

JACKSON R PHILLIPS

Department of Ecology and Evolutionary Biology, Cornell University

Phone: (860) 948-0649 Email: jack.phillips12314@gmail.com

Education

- 2024 – exp. 2026 **Ph.D.** student at Cornell University (Ecology and Evolutionary Biology)
Advisor: Molly C Womack (expected defense date: December 2026)
- 2020 - 24 **Ph.D.** student at Utah State University (Ecology/Biology).
Advisor: Molly C Womack
- 2017 - 19 **M.S.** at the University of Connecticut (Ecology and Evolutionary Biology).
Thesis Title: *The biomechanics and evolution of air breathing in tadpoles.*
Advisor: Kurt Schwenk
- 2013 - 17 **B.S.** at the University of Connecticut (Ecology and Evolutionary Biology),
honors, *cum laude*.
Honors thesis: *The functional morphology of air breathing in larval anurans.*

Research Interests

- Development and the role of metamorphosis in decoupling larval & adult evolution
- Macroevolutionary patterns of trait loss and re-gain
- Vertebrate and tetrapod evolution and origins
- Tadpole air-breathing biomechanics, functional morphology and evolution

Peer-reviewed Publications – [google scholar profile](#)

* undergraduate mentee ‡ first authorship equally shared

1. **Phillips, JR**, PH Dias, and MC Womack. (2025). Lungless tadpoles breathe fresh air into hypotheses for tetrapod lung loss and trait regains. *Evolution*. 79 (12), 2776-2790
covered by [Cornell Chronicle](#), [AOL](#), [Wild Science](#), [phys.org](#)
2. Kaczmarek, EB, **JR Phillips**, and WG Ryerson. (2025). Respiratory system. *In: Comparative vertebrate and human anatomy: ecology, evolution, and function.*
3. Ngwenya, SS*, GK Nicolau*, MC Womack, and **JR Phillips**. (2025). Range extension: *Schismaderma carens*. *African Herp News*.
4. Dias, PH‡, **JR Phillips**‡, MO Pereyra, B Means, and PJ Kok (2024). The remarkable larval morphology of *Rhaebo nasicus* (Werner, 1903) (Amphibia: Anura: Bufonidae) with the erection of a new bufonid genus and insights into the evolution of suctorial tadpoles. *Zool. letters*. 10 (1).
5. **Phillips, JR**, GK Nicolau*, SS Ngwenya*, EJ Jackson* and MC Womack. (2024). The effects of habitat and respiratory strategy on hypoxia performance in anuran tadpoles. *ICB*. 64 (2), 336-353.
6. Womack, MC, SM Strobel, **JR Phillips**, JS Parreiras, VT Vredenburg, and MH Wake. (2024). Organisms have gravity. *J. Exp. Biol.* 227 (12).
7. **Phillips, JR**, J Reissig, and GK Nicolau*. (2023) Notes on lung development in South African Ghost frogs (Anura: Heleophrynidae). *Afr. J. Herpetol.* 72 (1), 81-90.

8. Annibale, FS, RJ Wassersug, Y Zeng, AF Sabbag, CA Brasileiro, DC Rossa-Feres, F Nomura, and **JR Phillips**. (2023) The case for studying tadpole autecology, with comments on strategies to study other small, fast-moving animals in nature. *Austral Ecol.* 48 (5), 855-876.
9. **Phillips, JR**, AE Hewes, MC Womack, and K Schwenk. (2022) The mechanics of air-breathing in tadpoles of the African clawed frog, *Xenopus laevis* (Anura: Pipidae). *J. Exp. Biol.* 225 (10).
10. Schwenk, K‡ and **JR Phillips**‡. (2020). Circumventing surface tension: a novel form of air-breathing in anuran tadpoles *Proc. Roy. Soc. B.* 287 (1921).
covered by [UConn today](#), [New Scientist](#), [FYFD](#), [Popular Science](#), [TheScientist](#)
11. **Phillips, JR**, A Hewes and K Schwenk (2020). The mechanics of air-breathing in gray tree frog tadpoles, *Hyla versicolor* Leconte, 1825 (Anura: Hylidae). *J. Exp. Biol.* 223 (5).
12. Everitt, B and **JR Phillips** (2019). Natural History Note: Death Feigning in *Nerodia erythrogaster* and *N. fasciata*. *Herpetological Review.* 50 (3).

