

## KATHLEEN L. FOSTER, PH.D.

Assistant Professor of Biology  
Department of Biology  
Ball State University  
1600 Ashland Ave.  
Muncie, IN, 47306

Email: [klfoster@bsu.edu](mailto:klfoster@bsu.edu)  
Website: [www.comparativebiomechanics.com](http://www.comparativebiomechanics.com)

---

### Academic positions

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

2022-present – Affiliate Member (Core Scientist), Laboratory of Data Science, Purdue University Fort Wayne

2019-present – Affiliate Member, Center for Applied Mathematics and Statistics, Purdue University Fort Wayne

---

### 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, \* denotes graduate student)

- 17) Selvitella, A.M. and **Foster, K.L.** 2023. On the variability and dependence of human leg stiffness across strides during running and some consequences for the analysis of locomotion data. *Royal Society Open Science* 10, 230597. <https://doi.org/10.1098/rsos.230597>
- 18) Lutek, K.\*, **Foster, K.L.** and Standen, E.M. 2022. Behaviour and muscle activity across the aquatic-terrestrial transition in *Polypterus senegalus*. *Journal of Experimental Biology* 225, jeb243902. <https://doi.org/10.1242/jeb.243902>

- 17) Selvitella, A.M. and **Foster, K.L.** 2022. The spring-mass model and other reductionist models of bipedal locomotion on inclines. *Integrative and Comparative Biology* 62, 1320-1334. <https://doi.org/10.1093/icb/icac047>
- 16) **Foster, K.L.** and Selvitella, A.M. 2022. Transfer of *Anolis* locomotor behavior across environments and species. *Integrative and Comparative Biology* 62, 774-790. <https://doi.org/10.1093/icb/icac015>
- 15) **Foster, K.L.** and Selvitella, A.M. 2021. On the relationship between COVID-19 reported fatalities early in the pandemic and national socio-economic status predating the pandemic. *AIMS Public Health* 8, 439-455. <https://doi.org/10.3934/publichealth.2021034>
- 14) Selvitella, A.M. and **Foster, K.L.** 2021. A higher-order Taylor expansion of the initial trajectory of COVID-19 cases and deaths via Bayesian hierarchical models: A toy problem and possible public health insights. Available in the *Proceedings of the ICLR 2021 Workshop on AI for Public Health*. [https://aiforpublichealth.github.io/papers/ICLR-AI4PH\\_paper\\_3.pdf](https://aiforpublichealth.github.io/papers/ICLR-AI4PH_paper_3.pdf)
- 13) **Foster, K.L.** and Selvitella, A.M. 2021. Government measures against the COVID-19 pandemic must be determined according to the socio-economic status of the country. Available in the *Proceedings of the ICLR 2021 Workshop on AI for Public Health*. [https://aiforpublichealth.github.io/papers/ICLR-AI4PH\\_paper\\_2.pdf](https://aiforpublichealth.github.io/papers/ICLR-AI4PH_paper_2.pdf)
- 12) Selvitella, A.M. and **Foster, K.L.** 2021. Bayesian detection and uncertainty quantification of the first change point of the COVID-19 case curve in the Midwest: Timeliness of non-pharmaceutical interventions. Available in the *Proceedings of the ICLR 2021 Workshop on AI for Public Health*. [https://aiforpublichealth.github.io/papers/ICLR-AI4PH\\_paper\\_21.pdf](https://aiforpublichealth.github.io/papers/ICLR-AI4PH_paper_21.pdf)
- 11) Selvitella, A.M., Carolan, L.\*\*\*, Smethers, J.\*\*\*, Hernandez, C.\*\*\*, and **Foster, K.L.** 2021. A spatio-temporal investigation of the growth rate of COVID-19 incidents in Ohio early in the pandemic. *The Ohio Journal of Science* 121, 33-47. <https://doi.org/10.18061/ojs.v121i2.8059>
- 10) **Foster, K.L.** and Selvitella, A.M. 2020. Learning the locomotion behaviour of lizards transfers across environments. Available in the *Proceedings of the ICML 2020 Workshop on Computational Biology*. [https://icml-compbio.github.io/icml-website-2020/2020/papers/WCBICML2020\\_paper\\_2.pdf](https://icml-compbio.github.io/icml-website-2020/2020/papers/WCBICML2020_paper_2.pdf)
- 9) Selvitella, A.M. and **Foster, K.L.** 2020. Societal and economic factors associated with COVID-19 indicate that developing countries suffer the most. *Technium Social Sciences Journal* 10, 637-644. <https://doi.org/10.47577/tssj.v10i1.1357>
- 8) **Foster, K.L.**, Luterk, 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. <https://doi.org/10.1093/biolinnean/bly146>
- 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. <https://doi.org/10.1242/jeb.168716>
- 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. <https://doi.org/10.1242/jeb.151795>

