

# Samuel C. Evans, M.Sc.

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## SKILLS OVERVIEW

Biologist and statistical programmer. Conceptual strengths in behavior, ecology, and evolutionary theory. Comfortable in a laboratory setting and experienced in a variety of techniques (e.g. biomechanical testing, DNA extraction, PCR). Proficient in data organization, analyses, and visualization via R and Python languages. Detail-oriented and committed to producing consistent results in a well-controlled and disciplined manner.

## EDUCATION

- University of British Columbia**, Vancouver, BC, Canada 2014 – present  
PhD Zoology (on leave as of 1 Jan 2017)  
Dissertation: systematics and phylogenomics of jumping spiders
- University of Akron**, Akron, OH 2010 – 2013  
M.Sc. Biology  
Thesis: biomechanics and evolutionary ecology of prey capture by spider orb-webs  
Graduate coursework focused on evolutionary theory, computational biology
- Miami University**, Oxford, OH 2005 – 2010  
B.Sc. Zoology, Environmental Science; minor in Statistical Methods  
Capstone courses: Data Analysis Practicum, Winter Biology  
Graduate-level courses: Community Ecology, Bioinformatics
- The School for Field Studies' Centre for Wildlife Management**, Karatu, Tanzania 2008  
field courses abroad in wildlife ecology, management, and socioeconomic policy

## PROFESSIONAL EXPERIENCE

- Graduate Research and Teaching Assistant** 2014 – 2016  
Department of Zoology, University of British Columbia, Vancouver, BC, Canada  
– Developed R and Python scripts to organize and analyze genomic and transcriptomic sequence data  
– Followed protocols to properly preserve specimens for subsequent DNA/RNA extractions  
– Conducted DNA extractions, PCR, gel electrophoresis, and sample quality control procedures  
– Performed basic morphotyping of spider specimens for species descriptions and genus revision  
– Traveled throughout western North America to collect jumping spider specimens for phylogenetic studies  
– Volunteered in the Beaty Biodiversity Museum's Spencer Entomological Collection, identifying spider specimens, organizing collections, and participating in local biodiversity surveys  
– Taught eight terms of evolutionary biology (tutorial supplement to lecture), 15-45 students/term
- Graduate Research and Teaching Assistant** 2010 – 2013  
Department of Biology, University of Akron, Akron, OH  
– Developed Java and R scripts to execute individual-based models simulating spider web mechanics  
– Measured mechanical properties of spider silk using sensitive tensile testing equipment (Nano Bionix<sup>(R)</sup>)  
– Maintained lab populations of orb-weaving (Araneioidea) and black widow (*Latrodectus* spp.) spiders  
– Mentor for STEM Tiered-Mentoring and Research Experience for Undergraduates programs  
– Served one semester as coordinator for the Department of Biology Ecolunch seminar series  
– Taught five terms of introductory biology laboratory, 120 students per term
- Research Technician** 2012  
Ecology and Evolutionary Biology Department, Rice University, Houston, TX  
– Managed a joint lab headed by two principal investigators  
– Solely responsible for watering, weeding, and transplanting regimes of greenhouse plant populations

- Prepared and applied pyrethroid pesticides to control greenhouse aphid infestations
- Worked with maintenance staff to troubleshoot various greenhouse climate control system issues
- Traveled to field sites throughout eastern Texas to collect data, set up/take down experimental plots
- Frequently performed 12-hour days of fieldwork exposed to the summer elements of eastern Texas
- Performed data entry and maintained organized binders of hard-copy backups and original datasheets
- Managed undergraduate assistants to assist with several graduate student projects
- Managed payroll for undergraduate assistants and communicated with departmental administration to ensure student wages and lab equipment costs were paid for by the appropriate grants

### **Research Associate and Laboratory Manager**

2006 – 2010

Department of Biology, Miami University, Oxford, OH

- Designed and conducted laboratory experiments investigating the separate and combined effects of glyphosate-based herbicide and predator chemical cues on wolf spider and carabid beetle behavior
- Introduced a study species novel to the lab (the carabid beetle *Scarites quadricaps*) and developed protocols to collect specimens from the field and maintain populations in the lab
- Reared and maintained lab populations of wolf spiders, cellar spiders, and carabid beetles
- Prepared and applied glyphosate-based herbicide solutions as appropriate for experiments
- Maintained lab populations of fruit flies, crickets, collembolans used to feed research specimens
- Trained and supervised new undergraduate assistants
- Organized field trips to collect specimens necessary for field and lab research
- Designed and constructed arenas for mate choice and activity quantification trials
- Devised a handbook of protocols for all lab operations, still in use to date
- Designed and updated the laboratory's website
- Operated landscape management equipment (riding mowers, compact utility vehicles)
- Earned the Howard Hughes Medical Institute's Summer Scholars undergraduate research grant
- One of only six students awarded the 2007 Barrett Award for Excellence in Undergraduate Research

