Curriculum Vitae: Rebecca (Becky) Fuller

Rebecca C. Fuller

Professor

University of Illinois

Department of Evolution, Ecology,

and Behavior

School of Integrative Biology

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**University of Illinois Affiliations**

Illinois Natural History Survey, Center for Aquatic Ecology

Program in Ecology, Evolution, and Conservation Biology

Program in Neuroscience

Institute for Genomic Biology

Computational Science and Engineering

#### Professional Preparation

Undergraduate: 1989-1993 University of Nebraska; B.S., Major: Biology

Pre-graduate: 1993-1994 Fulbright Scholar; Uppsala University, Sweden

Graduate: 1994-1998 Michigan State University; M.S., Zoology

Graduate: 1998-2003 Florida State University; Ph.D., Biology, Ecology & Evolution

Post-doctoral: 2003-2005 Florida State University; post-doctoral study, School of Computational Science

Asst. Professor 2005 - 2012 University of Illinois; Department of Animal Biology

Assoc. Professor 2012 – 2018 University of Illinois; Department of Animal Biology

Professor 2018 - University of Illinois; Department of Animal Biology

(now Evolution, Ecology, and Behavior)

**Tech Transfer**

Provisional Patent - #62/525,526, “Application of Visual Detection Models to Visual Perception in Largemouth Bass”

President & CEO of BassInSight, Inc. - 2015- Present

#### Grants

(Anticipated Submission), NSF, Collaborative Research: Can cascade reinforcement initiate and complete speciation - submission, $850,000

(Anticipated Submission), NSF, Determining the limits to adaptive plasticity: the effects of spatial and temporal variation on phenotypic plasticity due to lighting environment in killifish, $750,000

2020 UI Research Board Award ($25,355) – “Killifish Genomics: Using Genomics to Answer Three Fundamental Questions in Evolution”

2019 NSF SBIR, BassInSight Inc. - $250,000 (August 1, 2019 – November 30, 2020)

2017 National Science Foundation Dissertation Improvement Award to R. Moran: R.C. Fuller - advisor ($20,618)

2016 National Institutes of Health, Award to B. Hug PI and R.C. Fuller co-PI, "*PAGES*: *Progressing through the Ages: Global climate change, Evolution, and Societal well-being*" ($1,315,531)

2016 National Science Foundation, Award to R.C. Fuller PI, "I-Corps: BassInSight: Determining the economic value and market potential for estimating bass visual perception" ($50,000)

2015 Hawkes Award, University of Illinois, R.C. Fuller PI, "Assembling darter genomes: resources for tackling the problem of species delimitation among allopatric taxa" ($19,230)

2014 Department of Defense Award, R.C. Fuller co-PI, "Thermoregulatory behavior of Midwestern amphibians following exposure to the chytrid fungus *Batrachochytrium dendrobatidis"* ($52,870)

2013 Department of Defense Award, R.C. Fuller co-PI, "Determining the Effects of Dietary Restriction, Temperature Shifts and Chytridiomycosis on Amphibian Behavior and Health" ($25,027)

2012 National Science Foundation, REU Award ($7,500)

2011 National Science Foundation, REU Award ($7,500)

2012-2014 National Science Foundation Dissertation Improvement Award to M. Zhou: R.C. Fuller - advisor ($12,779)

2012-2013 National Science Foundation Dissertation Improvement Award to D. Welsh: R.C. Fuller - advisor ($10,636)

2011-2013 National Science Foundation Dissertation Improvement Award to E. Berdan: R.C.

Fuller – advisor ($14,965)

2011 UI Research Board Award ($22,000)

2010-2017 National Science Foundation Early Career Award ($856,553)

2010-2012 National Science Foundation Dissertation Improvement Award to A. Johnson; R.C. Fuller – advisor. ($14,508)

2009 National Science Foundation, REU Award ($7,500)

2008 National Science Foundation, REU Award ($7,500)

2007 National Science Foundation, REU Award ($7,500)

2005-2009 National Science Foundation Award, PI- Fuller, Co-PIs Travis and Fadool ($415,044)

2000-2002 National Science Foundation Dissertation Improvement Award to R.C. Fuller

1995-1998 National Science Foundation Graduate Fellowship

**Fellowships and Awards**

2021 University of Illinois Impact Award

2018 Yerger Award, Florida State University

2018 Campus Distinguished Promotion Award

2018 Teaching Professorial Scholar in Integrative Biology

2016 University of Illinois Distinguished Award for Undergraduate Mentoring ($2,000)

2016, 2014, 2012, 2008 Instructor ranked as “Excellent” by their students for *Ichthyology*

2015 Instructor ranked as "Excellent" by their student for *Evolution*

2014 Instructor ranked as "Excellent" by their student for “*The Origins*” Graduate Seminar

2012 I.C. Gunsalus Professor ($10,000)

2006 Young Investigator Award – American Society of Naturalists

1993-1994 Fulbright Scholarship - Uppsala University, Sweden

# Teaching Experience

*Present Courses Taught*

The Analysis of Biological Data in R (Fall 2015, Spring 2016, Spring 2019, Fall 2019, Fall 2020)

Ichthyology (2006-2020, even years)

SIB Graduate School Orientation Seminar (2017-present)

Eco-Evo Seminar Series (Spring 2021)

*Past Courses Taught*

Evolution (Spring, 2012 - 2016)

Form and Function (Spring 2007-2012)

Program in Ecology, Evolution and Ecology Seminar (2016-2020)

Reading Group in Genetics, Behavior, Evolution – co-taught with A. Bell

“Your Inner Fish” Reading Group

“Sexual Conflict” Reading Group

“Developmental Plasticity and Evolution” Reading Group

“Why Evolution is True” Reading Group

"The Origins: Then and Now" Graduate Seminar (2011, 2014)

"Mate Choice: The Evolution of Sexual Decision Making From Microbes to Humans"

**Publications**

**Fuller, R.C.,** McGhee, K.E., Sandkam, B., Schrader, M., and Travis, J. (2022) Polyphenisms and polymorphisms: genetic variation in plasticity and color variation within and among bluefin killifish populations. Evolution.