- 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. <https://doi.org/10.1017/CBO9781107447189.012>
- 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. <https://doi.org/10.1098/rspb.2013.3331>
- 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. <https://doi.org/10.1242/jeb.069856>
- 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. <https://doi.org/10.1139/Z10-043>

## Abstracts and Presentations (\*\* denotes undergraduate student, \* denotes graduate student)

- 68) 2022 – Olson, N.\*, **Foster, K.L.**, and Selvitella, A.M. On the possibility of mode-collapse phenomena in combined machine learning and differential equation models for infectious diseases. Poster presentation given at the 2022 International Conference on Machine Learning (ICML) – 1<sup>st</sup> Workshop on Healthcare AI and COVID-19 (Virtual Conference).
- 67) 2022 – Schutt, N.\*, **Foster, K.L.**, and Selvitella, A.M. An interpretable time-series model for predicting nurse shortages and planning optimal nurse scheduling and staffing during the COVID-19 pandemic. Poster presentation given at the 2022 International Conference on Machine Learning (ICML) – 1<sup>st</sup> Workshop on Healthcare AI and COVID-19 (Virtual Conference).
- 66) 2022 – **Foster, K.L.** and Selvitella, A.M. Transfer of *Anolis* locomotor behavior across environments and species. Poster presentation given at the 30<sup>th</sup> Conference for Intelligent Systems for Molecular Biology (ISMB) (presented online).
- 65) 2022 – Selvitella, A.M. and **Foster, K.L.** The spring-mass model and other reductionist models of bipedal locomotion on inclines. Poster presentation given at the 30<sup>th</sup> Conference for Intelligent Systems for Molecular Biology (ISMB) (presented online).
- 64) 2022 – Selvitella, A.M. and **Foster, K.L.** *Anolis* ecomorph biomechanics across arboreal environments: What can machine learning tell us about behavioral plasticity in lizards? Oral presentation given at the Annual Meeting of the Statistical Society of Canada (Virtual Conference).
- 63) 2022 – Stroud, T.\* and **Foster, K.L.** Three-dimensional hind limb kinematics of water-running in *Basiliscus plumifrons* across different flow regimes. Oral presentation given at the Canadian Society of Zoology Annual Meeting (Virtual Conference).
- 62) 2022 – **Foster, K.L.** and Selvitella, A.M. Transfer of *Anolis* locomotor behaviour across environments and species. Oral presentation given at the Canadian Society of Zoology Annual Meeting (Virtual Conference).

