

Katherine Krynak

Curriculum Vitae

Ohio Northern University
Biological and Allied Health Sciences
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Current Position

Assistant Professor of Biology, Department of Biological and Allied Health Sciences, Ohio Northern University, August 2016-present.

Education

Postdoctoral Scholar, Case Western Reserve University/Cleveland Metroparks Zoo, August 2016
PhD. Biology, Case Western Reserve University, August 2015
B.S. Biology and Environmental Science Dual Major, University of Cincinnati, 1999

Fellowships and Research Grants

Fulbright Early Career Fellowship: Ecuador (2016-17)
National Wrestling Coaches Association (2016)
National Science Foundation Graduate Research Program Fellowship (2011-2014)
EPA STAR (2011; declined to accept NSF GRFP Fellowship)
Cleveland Metroparks Zoo “Cans for Conservation” (2011)

Publications

- M. Monson, P. Dennis, K. Lukas, S. Kyker, **K. Krynak**, D. Burke, M. Schook (*In Review*) Preliminary implications regarding the effects of increased hay to grain ratio on behavior, metabolism, and fecal microflora diversity in four Masai giraffe (*Giraffa camelopardalis tippelskirchi*). *Zoo Biology*.
- L.M. Young, A. Davis*, B. Kohls*, H. Dyer*, **K. Krynak**, R. Beaschler, and V. Motz (2018) Clean hands- healthy wrestlers: Effectiveness of hand cleaning in reducing bacterial load during wrestling competitions. *Health Sciences Research*.
- **K. Krynak**, D. Wessels, S. Imba, J. Lyons, J. Guayasamin (2018) Newly discovered bumpy glassfrog (*Centrolene heloderma*) population, with discussion of threats to population persistence. *CheckList: A Journal of Biodiversity Data*.
- A. Wagner*, A. LaValley*, **K. Krynak**, T. Krynak, E. Synder (2017) *Anolis gemmosus* (Gem anole) Sleep Site Fidelity. *Herpetological Review*.
- **K. Krynak**, D. Burke and M. Benard (2017) Effects of Rodeo™ herbicide on *Acris blanchardi* and the relationship to amphibian disease resistance. *Journal of Herpetology*.
- **K. Krynak**, D. Burke, R. Martin, and P. Dennis (2017). Gut microbiome composition is associated with cardiac disease in captive western lowland gorillas (*Gorilla gorilla gorilla*). *FEMS Microbiology Letters*. doi:10.1093/femsle/fnx149
- **K. Krynak**, D. Burke and M. Benard (2016) Landscape and water characteristics correlate with immune defense trait differences across Blanchard’s cricket frog (*Acris blanchardi*) populations. *Biological Conservation*. DOI: 10.1016/j.biocon.2015.11.019

Publications (continued)

- **K. Krynak**, D. Burke and M. Benard (2015) Larval environment alters amphibian immune defenses differentially across life stages and populations. PLOS ONE. DOI:10.1371/journal.pone.0130383.
- J. Guayasamin, T. Krynak, **K. Krynak**, J. Garcia, and C. Hutter. (2015) Phenotypic plasticity raises questions for taxonomically important traits: a remarkable new Andean rainfrog (*Pristimantis*) with the ability to change skin texture. Zoological Journal of the Linnean Society. 174(4):913-928. DOI:10.1111/zoj.12222
 - *This discovery was featured in the popular press including New York Times, National Geographic, Wired Magazine, PBS, Ranger Rick, Discovery and numerous others.*
- **K. Krynak**, R. Oldfield, P. Dennis, M. Durkalec, and C. Weldon. (2015) A novel field technique to assess ploidy in introduced Grass Carp (*Ctenopharyngodon idella*, Cyprinidae) Biological Invasions. DOI:10.1007/s10530-015-0856-9
 - *This paper was featured in FishSens Magazine and on Phys.org*
- K. Dananay, **K. Krynak**, T. Krynak, and M. Benard. (2015) Legacy of road salt: apparent positive larval effects counteracted by negative post-metamorphic effects in wood frogs. Environmental Toxicology and Chemistry. DOI: 10.1002/etc.3082.