**Fuller, R.C.** 2022. Revisiting old truths: The evolution of male coloration in guppies as a function of predation. Molecular Ecology in press.

Surber, L.L. and **Fuller, R.C.** 2021. Controversies past and present: Phenotypic plasticity and plasticity-led evolution. Evolution 75: 3224–3227. doi.org/10.1111/evo.14385

Wale, N., **Fuller, R.C.,** Johnsen, S., and Duffy, M. (2021) The visual ecology of selection predation: Are unhealthy hosts less stealthy hosts? Ecology and Evolution DOI: doi.org/10.1002/ece3.8464

Chang, C.-H., Moran, R.M., Wang, Y.-C., and **Fuller, R.C.** (2021) Sequence analysis and ontogenetic expression patterns of cone opsin genes in the bluefin killifish (*Lucania goodei*). Journal of Heredity DOI: [10.1093/jhered/esab017](https://doi.org/10.1093/jhered/esab017)

St. John, M.E. and **Fuller, R.C.** (2021) Reinforcement and cascade reinforcement in the *Lucania* system: the effects of heterospecific pairings and sex on mate preferences. Current Zoology 67: 215–224. doi: 10.1093/cz/zoaa049. Featured on Cover

Strickland, L.R., Windsor, D., **Fuller, R.C.,** and Caceres, C.E. (2021) The maintenance of phenotypic variation in the tortoise beetle, *Chelymorpha alternans:* testing the roles of non-random mating and differential survival. Journal of Evolutionary Biology DOI: 10.1111/jeb.13779

Berdan, E.L., **Fuller, R.C.**, and Kozak, G.M. (2020) Genomic landscape of reproductive isolation in *Lucania* killifish: The role of sex chromosomes and salinity. Journal of Evolutionary Biology, Special Issue, "Speciation in Marine Environments”. (Editor’s Choice) <https://doi.org/10.1111/jeb.13725>

Chang, C.-H., Moran, R.M., and **Fuller, R.C.** (2020) Eye size of bluefin killifish (*Lucania goodei*) varies between springs and swamps. Copeia, 108:758-766.

Mahardja, B. , Goodman, A., Goodbla, A., Schreier, A.D., Johnston, C., Contreras, D., McMartin, L., **Fuller, R.C.** (2020) Introduction of Bluefin Killifish *Lucania goodei* into the Sacramento-San Joaquin Delta. San Francisco Estuary and Watershed Science. 18(2). http://dx.doi.org/10.15447/sfews.2020v18iss2art3

Moran, R.L., Catchen, J.M., and **Fuller, R.C.** (2020) Genomic Resources for Darters (Percidae: Etheostominae) Provide Insight into Postzygotic Barriers Implicated in Speciation

Molecular Biology and Evolution. doi:10.1093/molbev/msz260

Darolti, I., Wright, A.E., Sandkam, B., Morris, J., Bloch, N.I., Farre, M., **Fuller, R.C.,** Bourne, G.R., Larkin, D.M., Breden, F. and Mank, J.E. (2019) Heterogeneous patterns of sex chromosome differentiation and dosage compensation in guppies. Proceedings of the National Academy of Sciences 116: 19031-19036

St. John, M.E. and **Fuller, R.C.** (2019) The effects of experimental design on mating preferences and reproductive isolation in killifish.  Behavioral Ecology 30: 92-100

Mitchem, L.D., Stanis, S., Zhou, M., Loew, E., Epifanio, J., and **Fuller, R.C**. (2019) Seeing red: Color vision in largemouth bass. Current Zoology 65: 43-52. DOI: 10.1093/cz/zoy019

-see YouTube coverage here: <https://www.youtube.com/watch?v=0pA7b_YkXls&feature=youtu.be>

Bergeron, Z. and **Fuller, R.C.** (2018) Using human vision to detect variation in animal coloration: How bad is it? The American Naturalist 191: 269-276. DOI: 10.1086/695282

Chang, C.-H., Schult, J., Sanders, J., Liui, S.-H., and **Fuller, R.C.** (2018) The vertical distributions and spawning site choices of red and yellow bluefin killifish (*Lucania* *goodei*) color morphs. Journal of Fish Biology 93: 396-400. DOI: 10.1111/jfb.13661

**Fuller, R.C.** and Endler, J.A. (2018) A perspective on sensory drive. Current Zoology. doi.org/10.1093/cz/zoy052

Johnson\*, A.M., Chang, C.-H.\*, and **Fuller, R.C.** (2018) Testing the potential mechanisms for the maintenance of a genetic color polymorphism in bluefin killifish populations. Current Zoology. DOI: doi.org/10.1093/cz/zoy017

\*these authors contributed equally to this manuscript.