- 61) 2022 – Selvitella, A.M. and **Foster, K.L.** The spring-mass model and other reductionist models of bipedal locomotion on inclines. Oral presentation given at the Canadian Society of Zoology Annual Meeting (Virtual Conference).
- 60) 2022 – Selvitella, A.M. and **Foster, K.L.** Bayesian detection and uncertainty quantification of the first change point of the COVID-19 case curve in the Midwest: Timeliness of non-pharmaceutical interventions. Poster presentation given at the 5<sup>th</sup> Annual Data for Public Good Symposium, University of Michigan, Ann Arbor, MI (Virtual Conference).
- 59) 2022 – **Foster, K.L.** and Selvitella, A.M. *Anolis* ecomorph biomechanics across arboreal environments: What can machine learning tell us about behavioral plasticity in lizards? Oral presentation given at the 4th Annual Conference on Quantitative Approaches in Biology. Northwestern University, Center for Quantitative Biology, Evanston, IL (presented online).
- 58) 2022 – Selvitella, A.M. and **Foster, K.L.** Gait stability of the spring-mass model of planar locomotion on inclines. Oral presentation given at the 4th Annual Conference on Quantitative Approaches in Biology. Northwestern University, Center for Quantitative Biology, Evanston, IL (presented online).
- 57) 2022 – Selvitella, A.M. and **Foster, K.L.** Gait stability of the spring-mass model of planar locomotion on inclines. Invited oral presentation for the *'Evolutionary conservation and diversity in a key vertebrate behavior: Walking as a model system'* Symposium at the annual meeting of the Society for Integrative and Comparative Biology, Phoenix, AZ.
- 55) 2022 – **Foster, K.L.** and Selvitella, A.M. *Anolis* ecomorph biomechanics across arboreal environments: What can machine learning tell us about behavioral plasticity in lizards? Invited oral presentation for the *'Integrating ecology and biomechanics to investigate patterns of phenotypic diversity: Evolution, development, and functional traits'* Symposium at the annual meeting of the Society for Integrative and Comparative Biology, Phoenix, AZ.
- 54) 2021 – Schutt, N.\*, **Foster, K.L.**, and Selvitella, A.M. On learning the effects of healthcare overextension on increased mortality rate in the COVID-19 pandemic. Poster presentation given at the 2021 International Joint Conference on Artificial Intelligence (IJCAI) – Workshop on AI for Social Good (Virtual Conference).
- 53) 2021 – Stroud, T.\*, Higham T.E., Selvitella, A.M. and **Foster, K.L.** Comparative locomotor kinematics of Puerto Rican *Anolis* ecomorphs in response to changes in incline and perch diameter. Oral presentation given at the annual meeting of the Society for Experimental Biology (Virtual Conference).
- 52) 2021 – Menchhofer, K.\*\*, Mills, N.\*\*, **Foster, K.L.**, and Selvitella, A.M. COVID-19 incidence in the Indiana's secondary school system through a conditional Gaussian model and an age-structured compartmental model. Poster presentation given at the 2021 Intelligent Systems of Molecular Biology/European Conference on Computational Biology (ISMB/ECCB), a joint meeting of the International Society for Computational Biology (Virtual Conference).
- 51) 2021 – Selvitella, A.M. and **Foster, K.L.** Bayesian detection and uncertainty quantification of the first change point of the COVID-19 case curve in the Midwest: Timeliness of non-pharmaceutical interventions. Poster presentation given at the 2021 Intelligent Systems of Molecular Biology/European Conference on Computational Biology (ISMB/ECCB), a joint meeting of the International Society for Computational Biology (Virtual Conference).