### **Undergraduate Assistant (prairie vole behavior and neurobiology)**

2008

Department of Biology, Miami University, Oxford, OH

- Assisted a graduate student in field experiments investigating the relationship between MC1R genetic variation and social monogamy in prairie voles (*Microtus ochragaster*)
- Followed protocols to trap and handle voles in field enclosures, recording demographic data
- Conducted radio telemetry to identify locations of radio-collared individuals relative to marked nests
- Frequently worked late evening hours to complete field data collection as dictated by weather conditions

### **Undergraduate Assistant (insect landscape ecology)**

2006

Department of Biology, Miami University, Oxford, OH

- Assisted graduate students post-docs in lab and field studies on insect landscape ecology
- Identified, organized, and mounted representatives of insects sampled from experimental plots
- Performed vacuum sampling (D-Vac) of insects from experimental plots

### OUTREACH

Guest, *The Sound of Ideas* science and technology radio program, WCPN 90.3 FM

2011

(<http://www.ideastream.org/programs/sound-of-ideas/science-cafe-the-fantastic-world-of-spider-silk>)

Guest Lecturer, Science Café Cleveland public lecture series (attendance: 197)

2011

Volunteer Educator, Miami University High School Outreach Program

2010

Volunteer for wetland restoration, Banrock Station Wine and Wetland Centre, South Australia

2007

## PUBLICATIONS

- Evans SC**, WP Maddison. In prep. A genome-wide phylogeny of the jumping spiders (Araneae: Salticidae) via anchored hybrid enrichment. To be submitted to *ZooKeys*.
- Evans SC**, TA Blackledge. In prep. A model integrating the ecology and biomechanics of prey capture by spider orb webs suggests foraging success hinges on capturing rare, large prey. To be submitted to *Journal of Theoretical Biology*.
- Rittman S, KM Wrinn, **SC Evans**, AW Webb, AL Rypstra. 2013. Glyphosate-based herbicide has contrasting effects on prey capture by two co-occurring wolf spider species. *Journal of Chemical Ecology* 39:1247-1253.
- Wrinn KM, **SC Evans**, AL Rypstra. 2012. Predator cues and an herbicide affect activity and emigration in an agrobiont wolf spider. *Chemosphere* 87:390-396.
- Griesinger LM, **SC Evans**, AL Rypstra. 2011. Effects of a glyphosate-based herbicide on mate location in a wolf spider that inhabits agroecosystems. *Chemosphere* 84:1461-1466.
- Evans SC**, EM Shaw, AL Rypstra. 2010. Exposure to a glyphosate-based herbicide affects agrobiont predatory arthropod behaviour and long-term survival. *Ecotoxicology* 19:1249-1257.

## PRESENTATIONS

- Evans SC, WP Maddison. 2016. Resolving deep relationships within jumping spiders. 20<sup>th</sup> annual International Congress of Arachnology meeting, Golden, CO.
- Evans SC, WP Maddison, CA Hamilton, JE Bond, AR Lemmon, EM Lemmon. 2015. A genome-wide phylogeny of the jumping spiders (Araneae: Salticidae) using anchored enrichment. 39<sup>th</sup> annual American Arachnological Society meeting, Mitchell, SD.
- Evans SC, TA Blackledge. 2015. Orb spider foraging success hinges on capturing rare large prey, even when small prey are biomass-dominant. 39<sup>th</sup> annual American Arachnological Society meeting, Mitchell, SD.
- Evans SC, D Piorkowski, TA Blackledge. 2011. Does the orb weaving spider *Argiope trifasciata* alter silk investment and web architecture based on proximity to starvation? University of Akron Biology Research Symposium, Akron, OH. (2<sup>nd</sup> place in student poster comp.)
- Evans SC, TA Blackledge. 2011. Can orb-weaving spiders adaptively alter web area in response to hunger level? Predictions of a simulation model. 35<sup>th</sup> annual American Arachnological Society meeting, Portland, OR.
- Evans SC, LM Griesinger, AL Rypstra. 2010. Effects of a glyphosate-based herbicide on mate location in the wolf spider *Pardosa milvina*. 95<sup>th</sup> annual Ecological Society of America meeting, Pittsburgh PA.
- Evans SC, LM Griesinger, AL Rypstra. 2010. Effects of a glyphosate-based herbicide on mate location in the wolf spider *Pardosa milvina*. 34<sup>th</sup> annual American Arachnological Society meeting, Greenville, NC.
- Evans SC, KM Wrinn, EM Shaw, AL Rypstra. 2009. Predatory agrobiont arthropod behavior and interactions as influenced by a glyphosate-based herbicide. 94<sup>th</sup> annual Ecological Society of America meeting, Albuquerque, NM.
- Evans SC, KM Wrinn, EM Shaw, AL Rypstra. 2009. Predatory agrobiont arthropod behavior and interactions as influenced by a glyphosate-based herbicide. 33<sup>rd</sup> annual American Arachnological Society meeting, Russellville, AR. (1<sup>st</sup> place in student poster competition)
- Evans SC, KM Wrinn, EM Shaw, AL Rypstra. 2009. Influences of an herbicide on predatory agrobiont arthropod activity and interactions. Entomological Society of America north-central branch meeting, St. Louis, MO.