Moran, R.M., Zhou, M., Catchen, J., and **Fuller, R.C.**  (2018) The previously underappreciated importance of postzygotic isolation in darters and its implications for reinforcement. Ecology and Evolution. 8: 9282-9294. doi:10.1002/ece3.4434

Moran, R.M. and **Fuller, R.C.** (2018)  Agonistic character displacement of genetically based male color patterns across darters. Proceedings of the Royal Society London, Biological Sciences 285: 20181248. dx.doi.org/10.1098/rspb.2018.1248

Mitchem, L.D., Stanis, S., Sutton, N.M., Turner, Z., and **Fuller, R.C.** (2018) The pervasive effects of lighting environments on sensory drive in bluefin killifish: an investigation into male/male competition, female choice, and predation. Current Zoology 64: 499-512. doi: 10.1093/cz/zoy038

Moran, R.M., Soukup, R.M., Zhou, M., and **Fuller, R.C.** (2018) Egg viability decreases rapidly with time since ovulation in the rainbow darter Etheostoma caeruleum: implications for the costs of choosiness.  Journal of Fish Biology 92: 532–536.

# Moran, R.M, and Fuller, R.C. (2018) Male-driven reproductive and agonistic character displacement in darters and its implications for speciation in allopatry.

Current Zoology 64: 101-113. DOI: 10.1093/cz/zox069

Sauer, E.L., **Fuller, R.C.**, Richards-Zawacki, C.L., Sonn, J., Sperry, J.H., Rohr, J.R. (2018) Variation in individual temperature preferences, not behavioural fever, affects susceptibility to chytridiomycosis in amphibians. Proceedings of the Royal Society B-Biological Sciences 285. DOI: 10.1098/rspb.2018.1111

St. John, M.E. and **Fuller, R.C.** (2018) The effects of experimental design on mating preferences and reproductive isolation in killifish. Behavioral Ecology. doi:10.1093/beheco/ary150

Moran, R.M., Zhou, M., Catchen, J.M., and **Fuller, R.C.** (2017) Male and female contributions to behavioral isolation in darters as a function of genetic distance and color distance. Evolution 71: 2428-2444. DOI: 10.1111/evo.13321.

**Fuller, R. C.** (2016) Reconciling concepts, theory, and empirical patterns surrounding cascade reinforcement. Current Zoology 62:131-134. DOI: 10.1093/cz/zow011

Sandkam, B. A., K. A. Deere-Machemer, A. M. Johnson, G. F. Grether, F. H. Rodd, and **R. C. Fuller.** (2016) Exploring visual plasticity: dietary carotenoids can change color vision in guppies (*Poecilia reticulata*). Journal of Comparative Physiology a-Neuroethology Sensory Neural and Behavioral Physiology 202:527-534. DOI: 10.1007/s00359-016-1097-9

Zhou, M. C., and **R. C. Fuller.** (2016) Intrasexual competition underlies sexual selection on male breeding coloration in the orangethroat darter, *Etheostoma spectabile*. Ecology and Evolution 6:3513-3522. DOI: 10.1002/ece3.2136

Johnson, A. M., and **R. C. Fuller.** (2015) The meaning of melanin, carotenoid, and pterin pigments in the bluefin killifish, *Lucania goodei*. Behavioral Ecology 26:158-167. DOI: 10.1093/beheco/aru164

Kozak, G. M., G. Roland, C. Rankhorn, A. Falater, E. L. Berdan, and **R. C. Fuller.** (2015) Behavioral isolation due to cascade reinforcement in *Lucania* killifish. American Naturalist 185:491-506. DOI: 10.1086/680023

Welsh, D. P., and **R. C. Fuller.** (2015) Influence of sex and habitat on the size and shape of anal and dorsal fins of the blackstripe topminnow *Fundulus notatus*. Journal of Fish Biology 86:217-227. DOI: 10.1111/jfb.12564

Zhou, M. C., E. R. Loew, and **R. C. Fuller.** (2015) Sexually asymmetric colour-based species discrimination in orangethroat darters. Animal Behaviour 106:171-179. DOI: 10.1016/j.anbehav.2015.05.016

Berdan, E. L., G. M. Kozak, R. Ming, A. L. Rayburn, R. Kiehart, and **R. C. Fuller.** (2014) Insight into genomic changes accompanying divergence: Genetic linkage maps and synteny of *Lucania goodei* and *L. parva* reveal a Robertsonian fusion. G3-Genes Genomes Genetics 4:1363-1372. DOI: 10.1534/g3.114.012096

Kozak, G. M., R. S. Brennan, E. L. Berdan, **R. C. Fuller,** and A. Whitehead. (2014) Functional and population genomic divergence within and between two species of killifish adapted to different osmotic niches. Evolution 68:63-80. DOI: 10.1111/evo.12265

Phamduy, P., G. Polverino, **R. C. Fuller,** and M. Porfiri. (2014) Fish and robot dancing together: bluefin killifish females respond differently to the courtship of a robot with varying color morphs. Bioinspiration & Biomimetics 9. DOI: 10.1088/1748-3182/9/3/036021

Zhou, M., and **R. C. Fuller.** (2014) Reproductive isolation between two darter species is enhanced and asymmetric in sympatry. Journal of Fish Biology 84:1389-1400. DOI: 10.1111/jfb.12364