- 50) 2021 – Selvitella, A.M. and **Foster, K.L.** Government measures against the COVID-19 pandemic must be determined according to the socio-economic status of the country. Poster presentation given at the 2021 Intelligent Systems of Molecular Biology/European Conference on Computational Biology (ISMB/ECCB), a joint meeting of the International Society for Computational Biology (Virtual Conference).
- 49) 2021 – Yakubik, A.\*\*, Stroud, T., Selvitella, A.M. and **Foster, K.L.** Primate skeletal morphology correlates with habitat and locomotor behavior. Poster presentation given at the Workshop on Mathematical and Computational Biology (Virtual Conference).
- 48) 2021 – Stroud, T.\* and **Foster, K.L.** Influence of structural habitat unevenness and heterogeneity during water running in the brown basilisk (*Basiliscus vittatus*). Poster presentation given at the Workshop on Mathematical and Computational Biology (Virtual Conference).
- 47) 2021 – Stroud, T.\*, Higham T.E., Selvitella, A.M. and **Foster, K.L.** Comparative locomotor kinematics of Puerto Rican *Anolis* ecomorphs in response to changes in incline and perch diameter. Oral presentation given at the annual meeting of the Canadian Society of Zoologists (Virtual Conference).
- 46) 2021 – Selvitella, A.M. and **Foster, K.L.** Bayesian detection and uncertainty quantification of the first change point of the COVID-19 case curve in the Midwest: Timeliness of non-pharmaceutical interventions. Poster presentation given at the 2021 International Conference on Learning Representations (ICLR) – Machine Learning for Preventing and Combatting Pandemics Workshop (Virtual Conference).
- 45) 2021 – Menchhofer, K.\*\*, Mills, N.\*\*, **Foster, K.L.**, and Selvitella, A.M. COVID-19 incidence in the Indiana's secondary school system through a conditional Gaussian model and an age-structured compartmental model. Poster presentation given at the 2021 International Conference on Learning Representations (ICLR) – Machine Learning for Preventing and Combatting Pandemics Workshop (Virtual Conference).
- 44) 2021 – Selvitella, A.M. and **Foster, K.L.** A higher-order Taylor expansion of the initial trajectory of COVID-19 cases and deaths via Bayesian hierarchical models: A toy problem and possible public health insights. Poster presentation given at the 2021 International Conference on Learning Representations (ICLR) – AI for Public Health Workshop (Virtual Conference).
- 43) 2021 – **Foster, K.L.** and Selvitella, A.M. Government measures against the COVID-19 pandemic must be determined according to the socio-economic status of the country. Poster presentation given at the 2021 International Conference on Learning Representations (ICLR) – AI for Public Health Workshop (Virtual Conference).
- 42) 2021 – Selvitella, A.M. and **Foster, K.L.** Bayesian detection and uncertainty quantification of the first change point of the COVID-19 case curve in the Midwest: Timeliness of non-pharmaceutical interventions. Poster presentation given at the 2021 International Conference on Learning Representations (ICLR) – AI for Public Health Workshop (Virtual Conference).
- 41) 2021 – **Foster, K.L.** and Selvitella, A.M. Government measures against the COVID-19 pandemic must be determined according to the socio-economic status of the country. Oral and Poster presentation given at the Great Lakes Bioinformatics Conference, an annual meeting of the International Society for Computational Biology (Virtual Conference).

