

KATHLEEN L. FOSTER, PH.D.

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Academic positions

2020-present – Assistant Professor of Biology, Ball State University

Previous positions

2019(Aug-Dec) – Visiting Scholar, Purdue University, Fort Wayne
Host: Dr. Dr. Alessandro Maria Selvitella

2016-2019 – Post-doctoral Fellow, University of Ottawa
Advisor: Dr. Emily Standen

Education

2011-2016 – Ph.D. – Evolution, Ecology and Organismal Biology, University of California, Riverside
Advisor: Dr. Tim Higham

2010-2011 – Graduate Student/Teaching Assistant – Clemson University (lab relocated to UCR)
Advisor: Dr. Tim Higham

2005-2010 – B.S. Hon. with Distinction, Marine Biology – University of British Columbia
Advisor: Dr. Robert Shadwick

PUBLICATIONS (* denotes undergraduate student)

- 8) **Foster, K.L.**, Lutek, K.K., and Standen, E.M. In revision. Neuromuscular control and mechanical constraints during an amphibious transition in *Polypterus senegalus*.
- 7) **Foster, K.L.**, Garland, T., Jr., and Higham, T.E. 2018. Skink ecomorphology: forelimb and hind limb lengths, but not static stability, correlate with habitat use and demonstrate multiple solutions. *Biological Journal of the Linnean Society* 125, 673-692.
- 6) **Foster, K.L.**, Dhuper, M.*, and Standen, E.M. 2018. Fin and body neuromuscular coordination changes during walking and swimming in *Polypterus senegalus*. *Journal of Experimental Biology* 221, 1-13.
- 5) **Foster, K.L.** and Higham, T.E. 2017. Integrating gastrocnemius force-length properties, *in vivo* activation, and operating lengths reveals how *Anolis* deal with ecological challenges. *Journal of Experimental Biology* 220, 796-806.
- 4) **Foster, K.L.**, Collins, C.E., Higham, T.E., and Garland, T., Jr. 2015. Determinants of lizard escape performance: decision, motivation, ability, and opportunity. In *Escaping From Predators: An*

Integrative View of Escape Decisions, eds. W.E. Cooper, Jr. and D.T. Blumstein. Cambridge: Cambridge University Press.

- 3) **Foster, K.L.** and Higham, T.E. 2014. Context-dependent changes in motor control and kinematics during locomotion: modulation and decoupling. *Proceedings of the Royal Society B* 281, 20133331.
- 2) **Foster, K.L.** and Higham, T.E. 2012. How forelimb and hindlimb function changes with incline and perch diameter in the green anole, *Anolis carolinensis*. *Journal of Experimental Biology* 215, 2288-2300.
- 1) **Foster, K.L.** and Higham, T.E. 2010. How to build a pectoral fin: Functional morphology and steady swimming kinematics of the spotted ratfish. *Canadian Journal of Zoology* 88, 774-780.

Abstracts and Presentations (* denotes undergraduate student)

- 27) 2019 – **Foster, K.L.** and Selvitella, A.M. The data science revolution in biomechanics: traditional statistical tests vs modern machine learning methods in the study of lizard locomotion. Oral presentation given at the Data Science Week at Purdue University, Fort Wayne, IN.
- 26) 2019 – Anderson, M.*, Chen, Y.*, Dearing, R.*, Flores, K.*, Ferguson, J.*, Grabau, J.*, Harris, B.*, Kaiser, Z.*, Kirk, J.*, Kohne, K.*, McCann, B.*, Mueller, A.*, Ponce, K.*, Powers, A.*, **Foster, K.L.**, and Selvitella, A.M. Uncovering the impact of the environment in lizard biomechanics: from classical methods to modern statistical learning. Poster presentation given at the Data Science Week at Purdue University, Fort Wayne, IN.
- 25) 2019 – Anderson, M.*, Chen, Y.*, Dearing, R.*, Flores, K.*, Ferguson, J.*, Grabau, J.*, Harris, B.*, Kaiser, Z.*, Kirk, J.*, Kohne, K.*, McCann, B.*, Mueller, A.*, Ponce, K.*, Powers, A.*, **Foster, K.L.**, and Selvitella, A.M. Leaf shape analysis and classification via supervised learning. Poster presentation given at the Data Science Week at Purdue University, Fort Wayne, IN.
- 24) 2018 – **Foster, K.L.**, Dhuper, M.*, and Standen, E.M. *In vivo* activation and contractile function of muscle during walking and swimming in *Polypterus senegalus*. Oral presentation given at the Conference on Bio-propulsion of Adaptive Systems at the Queens University Biological Station, Elgin, Ontario, Canada.
- 23) 2018 – **Foster, K.L.**, Lutek, K., Silverman, J.*, and Standen, E.M. Neuromuscular function and kinematics of the walking to swimming transition in *Polypterus senegalus*. Oral presentation given at the annual meeting of the Canadian Society of Zoologists, St. John's, Newfoundland, Canada.
- 22) 2018 – **Foster, K.L.** and Standen, E.M. Fin and body neuromuscular coordination changes during walking and swimming in *Polypterus senegalus*. Oral presentation given at the annual meeting of the Society for Integrative and Comparative Biology, San Francisco, CA.
- 21) 2017 – **Foster, K.L.** and Standen, E.M. Neuromuscular function and coordination of fin and body musculature during swimming and walking in *Polypterus senegalus*. Oral presentation given at the annual meeting of the Canadian Society of Zoologists, Winnipeg, Manitoba, Canada.
- 20) 2017 – **Foster, K.L.** and Higham, T.E. Comparative neuromuscular function during arboreal locomotion in *Anolis* lizards. Oral presentation given at the annual meeting of the Society for Integrative and Comparative Biology, New Orleans, LA.