Zhou, M. C., A. M. Johnson, and **R. C. Fuller.** (2014) Patterns of male breeding color variation differ across species, populations, and body size in rainbow and orangethroat darters. Copeia:297-308. DOI: 10.1643/CI-12-103

Johnson, A. M., S. Stanis, and **R. C. Fuller.** (2013) Diurnal lighting patterns and habitat alter opsin expression and colour preferences in a killifish. Proceedings of the Royal Society B-Biological Sciences 280. DOI: 10.1098/rspb.2013.0796

Schrader, M., **R. C. Fuller,** and J. Travis. (2013) Differences in offspring size predict the direction of isolation asymmetry between populations of a placental fish. Biology Letters 9. DOI: 10.1098/rsbl.2013.0327

Welsh, D. P., M. C. Zhou, S. M. Mussmann, L. G. Fields, C. L. Thomas, S. P. Pearish, S. L. Kilburn et al. **R.C. Fuller** (2013) The effects of age, sex, and habitat on body size and shape of the blackstripe topminnow, *Fundulus notatus* (Cyprinodontiformes: Fundulidae) (Rafinesque 1820). Biological Journal of the Linnean Society 108:784-789. DOI: 10.1111/bij.12022

Berdan, E. L., and **R. C. Fuller.** (2012a) Interspecific divergence of ionoregulatory physiology in killifish: insight into adaptation and speciation. Journal of Zoology 287:283-291.

Berdan, E. L., and **R. C. Fuller.** (2012b) A test for environmental effects on behavioral isolation in two species of killifish. Evolution 66:3224-3237. DOI: 10.1111/j.1558-5646.2011.01646.x

Gregorio, O., E. L. Berdan, G. M. Kozak, and **R. C. Fuller.** (2012) Reinforcement of male mate preferences in sympatric killifish species *Lucania goodei* and *Lucania parva*. Behavioral Ecology and Sociobiology 66:1429-1436. DOI: 10.1007/s00265-012-1398-0

Kozak, G.M., Rudolph, A.B., Colon, B.L., and **Fuller, R.C.** (2012) Postzygotic isolation evolves before prezygotic isolation between fresh and saltwater populations of the rainwater killifish, *Lucania parva.* International Journal of Zoology. Article ID 523967. doi: 10.1155/2012/523967.

**Fuller, R. C.,** and K. M. Claricoates. (2011) Rapid light-induced shifts in opsin expression: finding new opsins, discerning mechanisms of change, and implications for visual sensitivity. Molecular Ecology 20:3321-3335. DOI: 10.1111/j.1365-294X.2011.05180.x

Sandkam, B. A., and **R. C. Fuller.** (2011) The effects of water depth and light on oviposition and egg cannibalism in the bluefin killifish *Lucania goodei*. Journal of Fish Biology 78:967-972.

Schrader, M., J. Travis, and **R. C. Fuller.** (2011) Do density-driven mating system differences explain reproductive incompatibilities between populations of a placental fish? Molecular Ecology 20:4140-4151.

Welsh, D. P., and **R. C. Fuller.** (2011) Where to place your eggs: the effects of conspecific eggs and water depth on oviposition decisions in bluefin killifish. Journal of Zoology 284:192-197.

**Fuller, R. C.** (2010) Sensory Bias, Pages 424-425 *in* D. F. Westneat, and C. W. Fox, eds. Evolutionary Behavioral Ecology, Oxford University Press.

**Fuller, R. C.,** and L. A. Noa. (2010) Female mating preferences, lighting environment, and a test of the sensory bias hypothesis in the bluefin killifish. Animal Behaviour 80:23-35.

**Fuller, R. C.,** L. A. Noa, and R. S. Strellner. (2010) Teasing apart the many effects of lighting environment on opsin expression and foraging preference in bluefin killifish. American Naturalist 176:1-13.

**Fuller, R. C.** (2009) A test of the critical assumption of the sensory bias model for the evolution of female mating preference using neural networks. Evolution 63:1697-1711.

**Fuller, R. C.,** and A. M. Johnson. (2009) A test for negative frequency-dependent mating success as a function of male colour pattern in the bluefin killifish. Biological Journal of the Linnean Society 98:489-500.

**Fuller, R. C.** (2008a) Genetic incompatibilities in killifish and the role of environment. Evolution 62:3056-3068.

**Fuller, R. C.** (2008b) A test for a trade-off in salinity tolerance in early life-history stages in *Lucania goodei* and *L. parva*. Copeia:154-157.

**Fuller, R. C.,** and L. A. Noa. (2008) Distribution and stability of sympatric populations of *Lucania goodei* and *L. parva* across Florida. Copeia:699-707.

**Fuller, R. C.,** K. E. McGhee, and M. Schrader. (2007) Speciation in killifish and the role of salt tolerance. Journal of Evolutionary Biology 20:1962-1975.

McGhee, K. E., **R. C. Fuller,** and J. Travis. (2007) Male competition and female choice interact to determine mating success in the bluefin killifish. Behavioral Ecology 18:822-830.

**Fuller, R. C.,** C. F. Baer, and J. Travis. (2005a) How and when selection experiments might actually be useful. Integrative and Comparative Biology 45:391-404.

**Fuller, R. C.,** K. L. Carleton, J. M. Fadool, T. C. Spady, and J. Travis. (2005b) Genetic and environmental variation in the visual properties of bluefin killifish, *Lucania goodei*. Journal of Evolutionary Biology 18:516-523.