- 40) 2021 – Selvitella, A.M., Olson, N.\*, and **Foster, K.L.** Optimal egg-packing in polygons and COVID-19: Closed spaces, social distancing, and mask usage. Oral and Poster presentation given at the Great Lakes Bioinformatics Conference, an annual meeting of the International Society for Computational Biology (Virtual Conference).
- 39) 2021 – Menchhofer, K.\*\*, Mills, N.\*\*, **Foster, K.L.**, and Selvitella, A.M. COVID-19 incidence in the Indiana's secondary school system through a conditional Gaussian model and an age-structured compartmental model. Oral and Poster presentation given at the Great Lakes Bioinformatics Conference, an annual meeting of the International Society for Computational Biology (Virtual Conference).
- 38) 2021 – Selvitella, A.M., Hoang, C.\*\*, Do, D.A.\*, and **Foster, K.L.** The topology of COVID-19 diffusion: the effect of non-pharmaceutical interventions, comparisons with seasonal influenza, and similarities among US regions. Oral and Poster presentation given at the Great Lakes Bioinformatics Conference, an annual meeting of the International Society for Computational Biology (Virtual Conference).
- 37) 2021 – Schutt, N.\*, **Foster, K.L.**, and Selvitella, A.M. On the effects of healthcare overextension on increased mortality rate in the COVID-19 pandemic. Oral and Poster presentation given at the Great Lakes Bioinformatics Conference, an annual meeting of the International Society for Computational Biology (Virtual Conference).
- 36) 2021 – Selvitella, A.M. and **Foster, K.L.** A higher-order Taylor expansion of the initial trajectory of COVID-19 cases and deaths via Bayesian hierarchical models: A toy problem and possible public health insights. Oral and Poster presentation given at the Great Lakes Bioinformatics Conference, an annual meeting of the International Society for Computational Biology (Virtual Conference).
- 35) 2021 – **Foster, K.L.** and Selvitella, A.M. Government measures against the COVID-19 pandemic must be determined according to the socio-economic status of the country. Oral presentation given at the European Consortium for Mathematics in Industry (Virtual Conference).
- 34) 2021 – Selvitella, A.M. and **Foster, K.L.** A higher-order Taylor expansion of the initial trajectory of COVID-19 cases and deaths via Bayesian hierarchical models: A toy problem and possible public health insights. Oral presentation given at the European Consortium for Mathematics in Industry (Virtual Conference).
- 33) 2021 – Lutek, K.\*, **Foster, K.L.**, Znotinas, K.R.\*, and Standen, E.M. Do environmental gradients elicit behavioural gradients in an amphibious fish. Oral presentation given at the annual meeting of the Society for Integrative and Comparative Biology (Virtual Conference).
- 32) 2020 – Sanders, A.\*\*, **Foster, K.L.**, and Selvitella, A.M. Geometric and machine learning methods in biological shape analysis. Poster presentation given at the Mathematics Continued Conference: A Research Conference for Undergraduates at University of Connecticut, Storrs, CT (Virtual Conference).
- 31) 2020 – **Foster, K.L.** The impact of the environment on the locomotor behavior and muscle function of *Anolis* lizards: A machine learning journey through ecomorphology. Oral presentation for the BSU Biology Graduate Student Seminar Series.
- 30) 2020 – **Foster, K.L.** and Selvitella, A.M. Learning the locomotion behaviour of lizards transfers across environments. Oral and Poster presentation given at the 2020 International Conference on Machine Learning (ICML) – Workshop on Computational Biology (Virtual Conference).

- 29) 2020 – **Foster, K.L.** and Selvitella, A.M. Uncovering the impact of the environment in lizard biomechanics: From classical methods to modern statistical learning. Oral presentation given at the Mathematical and Computational Methods in Biology (Virtual) Conference of the Mathematical Biology Institute at Ohio State University, Columbus, OH.
- 28) 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.
- 27) 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.
- 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. Leaf shape analysis and classification via supervised learning. Poster presentation given at the Data Science Week at Purdue University, Fort Wayne, IN.
- 25) 2019 – Lutek, K.\*, **Foster, K.L.**, Salameh, G.\*\*, Znotinas, K.\*, and Standen, E.M. Locomotion of *Polypterus* in environments across the terrestrial-aquatic transition. Oral presentation given at the 10<sup>th</sup> International Congress of Comparative Physiology and Biochemistry – Mechanisms and Evolutionary Processes, Ottawa, Ontario, Canada.
- 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

### Instructor of Record

- **Structure and Development of Vertebrates (ZOOL330)** Ball State University, 2020-present (every semester).
- **Methods in Ecology (BIO316)** Ball State University, 2020-present (every Fall semester).
- **Principles of Biology 2 (BIO112)** Ball State University, Spring 2020.

### Guest Lecturer

- **Transfer of *Anolis* Locomotor Behavior Across Environments: Implications for Phenotypic Plasticity and Adaptive Radiation?** (Instructor Travis Hagey), Mississippi University for Women, 2020.
- **Elementary Statistical Methods II – 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.

### Courses Taught (without credit)

- **Data Science for the Biological Sciences Workshop**, 2-day workshop presented at Purdue University Fort Wayne, Nov. 29 & Dec. 1, 2022. Co-organizer and co-instructor, involved in course design, development of materials, presentation of workshop.

