:

2019- present: Mentored Joseph Aubert, David Johnson, Josh Odom

2018-2019: Mentored Grant Phillips on aquatic beetle identification, Grace Cohenour on water chemistry and frog call identification

2017-2018: Mentored Ian Lovemore on leaf chemistry

2015, 2016: Mentored Madison Aiken to perform a meta-analysis of Lesser Prairie Chicken demographic rates and the influence of habitat and climate and to work on a study examining the effects of forestry practices on reptile captures.

2014: Co-mentored (with Sean Hoban) Brittany Boribong, Michelle Cruz, and Fangyaun Hong through the NIMBioS Summer Research Experience for undergraduates. They performed a meta-analysis on the effects of population location within a species' geographic range on genetic diversity.

2010-2012: Mentored Luke Pauley (currently a statistician) through the Life Sciences Undergraduate Research Opportunity Program. Luke performed an experiment on the effects of mosquito insecticides on tadpoles and aquatic communities and surveyed land managers on their mosquito insecticide use in different aquatic habitats. He further used stable isotopes to examine the potential for amphibian decomposition to influence plant growth and developmental rates. Luke wrote up his work for publication and is first author on a paper in the *Journal of Herpetology*.

2009-2012: Mentored Paula Castello through the NSF program Undergraduate Mentoring in Environmental Biology. Paula performed two studies investigating aquatic community patterns in relationship to different tree species surrounding ponds. Paula helped write a paper published in *Oecologia*.

2008-2009: Mentored Kara Cohagen (currently a Middle school Science Teacher) through the NSF program Undergraduate Mentoring in Environmental Biology. Kara performed two experiments on the effects of litter species on tadpole growth and development. Kara's data has been published in *Environmental Toxicology and Chemistry* and *Oecologia*.

Outreach/ Community Service:

Science Olympiad 2019: Made and gave the Herpetology and Water Quality tests

South Central Climate Science Center Internship for underrepresented minority undergraduates:

led group for two days: June 2015, 2016
Girls in Science camp at the Great Smoky Mountain National Park: Assisted with program where middle schoolers learned about biodiversity, how to calculate diversity indices from their own data, and collected data for a citizen science stream salamander project: June 2013
Girls in STEM camp: interviewed by middle school students about being a scientist: June 2013
STEM Breakfast: was interviewed by high school students about STEM careers: March 2013
Career Panel: Participated in a panel on career paths for the Wildlife Society at Purdue University: November 2012
Gadget Girls: taught Girl Scouts 3D geometry: November 2012
Bat Outreach at Knoxville Tennessee Zoo Event: October 2012
Women in Wildlife: taught Girl Scouts about Watershed Ecology and Water Quality through hands on experiences, July 2008-2011
Wrote Ecology Test for Columbia, MO Science Olympiad: March 2008, 2010, 2011
Popular Publication: Earl, J.E. 2009. Velvet scales. Pp. 61-66. In: Reaser, J.K., ed. Courting the Wild: Love Affairs with Reptiles and Amphibians. Hiraeth Press, San Francisco.
Bioblitz Walk Leader and Public Educator for Herpetology: September 2008
North American Amphibian Monitoring Program Volunteer: 2006-2007
Murray, KY Regional Science Fair Judge for primary/middle school students: April 2006

Professional Development and Academic Service

Judge for SSAR Siebert Award in Conservation Biology, July 2018 and 2019
Judge for ASIH Stoye Graduate Research Award in Ecology/Ethology, July 2017
Board of Governors for American Society of Ichthyology and Herpetology, 2017-2021
Expert reviewer for the Quantitative Biology Concept Inventory, January 2016
Co-coordinated NIMBioS professional development seminar on time management, July 2014
Grants Workshops (UTK): Finding Funding, Building the NSF Grant Proposal, NSF CAREER Awards, Spring 2013
Stable Isotope Course, University of Utah, June 2012
Preparing Future Faculty, 2011-2012
Mentoring Certificate from Entering Mentoring course, Spring 2011
Interim Biology Graduate Student Association representative to the Graduate and Professional Student Council, April-May 2011
Coordinated Dissertation Writing Workshop, Biology Graduate Student Association March 2011
Webmaster for University of Missouri Conservation Biology: January 2011- July 2012
Coordinated Conservation Biology Reading Group, Conservation Biology Program: August 2009- December 2010

Reviewer
Grants/Internships:

NSF CAREER Grants 2018
Army Corps of Engineers' ERDC: 2017
NSF- Population and Community Ecology Program: 2016
E.E. Williams Award in Conservation (for graduate students in the Herpetologists' League): 2015, 2016, 2017
South Central Climate Science Center Internship for Underrepresented Minorities: 2015, 2016

Journals: (35 journals, 60 articles)

African Journal of Biotechnology
American Midland Naturalist
Animal Biology
Animal Conservation
Biological Invasions
Conservation Biology
Copeia
Diversity and Distributions
EcoHealth
Ecology and Evolution
Ecology BMC
Ecology
Ecological Applications
Ecological Engineering
Ecological Modelling
Ecosphere
Ethology
Freshwater Biology
Freshwater Science
Global Ecology and Conservation
Herpetologica
Herpetological Journal
Herpetological Review
Hydrobiologia
Journal of Herpetology
Journal of Wildlife Management
Limnologica
Oecologia
Oikos
PLoS One
Southeastern Naturalist
Urban Ecosystems
Wetlands
Wildlife Research
Wildlife Society Bulletin

Professional Memberships:

Ecological Society of America: 2008 to Present
The Wildlife Society 2016 to 2018
American Society of Ichthyologists and Herpetologists: 2015 to Present
Society for the Study of Amphibians and Reptiles: 2011 to 2014, 2016 to 2018
Herpetologist's League: 2005 to Present
American Water Resource Association: 2017
Society for Conservation Biology: 2010 to 2014
Southeastern Partners in Amphibian and Reptile Conservation: 2005-2007
    Member of the Inventory and Monitoring Working Group
Tennessee Herpetological Society: 2006