**Fuller, R. C.,** D. Houle, and J. Travis. (2005c) Sensory bias as an explanation for the evolution of mate preferences. American Naturalist 166:437-446.

**Fuller, R. C.,** K. L. Carleton, J. M. Fadool, T. C. Spady, and J. Travis. (2004) Population variation in opsin expression in the bluefin killifish, *Lucania goodei*: a real-time PCR study. Journal of Comparative Physiology a-Neuroethology Sensory Neural and Behavioral Physiology 190:147-154.

**Fuller, R. C.,** and J. Travis. (2004) Genetics, lighting environment, and heritable responses to lighting environment affect male color morph expression in bluefin killifish, *Lucania goodei*. Evolution 58:1086-1098.

Aresco, M. J., J. Birdsley, **R. C. Fuller,** M. S. Gunzburger, and J. Travis. (2003) *Pseudemys concinna concinna* (Eastern river cooter). Geographic distribution. Herpetological Review 34:261.

**Fuller, R. C.** (2003a) Disentangling female mate choice and male competition in the rainbow darter, *Etheotoma caeruleum* (issue 1, pg 138, 2003). Copeia:926-926.

**Fuller, R. C.** (2003b) Disentangling female mate choice and male competition in the rainbow darter, *Etheostoma caeruleum*. Copeia:138-148.

**Fuller, R. C.,** L. J. Fleishman, M. Leal, J. Travis, and E. Loew. (2003) Intraspecific variation in retinal cone distribution in the bluefin killifish, *Lucania goodei*. Journal of Comparative Physiology a-Neuroethology Sensory Neural and Behavioral Physiology 189:609-616.

**Fuller, R. C.,** and D. Houle. (2003) Inheritance of developmental instability, Pages 157-181 *in* M. Polak, ed. Developmental Instability: Causes and Consequences. Oxford, Oxford University Press.

**Fuller, R. C.** (2002) Lighting environment predicts the relative abundance of male colour morphs in bluefin killifish (*Lucania goodei*) populations. Proceedings of the Royal Society B-Biological Sciences 269:1457-1465.

**Fuller, R. C.,** and D. Houle. (2002) Detecting genetic variation in developmental instability by artificial selection on fluctuating asymmetry. Journal of Evolutionary Biology 15:954-960.

McCune, A. R., **R. C. Fuller,** A. A. Aquilina, R. M. Dawley, J. M. Fadool, D. Houle, J. Travis et al. (2002) A low genomic number of recessive lethals in natural populations of bluefin killifish and zebrafish. Science 296:2398-2401.

**Fuller, R. C.** (2001) Patterns in male breeding behaviors in the bluefin killifish, *Lucania goodei*: A field study (Cyprinodontiformes : Fundulidae). Copeia:823-828.

**Fuller, R. C.,** and J. Travis. (2001) A test for male parental care in a fundulid, the bluefin killifish, *Lucania goodei*. Environmental Biology of Fishes 61:419-426.

**Fuller, R. C.** (1999) Costs of group spawning to guarding males in the rainbow darter, *Etheostoma caeruleum*. Copeia:1084-1088.

**Fuller, R. C.** (1998a) Fecundity estimates for rainbow darters, *Etheostoma caeruleum,* in southwestern Michigan. Ohio Journal of Science 98:2-5.

**Fuller, R. C.** (1998b) Sperm competition affects male behaviour and sperm output in the rainbow darter. Proceedings of the Royal Society B-Biological Sciences 265:2365-2371.

Rettig, J. E., **R. C. Fuller,** A. L. Corbett, and T. Getty. (1997) Fluctuating asymmetry indicates levels of competition in an even-aged poplar clone. Oikos 80:123-127.

**Fuller, R.,** and A. Berglund. (1996) Behavioral responses of a sex-role reversed pipefish to a gradient of perceived predation risk. Behavioral Ecology 7:69-75.

**Fuller, R. C.,** and A. Joern. (1996) Grasshopper susceptibility to predation in response to vegetation cover and patch area. Journal of Orthopteran Research 5:175-183.

### Presentations at Meetings

# SBIR Bootcamp Kick-Off, Arlington VA, September, 2019

# Society for the Study of Evolution, Providence, RI, June 2019.

# National Science Teachers Association, St. Louis, MO, April 2019.

# National Association of Biology Teachers, San Diego, CA, November 2018.

# Society for the Study of Evolution/European Society of Evolutionary Biology/American Society of Naturalists, Montpellier, France, August 2018

# American Society of Naturalists, Asilomar, CA, January 2018

# Society for the Study of Evolution/American Society of Naturalists, Portland, OR, June 2017.

National Association of Biology Teachers, Featured Speaker, Denver, CO, November 2016

# Society for the Study of Evolution/American Society of Naturalists, Austin, TX, June 2016.

# Society for the Study of Evolution/American Society of Naturalists, Guarujá, São Paulo, Brazil, June 2015.

Society for the Study of Evolution/American Society of Naturalists, Raleigh, NC, June 2014.

American Society of Naturalists, Asilomar, CA, January 2014.

Society for the Study of Evolution/American Society of Naturalists, Snowbird, UT, June 2013.

Society for the Study of Evolution/American Society of Naturalists, Ottawa ON, June 2012.

Society for the Study of Evolution/American Society of Naturalists, Norman, OK, June 2011.

Society for the Study of Evolution/American Society of Naturalists, Minneapolis, MN, June 2009.