- 19) 2016 – **Foster, K.L.** and Higham, T.E. Comparative arboreal locomotion of *Anolis* lizards. Oral presentation given at the annual meeting of the Society for Integrative and Comparative Biology, Portland, OR.
- 18) 2015 – **Foster, K.L.** and Higham, T.E. Muscle recruitment and mechanics are modulated during arboreal locomotion in *Anolis* lizards. Oral presentation given at the annual meeting of the Society for Experimental Biology, Prague, Czech Republic.
- 17) 2015 – **Foster, K.L.** and Higham, T.E. Modulation of muscle function during arboreal locomotion in *Anolis* lizards. Oral presentation given at the annual meeting of the Canadian Society of Zoologists, Calgary, Alberta, Canada.
- 16) 2015 – **Foster, K.L.** and Higham, T.E. Modulation of muscle function during arboreal locomotion in *Anolis* lizards. Oral presentation given at Gradfest – University of California, Riverside, Riverside, CA.
- 15) 2015 – **Foster, K.L.** and Higham, T.E. The mechanical functions of muscle and tendon during arboreal locomotion in *Anolis* lizards. Oral presentation given at the annual meeting of the Society for Integrative and Comparative Biology, West Palm Beach, FL.
- 14) 2015 – **Foster, K.L.**, Garland, T., Jr., and Higham, T.E. Ecomorphology of lygosomine skinks: the impact of habitat use on limb length. Poster presentation given at the annual meeting of the Society for Integrative and Comparative Biology, West Palm Beach, FL.
- 13) 2014 – **Foster, K.L.** Presenting your research to judges, teachers, and adults: what to say and how to say it. Invited lecture given at the Pomona Unified School District Science Fair Expo, Riverside, CA.
- 12) 2014 – **Foster, K.L.** Statistics for science fairs: what you need to know about basic graphing and statistics. Invited lecture given at the Riverside County Office of Education Science Fair Expo, Riverside, CA.
- 11) 2014 – **Foster, K.L.** and Higham, T.E. Muscle and tendon function in *Anolis* lizards. Oral presentation given at the Southwest Organismal Biology meeting, Irvine, CA.
- 10) 2014 – **Foster, K.L.** and Higham, T.E. Context-dependent modulation and decoupling of motor control and kinematics during locomotion in the green anole (*Anolis carolinensis*). Oral presentation given at Genomes to/aux Biomes 2014 - Joint meeting of the Canadian Society of Ecology and Evolution, Canadian Society of Zoologists, and Society of Canadian Limnologists, Montréal, Canada.
- 9) 2013 – **Foster, K.L.** Analyzing data: why and how to make graphs for science fair projects. Invited lecture at the Coachella Valley Science Fair Expo, Palm Desert, CA.
- 8) 2013 – **Foster, K.L.** Statistics in science: methods, insights, and limitations of statistics in scientific research. Invited lecture at the Coachella Valley Science Fair Expo, Palm Desert, CA.
- 7) 2013 – **Foster, K.L.** Statistics in science: methods, insights, and limitations of statistics in scientific research. Invited lecture at the Riverside County Office of Education Science Fair Expo, Riverside, CA.
- 6) 2013 – **Foster, K.L.** and Higham, T.E. Functional mechanisms underlying the relationship between morphology and habitat use in lizards. Symposium presentation given at the International Congress of Vertebrate Morphology, Barcelona, Spain.