*undergraduate author

Selected Professional Presentations

- *Getting by with a little help from their bacterial friends: relationships between wildlife health and their microbiome.* Invited Talk. College of Wooster. Oct 2017.
- *Trophic morphology predicts microbiome composition in a developmental resource polymorphism.* Poster presentation. Ecological Society of America. August 2017. Portland, OR. **Co-authors:** S. DeLaSerna, M. Dugas, D. Burke, P. Dennis, and R. Martin.
- *Practically non-toxic? Effects of Rodeo™ herbicide on Acris blanchardi across life stages.* Oral Presentation. Integrated Research Challenges in Environmental Biology meeting. 2016. Arizona State University. **Co-authors:** D. Burke, and M. Benard.
- *Landscape and water characteristics correlate with immune defense trait differences across Blanchard's Cricket frog (Acris blanchardi) populations.* Poster Presentation. Early Career Scientists Symposium, University of Michigan. 2015. **Co-authors:** D. Burke and M. Benard.
- *Are amphibian skin associated microbial communities regulated by the host, the external environment, or both?* Oral presentation. Ecological Society of America. August 2014. Sacramento, CA. **Co-authors:** D. Burke and M. Benard.
- *It's not easy being green: Effects of environmental change on amphibian immune defense traits.* Invited Talk. Brown Bag Lecture Series. 2014. Cleveland Museum of Natural History.
- *Practically non-toxic to aquatic organisms? The effects of Rodeo herbicide on Northern Cricket Frogs (Acris crepitans).* Poster Presentation. Ohio Biological Survey Natural Resources Conference 2014. **Co-author:** M. Benard.
- *Effects of environmental change on amphibian immune defense traits.* Invited Talk. Biology Departmental Seminar Series. 2013. John Carroll University.
- *Does Larval Habitat pH influence Rana catesbeiana immunological defenses post-metamorphosis?* Poster Presentation. Mid-West Partners in Amphibian and Reptile Conservation conference 2012. **Co-authors:** D. Burke, and M. Benard.

Teaching & Mentoring Experience

Fall 2016-Present: *Assistant Professor of Biology:* Ohio Northern University

- Teaching: Introductory Biology (Lab; 1311/1321/1201), Cell Biology (Lecture, 3511), Marine Biology (Field/Research Course; 3701), Microbiology (Lab; 3111), Herpetology (Lecture/Lab; 3641); Independent Research (4971)
- Mentoring undergraduate students (currently: Holly Dyer, Elizabeth Naugle, Olivia Keserich, Tyler Tanto, Gunner Stall, Alyssa Griffith, Ian Smith, and Justin Kindle) in microbial ecology laboratory techniques and bacterial community analysis using MOTHUR and R.
- Mentoring graduate student Dana Wessels of Grand Valley State University, MI. Project: Saving Streams in the Neotropical Cloud Forest: Evaluating the Impacts of Rainbow Trout (*Oncorhynchus mykiss*) Farming on Invertebrates and Glassfrogs.

Fall 2015-Spring 2016

- Mentoring graduate student Anna Harris of Grand Valley State University, MI. Project: Amphibian conservation (Centrolenidae) in neotropical cloud-forest streams using stable isotopes to measure energy subsidies. Anna successfully defended her thesis Dec. 2016.

Summer 2015: *Masters student research mentor:* Cleveland Metroparks Zoo

- Mentoring graduate student Michael Monson of Cleveland State University in assessment of gut microbiome analyses of captive Masai Giraffes from Cleveland Metroparks Zoo.

Spring 2015: *Cells and Proteins Laboratory (Biol 215) Graduate Teaching assistant:* Case Western Reserve University

- Grading and recitation instructor for this introductory course; teaching manuscript preparation during recitation sections; grading laboratory reports.

Fall 2014-present: *Masters student committee member;* Adjunct Professor Grand Valley State University

- Mentoring graduate student Anna Harris of Grand Valley State University, MI. Project: Amphibian conservation (Centrolenidae) in neotropical cloud-forest streams using stable isotopes to measure energy subsidies.

Fall 2014 and 2010: *Herpetology (Biol 305) Graduate Teaching Assistant:* Case Western Reserve University

- Laboratory instructor at CWRU, Squire Valleevue Farm, Cleveland Metroparks Zoo, and The Cleveland Museum of Natural History; teaching in the classroom as well as in the field, developing laboratory teaching materials, preparing specimens, grading, and proctoring exams.

Summer 2014: *Undergraduate research mentor:* The Holden Arboretum/Kent State University

- Mentored Kent State undergraduate student (Alexa Wagner) with two molecular research studies culminating in presentation of two posters at The Holden Arboretum's annual Summer Internship Symposium.

Spring 2014, 2016: *Tropical Ecology and Conservation (Bio417/NRM407) Co-instructor, Adjunct Professor:* Grand Valley State University

- Co-instructs and serves as natural history guide, providing undergraduate students with the experience of conducting biological research on the diverse taxa of the Andean Cloud-forest at Reserva Las Galarias, Ecuador.

Spring 2011: *Ichthyology (Biol 338/438) Graduate Teaching Assistant:* Case Western Reserve University

- Assisted in teaching hands-on field and museum components of the course, preparing specimens, grading, and proctoring exams.

Previous Employment

Spring 2009- Summer 2010: Research Assistant: Benard Laboratory, Case Western Reserve University

- Assisted PI in studies of amphibian ecology including large scale mesocosm studies, quantitative pond sampling, data analysis in ARC GIS, specimen identification, and presentation of research.