European Society of Evolution Biology, Uppsala, Sweden: August 2007.

Symposium Participant: Animal Behavior Society, Snowbird, UT: August 2006.

Young Investigator Talk: Society for the Study of Evolution, Stony Brook, NY: July 2006.

Society of Integrative and Comparative Biology, Orlando, FL: January 2006.

Society for the Study of Evolution/American Society of Naturalists, Ft. Collins, CO: June 2004.

Society for the Study of Evolution/American Society of Naturalists, Chico, CA: June 2003.

American Society of Ichthyology and Herpetology. Kansas City, KS: July 2002.

Society for the Study of Evolution/American Society of Naturalists, Knoxville, TN, June 2001.

Animal Behavior Society. Atlanta, GA: August 2000.

American Society of Ichthyology and Herpetology. LaPaz, Mexico: June 2000.

Ecology, ethology, and evolution of fishes. Athens, FA: May 2000.

British and American Ecological Societies. Orlando, FL: Feb. 2000. (poster)

American Society of Ichthyology and Herpetology. PennState PA: Jul, 1999.

International Society for Behavioral Ecology. Asilomar, CA: July 1998.

Darterfest. Toshimongo, MS: March 1998.

Animal Behavior Midwest Conference. Indiana University, Bloomington, IN: November 1996.

XXIV International Ethological Conference. Honolulu, HI: August 1995.

Annual West Coast Marine Biology Summer Meeting: Fiskebäckskil, Sweden: July 1994.

Nebraska Academy of Sciences. Lincoln, NE: April 1993.

**Invited Institutional Seminars**

Featured Speaker: University of Nebraska at Lincoln, Undergraduate Symposium, April, 2022

Symposium Organizers and Presenter: Best Practices for Teacher Development in Evolution, Providence, RI, June 2019

Symposium Organizer and Presenter: 25 Years of Sensory Drive, Evolution Meetings, Portland, OR June 2017

Symposium Organizer and Presenter: ASN Education Symposium: Natural History in the Classroom, Evolution Meetings, Portland, OR June 2017

Workshop Participant: Cultural Attraction, Ghent, Belgium, December 2014

Symposium Speaker, European Soc. for Evol. Biol., Tubingen, Germany, August, 2011

Invited Symposium Speaker, Animal Behavior Society, June 2009 – declined.

Key Note Speaker, Kentucky Symposium in Ecology and Evolutionary Biology, May 21, 2006.

Invited Seminar: University of Alabama-Huntsville, November, 2020

Invited Seminar: Kellogg Biological Station, December 6, 2019

Invited Seminar: Indiana State University, October 1, 2019

Invited Seminar: Florida State University, November 15-16, 2018

Invited Seminar: Florida State University, May 2, 2018

Invited Seminar: Louisiana State University, October 9, 2017

Invited Seminar: Union College, April 13, 2017

Invited Seminar: Arizona State University, October 26, 2016

Invited Seminar: Mountain Lake Biological Station, June 17, 2015

Invited Seminar: University of Connecticut, October 16, 2014

Invited Seminar: University of Georgia, February 5, 2014

Invited Seminar: University of North Carolina, October 8, 2013

Invited Seminar: University of Akron, April 21, 2013

Invited Seminar: University of Wisconsin, February 2012

Invited Seminar: Indiana University, February 2010.

Invited Seminar: University of Toronto, March 4, 2009

Invited Seminar: Northern Illinois University, October 4, 2007

Invited Seminar: Indiana State University, September 25, 2007

Invited Seminar: Purdue University, February 27, 2007

Invited Seminar: Southern Illinois University at Edwardsville, February 19, 2007

Invited Seminar: Kellogg Biological Station, February 2, 2007

Invited Speaker: Harvard University: December 2004.

Invited Speaker: University of Maryland, Baltimore County: December 2004.

Invited Speaker: Auburn University, Auburn, AL: September 2003.

Invited Speaker: University of Florida, Gainesville, FL: September 2003.

Invited Speaker: University of New Hampshire, Durham, NH: September 2002.

Invited Speaker: University of Illinois. Champaign-Urbana, IL: November 1996.

Invited Speaker: Alma College, Alma, MI: January 1996.

## Service & Committee Work

*Leadership*

Incoming Department Head - Department of Evolution, Ecology, and Behavior (to begin August 15, 2022)

Director of Graduate Students - Department of Evolution, Ecology, and Behavior: 2017 – present

*Committees*

University of Illinois Planning Committee for Translation Research Facility, Enterprise Works 2.0 (April 2020 – present)

University of Illinois Covid Task Force on Contingency Planning (May 2020 – December 2021)

School of Integrative Biology Executive Committee: 2018-2021

GAAN Fellowship Committee: 2016-2020

University of Illinois Graduate College Executive Committee: 2018 - 2020

Liberal Arts & Sciences General Education Committee: 2016-2018

Liberal Arts & Sciences Appeals Committee: 2016-2018

University of Illinois - Fulbright & Goldwater Standing Committee: 2012-present (standing committee)

Department of Evolution, Ecology, and Behavior Grad Admissions Committee: 2005-present

Program in Ecology, Evolution, & Conservation Steering Committee: 2008-2011, 2015-2018

Program in Ecology, Evolution, & Conservation Graduate Committee: 2005-2007

Program in Ecology, Evolution, & Conservation Seminar Committee: 2015-2020

School of Integrative Biology Fellowship Committee: 2010-2013

School of Integrative Biology Curriculum and Development Committee: 2006-2009

School of Integrative Biology – 200 level Course Development: 2006

School of Integrative Biology Undergraduate Distinction committee – 2007-2008, 2016-2018