- 5) 2013 – **Foster, K.L.** and Higham, T.E. Neuromuscular control of arboreal locomotion: how green anoles deal with changes in incline and perch diameter. Oral presentation given at Gradfest – University of California, Riverside, Riverside, CA.
- 4) 2013 – **Foster, K.L.** and Higham, T.E. Neuromuscular control of arboreal locomotion: how green anoles (*Anolis carolinensis*) deal with changes in incline and perch diameter. Oral presentation given at the annual meeting of the Society for Integrative and Comparative Biology, San Francisco, CA.
- 3) 2012 – **Foster, K.L.** and Higham, T.E. How fore- and hindlimb function changes with incline and perch diameter in *Anolis carolinensis*. Oral presentation given at the annual meeting of the Society for Integrative and Comparative Biology, Charleston, SC.
- 2) 2010 – **Foster, K.L.** and Higham, T.E. Functional morphology and biomechanics of ratfish steady swimming. Oral presentation given at the annual meeting of the Society for Integrative and Comparative Biology, Seattle, WA.
- 1) 2009 – **Foster, K.L.** Flight of the Dr. Seuss fish: Pectoral fin functional morphology of the spotted ratfish (*Hydrolagus collieri*). Oral presentation at Bamfield Marine Sciences Centre, BC, Canada.

Awards and Distinctions

- 2016 – Outstanding Teaching Award, University of California, Riverside
- 2015 – William S. Hoar Award for best student oral presentation, society-wide, at the 2015 annual meeting of the Canadian Society of Zoologists – \$500

Teaching/Mentoring Experience

Guest Lecturer

- **Applied Linear Regression – A 3-day R-workshop in Statistical Analyses and Visualization Methods for Biologists** (Instructor Alessandro Selvitella), Purdue University, Fort Wayne, 2019.
- **The Effect of Substrate on Forelimb and Hind Limb Movements in Lizards** (Instructor Alessandro Selvitella), Purdue University, Fort Wayne, 2019.
- **Introduction to Statistics (for Biology)** (Instructor Tim Higham), Bamfield Marine Sciences Centre, 2019.
- **Gas Exchange and Homeostasis** (Instructor Tim Higham), Bamfield Marine Sciences Centre, 2019.
- **How Muscles Function in Amphibious Fish** (Instructor Travis Hagey), Mississippi University for Women, 2018.
- **Stability and Maneuverability** (Instructor Tim Higham), University of California, Riverside, 2015.
- **Biogeography and Phylogeography** (Instructor Tim Higham), Clemson University, 2011.

Teaching Assistantships

- **Biology of Marine Fishes**, Bamfield Marine Sciences Centre, Vancouver Island, Canada, Summer 2019. Involved in course design, planning and executing laboratory and field activities, assisting students with independent projects, and grading.
- **Animal Behavior (BIOL 160)**, University of California, Riverside, Spring 2015. Responsible for leading and grading four discussion sections per week.
- **Functional Anatomy of the Vertebrates (BIOL 161B)**, University of California, Riverside, Winter 2015. Responsible for instructing and grading two laboratory sections per week.
- **Functional Anatomy of the Vertebrates (BIOL 161A)**, University of California, Riverside, Fall 2014. Responsible for instructing and grading two laboratory sections per week.
- **Human Physiology (BIOSC 316)**, Clemson University, Spring 2011. Responsible for instructing and grading two laboratory sections per week.
- **Comparative Physiology (BIOSC 475)**, Clemson University, Fall 2010. Responsible for instructing and grading two laboratory sections per week.
- **Biomechanics, Biology of Marine Fishes**, Bamfield Marine Sciences Centre, Vancouver Island, Canada, Summer 2010 and 2011. Involved in planning and executing laboratory and field activities, assisting students with independent projects, and grading.

Undergraduate mentoring

- 2018-2019 – Mentored 1 undergraduate honors completing independent research
- 2017-2018 – Mentored 3 undergraduate honors completing independent research

Research Funding and Fellowships – total = \$341,609.00

- 2015 – UC Riverside Dissertation-Year Fellowship for 2015-16 academic year – \$38,767
- 2014 – UC Riverside Dissertation Research Grant – \$800
- 2014 – UC Riverside Vaughan H. Shoemaker Graduate Fellowship – \$1500
- 2012 – UC Riverside Graduate Division Fee Fellowship – 2 years totalling \$26,094
- 2011 – UC Riverside Dean's Distinguished Fellowship – five years totalling \$168,323
- 2011 – Alberta Innovates Graduate Student Scholarship – \$10,000 (declined)
- 2011 – NSERC Postgraduate Scholarship D – three years totalling \$63,000
- 2011 – Bamfield Marine Sciences Centre Graduate Student Scholarship - \$2000
- 2010 – Clemson University teaching/research assistantship - \$18,000
- 2010 – Clemson University graduate school recruitment fellowship - \$7500
- 2009 – NSERC Undergraduate Student Research Award - \$5625