2001- 2008: Animal Keeper: Cleveland Metroparks Zoo

- Responsible for general care, husbandry, exhibit design and construction for a diverse group of animals within the facility's RainForest as well as specialized exhibits throughout the park.
- Conducted research studying innate immune defense traits of Panamanian Golden Frogs in collaboration with Dr. Brandon Sheafor, Dr. Jonathan Scott and their undergraduate student researchers of Mount Union College.
- Extensive field work in association with Project Golden Frog/Atelopus Conservation Trust, Smithsonian Tropical Research Institute in Panama, and El Valle Amphibian Conservation Center in Panama.
- Co-creator of the "Leap into Action", a local amphibian conservation initiative designed to increase public awareness of the global amphibian crisis and wetland conservation. \$17,000 was raised for vernal pool construction and amphibian conservation research in Cleveland Metroparks. Awarded The 2009 Apex *Grand Award* for Publication Excellence (category: Campaigns, Programs & Plans).
- Mentored Auburn Career Center high school students in the creation of a short animated film called *Leap into Action: Solving the Amphibian Crisis* (<http://www.youtube.com/watch?v=p5d33bJpPw0>)
- Distance Learning speaker for Cleveland Metroparks Zoo conservation education department.

Outreach Activities

- 2018 The Atlantic. [*Something Mysterious is killing captive gorillas.*](#)
- 2017 NPR Sound of Ideas/Science Café Cleveland: [Forest Microbiome and Species Conservation](#). Co-presenter D. Burke.
- 2017 [Of Herps and Punks](#). Sandusky County Park District's Meet the Scientist lecture series. Wilson Nature Center.
- 2016 [FiveThirtyEight](#). Provided support/material for an article on Valerie McKenzie's microbial ecology work.
- 2016 [National Geographic](#). Provided support/material for a story covering the discovery of a new Peruvian amphibian species.
- 2015 #PunkRockFrog viral campaign in partnership with the Amphibian Survival Alliance; Highlights the need for habitat protection in response to newly described shape-shifting frog species, *Pristimantis mutabilis* DOI: 10.1111/zoj.12222
- 2014 The Holden Arboretum Leaves Magazine. Authored a popular science style article titled: *It's not easy being green: The effects of environmental change on amphibians.*

Outreach Activities (continued)

- 2013 and 2014 Educational workshop for Painesville City Schools at The Holden Arboretum: assisted with instructional exercises aimed at introducing middle school students to the ideas of soil microbiota and how scientists estimate diversity and richness in soil communities.
- 2013 Science In Action- Cricket Frogs: Guest lecturer of a family program for Wood County Park District regarding my studies of Cricket Frog immune defenses.
- 2009-2011 Environmental Heroes: Guest lecturer instructing middle school students how to quantitatively sample wetlands for amphibians.
- 2005-2009 Annual invited guest instructor Escuela Rio Tumbes elementary school, Ecuador.
- 2008 [National Geographic](#): worked with Senior Writer Jennifer Holland and Photographer Joel Sartore in Ecuador on an article published in 2009 regarding the global amphibian crisis as well as footage for their website.
- 2008 Jason Project: Distance Learning programs for hundreds of local elementary school children discussing the implications of global amphibian declines and what children can do to help conserve amphibians.
- 2008 Year of the Frog: Performed biweekly public talks regarding amphibian conservation for various organizations throughout the Cleveland area and co-authored text for the educational website (<http://www.clemetzoo.com/forfrogs>).
- 2005-2009 Las Galarias Foundation: Co-editor of the foundation's newsletter "The Hum..." Currently (2005-present) writes articles for each edition of "The Hum..." as well as LGF's new short communication "The Chirp".

Independent International Conservation Efforts

2005-Present: Founding Board Member, Secretary, Research Coordinator, Biologist, Social Media administrator: Las Galarias Foundation, Inc.

- Coordinates scientific research conducted at Reserva Las Galarias (RLG), Ecuador.
- Conducts biological surveys of birds, bats, reptiles, fish, and amphibians at RLG.
- Organizes fundraising programs, presentations, marketing, and publication of the organization's newsletter "The Hum..." which can be viewed at www.lasgalariasfoundation.org.
- Promotes research, education and outreach opportunities at Reserva Las Galarias including bird banding, wildlife monitoring, water quality monitoring, service projects such as native tree propagation and planting as part of on-going reforestation efforts, and educational programming at the local elementary school *Escuela Rio Tumbes*.

2002-2006: Project Golden Frog: Field volunteer, Panama

- Assisted in field expeditions in search of previously undocumented *Atelopus varius* and *A. zeteki* populations in the tropical forests of Panama, data/sample collection for Dr. Roberto Ibanez of Smithsonian Tropical Research Institution, construction of El Valle Amphibian Conservation Center (EVACC), and in the care of newly rescued amphibians for EVACC in the wake of the chytridiomycosis outbreak in Panama.

Professional Memberships and Service

- Society for the Study of Amphibians and Reptiles, Herpetologists' League, Ecological Society of America, The Ohio Academy of Science
- 2018 E.E. Williams Research Grant judge for Herpetologist's League
- 2018 District Science Day judge
- 2011-2016 Manuscript reviewer for Biological Conservation, Conservation Physiology, Diseases of Aquatic Organisms, Herpetological Review
- 2013 Cleveland Metroparks Zoo- Conservation Endowment Fund grant reviewer
- 2013 SOURCE program application reviewer for Case Western Reserve University
- 2011 Poster judge for Case Western Reserve University Intersections undergraduate poster competition