School of Integrative Biology, Transforming the Curriculum Leader: 2014-2016

Program in Neuroscience Brain Awareness Week Committee: 2006-2007

Program in Neuroscience Graduate Admissions Committee: 2009-2011

Biotechnology Center Faculty Advisory Committee Meeting: 2008-2012

Presented Neuroscience Brain Awareness Presentation: 2008

Organized Illinois Fish Consortium Working Group – 2009

*Search Committees*

Illinois Natural History Survey Ichthyology Search Committee: 2007

School of Integrative Biology Endowed Chair in Parasitology Search: 2015

School of Integrative Biology Functional Morphology Search (Chair): 2016

School of Integrative Biology Physiology Search: 2018

School of Integrative Biology Photosynthesis Engineering Search: 2020

*Review Committees*

5-Year Review Committee: Department Head Evolution, Ecology and Behavior, Andrew Suarez (2018)

5-Year Review Committee: Cline Center Direct, Scott Althaus (Chair, 2019)

5-Year Review Committee: Graduate Dean, Wojtek Chodzko Zajko (2020)

5-Year Review Committee: School of Molecular and Cellular Biology, Milan Bagchi (2022)

## Professional Affiliations, Memberships, and Honoraries

European Society of Evolutionary Biology, 2007, 2011

American Society of Naturalists, 2005-present

Joint Meeting Committee Rep, 2014-2016

Committee Member to Help Organize ASN Stand Alone meeting in Asilomar, 2014

ASN Student Research Award Committee, 2013-2015 (chair in 2015)

Society for the Study of Evolution, 1996 – present

Council Member 2016-2018

Rosemary Grant Award Committee, 2016-2018

Hamilton Award Committee, 2012-2015

Education Committee, 2017-present

International Society of Behavioral Ecology, 1994 - 2018

Animal Behavior Society, 1995 - present

American Society of Ichthyology and Herpetology, 1999 – present

American Association for the Advancement of Science, 2005-present

Sigma Delta Epsilon - Graduate Women in Science - Omega Chapter, 1996 – 2005

Sigma Xi – 2007-present

**Broader Community Service**

*Leadership*

American Society of Naturalists - Treasurer (2020-2022)

American Society of Naturalists Representative to ‘Safe Evolution’ Committee (2020 – present)

American Society of Naturalists - Joint Meeting Committee Representative (January 2014-2017)

Society for the Study of Evolution – Council Member (2015-2018)

*Committees and Service*

American Society of Naturalists - Meeting Organizer for Asilomar Meeting, January 2014

American Society of Naturalists - Student Research Award (2012-2014, chair 2014)

Society for the Study of Evolution – Hamilton Award Committee (2008-2013, 2015)

Society for the Study of Evolution – Education Committee (2017-present)

National Science Foundation – Evolutionary Ecology Panel (Spring 2010)

National Science Foundation – Evolutionary Ecology Panel (Spring 2011)

National Science Foundation - Evolutionary Genetics Panel (Spring 2013)

National Science Foundation - Evolutionary Genetics Panel (Fall 2021)

# Journals/Institutions Reviewed

*Editorial Duties*

Associate Editor for Current Zoology - June 2015 - present

Associate Editor for The American Naturalist - October 2014 - present

Associate Editor for Evolution – January 2011 - January 2014, January 2019 – January 2022

Special Column Editor for Current Zoology - 2018 (25 Years of Sensory Drive)

Special Column Editor for Current Zoology - 2016 (Cascade Reinforcement)

*Reviewing Duties*

American Naturalist

Animal Behaviour

Behavioral Ecology

Behavioral Ecology and Sociobiology

Biological Journal of the Linnean Society

Biological Review

BMC Biology

Copeia

Ecology

Environmental Biology of Fishes

Evolution

Journal of Evolutionary Biology

Journal of Fish Biology

Nature Communications

Oecologia

Plos Biology

Proceedings of the Royal Society London: Series B

Proceedings of the National Academy of Science

Outside Reviewer National Science Foundation (Animal Behavior, Population Biology, Physiology)

Outside Reviewer Danish Institute of Science

Outside Reviewer for Canadian Research Chair

**Outreach**

Teacher Workshop for PAGES (Progressing through the Ages: Global change, Evolution, and Societal well-being)

Presented at Wisconsin Killifish Association Meeting - November 2017

Organized 'Teacher Workshop in Evolutionary Biology' - 2012, 2013, 2014, 2015

Faculty Advisor to Project NEURON unit 'Light, Sight, and Natural Selection'

Fish Presentations at Boneyard Creek Clean-up Day - 2013-2015

Letter to the Editor in News-Gazette on evolution vs. creationism - July 9, 2014

Organized Summer Workshops for Next Generation Science Standards in Ecology & Evolution – 2016, 2017

Fish Presentations for Yankee Ridge Junior Scientist Day (2016-2018)

Worked with first grade teachers to set up display on ‘life cycles’

Presentation: Wisconsin Area Killifish Association, October 28, 2017, *Title: Color patterns, color vision, and the pervasive effects of lighting environments on killifish.*

Presentation: Champaign Public Library, April 24, 2018, *Title: Seeing the World Through the Eyes of a Fish: The Difficulties of Using Human Vision to Predict Fish Vision*