Travel Funding and Awards – total = \$17,720.00

- 2018 – University of Ottawa Conference Travel Grant – \$550
- 2015 – UC Riverside Graduate Student Association Travel Award – \$600
- 2015 – Company of Biologists Travel Grant – \$544
- 2015 – Canadian Society of Zoologists Travel Grant – \$500
- 2015 – UC Riverside Graduate Student Association Travel Award – \$500
- 2015 – UC Riverside Graduate Student Association Travel Award – \$400
- 2014 – UC Riverside Earle C. Anthony Travel Award – \$900
- 2014 – EPCOR Water Ltd. Student Travel Award – \$500
- 2013 – UC Riverside Graduate Student Association Travel Award – \$360
- 2013 – UC Riverside Graduate Student Association Travel Award – \$300
- 2011 – Clemson University Professional Enrichment Grant - \$1000 (declined)
- 2010 – Clemson University Professional Enrichment Grant - \$566
- 2007-2008 – Scotiabank Student Mobility Award - \$7000
- 2005-2006 – University of British Columbia President's Entrance Scholarship - \$4000

Field Work

- 2015 – Puerto Rico, in the vicinity of El Yunque National Forest
- 2009, 2010, 2011 – Bamfield Marine Sciences Centre, Vancouver Island, Canada

Academic Service

- Committee member – Community Ecologist tenure-track faculty search committee (2015-2016)
- Committee member – Biology Department Outreach Committee (2013-present)
- President - Evolution, Ecology, and Organismal Biology Graduate Student Association (2013-2014 and 2014-2015 academic years)
- Co-organizer - Evolution, Ecology, and Organismal Biology Lunch Bunch Seminar Series (2014)
- Co-organizer – GradFest Recruitment Weekend/Conference for incoming EEOB students (2014)
- Designed website for the Southwest Division of Comparative Biomechanics/Division of Vertebrate Morphology regional meeting of the Society of Integrative and Comparative Biology (meeting date Oct. 26, 2013)
- Part of organization committee for the Southwest Division of Comparative Biomechanics/Division of Vertebrate Morphology regional meeting of the Society of Integrative and Comparative Biology (meeting date Oct. 26, 2013)

- Reviewer for the following journals: Zoology (4), Journal of Morphology (5), Journal of Experimental Biology (3), Biological Journal of the Linnean Society (2), Philosophical Transactions of the Royal Society B: Biological Sciences (1), Functional Ecology (1), Behaviour (1), Comprehensive Physiology (1), Anatomical Record (1), Zoologia (1), Journal of Herpetology (1), Journal of Zoology (1), Journal of Applied Animal Welfare Science (1)

Volunteer/Outreach Experience

- Judged oral presentations at the Ottawa-Carleton Institute of Biology symposium (2018)
- Judged poster presentations given by honours students at the Biomedical Science and Biology Poster Day, the primary oral defense event of the honours thesis projects at the University of Ottawa (2018)
- Volunteered in a “First Sundays” outreach event, called “Science Day”, at the Riverside Metropolitan Museum (2015)
- Volunteer Biology Department representative at UCR’s Discover Day undergraduate recruitment event (2015)
- Presenter at the Pomona Unified School District Science Fair Expo (2014)
- Presenter and consultant at the Riverside County Office of Education Science Fair Expo (2014)
- Volunteer Biology Department representative at UCR’s Discover Day undergraduate recruitment event (2014)
- Helped organize and participate in a “First Sundays” outreach event, called “Animal Olympics”, at the Riverside Metropolitan Museum (2014)
- Assistant judge for Riverside Unified School District science fair (2014)
- Assistant judge for Alcott Elementary School science fair (2014)
- Presenter and consultant at the Coachella Valley Science Fair Expo (2013)
- Presenter and consultant at the Riverside County Office of Education Science Fair Expo (2013)
- Mentor for Grade 8 science students through University of British Columbia’s Let’s Talk Science program at Britannia high school (2009)
- UBC Tri-mentoring program (2008-2009 school year)
- Assistant Coach for London Rowing Club Summer Program (summer 2006 and 2007)
- Women’s coach for Saunders Rowing Team (spring 2006 and 2007)

Academic Society Membership

- Society for Experimental Biology (2015-present)
- Canadian Society of Zoologists (2014-present)
- Society for Integrative and Comparative Biology (2009-present)
- Golden Key International Honours Society (2009-present)