### 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.

### Graduate mentoring

- 2020-2022 – Supervisor of 1 Masters student (Thomas Stroud) completing Thesis research
- 2021-present – Thesis committee member for 1 PhD student (Brooke Karasch)
- 2021-present – Thesis committee member for 1 Masters student (Grace Carter)
- 2020 (summer) – Thesis committee member for 1 Masters student (Gina Lamka)

### Undergraduate mentoring

- 2022-2023 – Mentored 2 undergraduate students in the teacher-scholar program (Heaven Curtis and Lillian Goulet)
- 2021-2022 – Mentored 3 undergraduate students, 2 in the teacher-scholar program (Alicia Villalobos and Claire Buchheit) and 1 completing independent research (Lex Thomas)
- 2020-2021 – Mentored 3 undergraduate students, 1 in the teacher-scholar program (Sherlyn Lopez-Contreras), 1 in the LSAMP program (Anizha Young), and 1 volunteer (Lex Thomas)

- 2018-2019 – Mentored 1 undergraduate honors student (Serena Lao) completing independent research
  - 2017-2018 – Mentored 3 undergraduate honors students (Ashley Chao, Misha Dhuper, David Ek) completing independent research
- 

## **Research Funding and Fellowships – total = \$1,212,742.00**

- 2022-2025 – NSF DMS/NIGMS Grant – Collaborative Proposal – *The Mathematical Laws of Morphology and Biomechanics through Ontogeny* – \$597,147 total (\$384,885 for Ball State University portion; Co-PI A.M. Selvitella, Purdue University Fort Wayne)
  - 2022 – Society for Experimental Biology Small Conference Grant – Funding for ‘*Midwest Workshop of Women in Experimental Biology - Towards an Integration of Modern Machine Learning Methods to the Biological Sciences*’ – \$1115 (£850)
  - 2021-2023 – NSF-Simons Center for Quantitative Biology Pilot Project Program Grant – Collaborative Proposal – *On the Mathematical and Physical Laws of the Morphology and Biomechanics of Mourning Geckos through Ontogeny* – \$48,000 total (\$26,241 for Ball State University portion; Co-PI A.M. Selvitella, Purdue University Fort Wayne)
  - 2020-2023 – Ball State University Start-up Fellowship – \$225,896
  - 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

- Co-organizer – Data Science Week (2022) - [website](#)
- Co-organizer – Midwest Workshop of Women in Experimental Biology - Towards an Integration of Modern Machine Learning Methods to the Biological Sciences (2022) - [website](#)
- Co-organizer – Workshop in Mathematical and Computational Biology (2022) - [website](#)
- Chair – BSU Search & Selection committee (2022)
- Committee member – BSU Graduate Education and Research Committee (2022-2023)
- Committee member – BSU Curriculum Committee (2022-2023)
- Co-organizer – Seminar Series and Working Groups in The Mathematical Laws of Morphology and Biomechanics (2021-2023) - [website](#)
- Committee member – BSU Outstanding Environmental Sciences Doctoral Student award selection committee (2021 & 2022)
- Chair – BSU Graduate Education and Research Committee (2020-2022)
- Co-organizer – Data Science Week (2021) - [website](#)
- Committee member – BSU Search & Selection committee (2021)
- Co-organizer – Workshop in Mathematical and Computational Biology (2021) - [website](#)

- Co-organizer – Thematic Program on Data Science and COVID-19 (2020-2021) - [website](#)
- Co-organizer – Data Science Week (2020) - [website](#)
- Co-organizer – Data Science Week (2019) - [website](#)
- Committee member – Community Ecologist tenure-track faculty search committee (2015-2016)
- Committee member – Biology Department Outreach Committee (2013-2016)
- 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) - [website](#)
- Reviewer for the following journals: Zoology (4), Journal of Morphology (7), Journal of Experimental Biology (10), Biological Journal of the Linnean Society (4), Philosophical Transactions of the Royal Society B: Biological Sciences (1), Proceedings of the Royal Society B: Biological Sciences (2), Functional Ecology (2), Integrative and Comparative Biology (2), Ecology and Evolution (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**

- International Society for Computational Biology (2021-present)
  - 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 (2009-2010)
-