Presentation: Urbana Presbyterian Church, February 11, 2018, *Title: Common Misconceptions Surrounding Evolution.*

**Ph.D. Students**

Emma Berdan, 2013, currently Research Scientist, University of Gothenburg

Ashley Johnson, 2013, currently director of outreach at Broad Institute of MIT and Harvard

Daniel Welsh, 2013, currently associate professor, Fitchburg State University

## Muchu Zhou, 2014, currently Zebrafish Facility Manager/Researcher at University of Michigan College of Medicine

Rachel Moran, 2019, currently post-doctoral scientist, University of Minnesota

Ratna Karatgi, in-progress, University of Illinois

Kasey Brockelsby, in-progress, University of Illinois

**M.S. Students**

Zachary Bergeron, 2015, currently assistant in the Provost Office at Smith College

Michelle St. John, 2017, currently Ph.D. student at University of California - Berkeley, Chris Martin, Advisor

Lisa Mitchem, 2017, currently Ph.D. student at University of Virginia, Butch Brodie, Advisor

Lauren, McDaniel, 2020, currently working as a biological researcher in Bradenton, FL

**Undergraduate Students**

Approximately 160 undergraduates have had research experiences in my lab between 2005-2022. In addition, I have employed 13 biology secondary education teachers and three in-service teachers in my lab. I have also hosted summer interns from various programs across campus. Below, I list a few notable undergraduate students and their current position.

|  |
| --- |
| **Teachers** |
| **Kevin Knapik,** BS University of Illinois, High School Biology Teacher, Chicagoland Area |
| **Jennifer Kinderman,** BS University of Illinois, Francis Granger Middle School, Biology Teacher, Aurora, Illinois |
| **Bobby Reuter,** BS University of Illinois, High School Biology Teacher, Chicagoland Area |
| **Lynn Wydelman**, BS University of Illinois, Centennial High School Biology Teacher, Champaign, IL |
| **Jessie Coonley,** BS University of Illinois, Lane Technical High School Chicago Public Schools Biology Teacher |
| **Mike Klikuszewski,** BS University of Illinois, High School Biology Teacher, Wauconda High School |
| **Reid Strellner,** BS University of Illinois, Swimming Coach, Lane Technical High School Chicago Public Schools |
| **Paige Waccholz,** BS University of Illinois, Lakes Community High School Biology Teacher |
| **Genevieve Roland,** BS University of Illinois, Roberto Clemente High School Science Teacher |
| **Lindsay Heffernan,** BS University of Illinois, Mascoutah High School Biology Teacher |
| **Erica Simburger,** BS University of Illinois, High School Biology Teacher |
| **Natasha Capell,** Summer Intern, Academy High Biology Teacher |
| **Bridget Kemmer,** Summer Intern, Homer High School Science Teacher |
| **Zach Boehmke**, Summer Intern, Urbana High School Biology Teacher |
| **Joel Borowicz,** BS University of Illinois, Science Teacher at Glenbrook High School |
| **Other Notable Undergraduates, year graduated UI Bachelor's of Science, highest degree obtained, current position**   |  | | --- | | **Kristin Claricoates** - 2008, D.V.M., Veterinarian at Chicago Exotics Animal Hospital | | **Abhi Sarup** - 2008, M.S., Medical Technologist | | **Ben Sandkam** - 2009 - Ph.D., Post-Doc at University of Maryland, Assistant Professor at Cornell University Starting Fall 2020 | | **Kathryn Danielson** - 2009, Outdoor Environmental Activist / Senior Strategiest / UX Researcher | | **Arthur Rudolph** - 2010, Ph.D., Yeast researcher and QAQC manager at First Magnitude Brewing Company | | **Katie Murphy** - 2010, M.S., Research Technologist II at Northwestern University, Feinberg School of Medicine | | **Jamie Brusa** - 2010, M.S., Ph.D. student at Montana State University pursuing marine biology | | **Ursula Sieklucki** - 2010, D.V.M., Veterinarian at Banfield Pet Hospital | | **Chris Holmes** - 2011, Ph.D., Program Manager for the Office of Undergraduate Research, University of Illinois | | **Austin Rundus** - 2012, M.S., Media Analyst III at IRI | | **Shannon Stanis** - 2013, M.S, Wabash River Enhancement Group, Watershed Coordinator | | **Nicholas Sutton** - 2013, M.S., Ph.D. Student at University of Illinois, Theoretical Ecology | | **Clare Rankhorn** - 2014, M.A. in Education, Outdoor Environmental Educator | | **Sally Feng** - 2014, Fulbright Scholar to Philippines, Educator at Salvadori Center | | **Numan Karim** - 2014, M.S., Clinical Analytics Lead at AbbVie | | **Nicholas Barts** - 2015, Pursuing Ph.D. at Kansas State University | | **Nicholas Flores-Hutton** - 2016, Currently in Dental School University of Illinois Chicago | | **Rachel Shim** - 2016, Illinois College of Optometry | | **Makayla Wycoff** - 2016, Currently in Optometry School | | **Rachel Soukup** - 2018, D.V.M. in progress, Student at Veterinary School, University of Missouri  **Evi Malone** – 2022, Currently in Nursing Anesthesiology  **Kieran Patel** – 2021, Currently applying to medical School  **Jonny Chan** – 2022, Working in Chicago  **Valerie Shamshyna** – 2022, Working in Chicago | |