Other Publications

13. **Phillips, JR**. Book review- Frog Day: a story of 24 hours and 24 amphibian lives (2025). *Herpetological Review.* 56 (1).
14. **Phillips, JR**. Book review- Conservation of amphibians and reptiles in Connecticut (2022). *Ichthyology and Herpetology.* 110 (3), 633-634.

Manuscripts in Preparation

- Phillips, JR** and MC Womack. (*in review*). Bubbleguts: re-evolution of air breathing in a lungless tadpole. *Ecology*
- Phillips, JR** and MC Womack. (*complete draft*). The importance of considering both ecological and developmental coupling across life stages.
- Phillips JR**, Dias PH, Harrington S, and D Paluh. (*complete draft*). The loss and regain of larval tooth structures in anuran tadpoles.
- Phillips, JR**, Paluh, D, PH Dias, P Lukas, S Paynter-Tavares* and MC Womack. (*in prep*). Two-faced frogs: larval habitat dominates shape evolution in tadpole skulls.
- Phillips, JR**, Mayerl, Keefe and EB Kaczmarek. (*in prep*). Re-assessing anuran ventilation mechanics using highspeed x-ray videography.

Oral Presentations

Invited talks

- 2024 World Congress of Herpetology – Kuching, Malaysia. *An extravagance of breathing modes in anuran tadpoles*. In: “Amazing world of tadpoles” Symposium.
- 2024 Society for the study of Amphibians and Reptiles – Ann Arbor, MI. *Use it or lose it: implications of activity dependence on dynamics of trait loss*. In: “Endless herps most beautiful” Symposium.
- 2024 II International Symposium for Tadpole Evolution – 30-minute invited lecture. *Losses and regains of lung function in frog tadpoles*.

- 2023 Brown University, invited presentation for functional morphology group. *Losses and regains of lung function in frog tadpoles.*
- 2020 Gamboa “frog talk” series– 30-minute invited lecture. *Bubble-sucking tadpoles: physical constraints allow tadpoles to reach new adaptive space.*

Contributed presentations

* student prize awarded

- 2026 Evolution Meeting – Cleveland, OH.
- 2026 Society for Integrative and Comparative Biology (SICB) – Portland, OR.
- 2025 Cornell EEB Research Symposium.*
- 2025 Joint Meeting of Ichthyologists and Herpetologists (JMIH) – St. Paul, MN.
- 2024 Cornell EEB Research Symp.*
- 2023 Evolution Meeting – Albuquerque, NM.
- 2023 Herpetological Association of Africa (HAA) – Mpumalanga, South Africa.
- 2022 Joint Meeting of Ichthyologists and Herpetologists (JMIH) – Spokane, WA.
- 2021 Evolution Meeting – online only.
- 2020 First International Symposium for Tadpole Evolution.*
- 2020 Society for Integrative and Comparative Biology (SICB) - Austin, TX.*
- 2019 SICB Northeast Division of Vertebrate Morphology (DVM) - Boston College, Boston, MA.
- 2019 Herpetological Association of Africa (HAA) – Eastern Cape, South Africa.*
- 2019 Joint Meeting of Ichthyologists and Herpetologists (JMIH) - Snowbird, UT.
- 2018 SICB Northeast DVM - Brown University, Providence, RI.
- 2018 JMIH - Rochester, NY.
- 2017 SICB Northeast DVM - University of Massachusetts Lowell, Lowell, MA.

Grants

- 2024 Utah State BGSA Student travel award: amount = \$1000
- 2022 Sigma Xi Grants in Aid of Research: amount = \$1000
- 2022 Utah State Ecology Center Graduate Award: amount = \$5000
- 2022 Utah State Biology Del Grosso Award: amount = \$5000
- 2021 Utah State Biology Ecology Graduate Award: amount = \$5000
- 2019 Carl Gans Foundation Travel Award: amount = \$1000
- 2018 UConn EEB Biology Graduate Research Award in Zoology: amount = \$300

Honors and Awards

- 2026 College of Arts and Sciences Russell family teaching award
- 2025 Whittaker award for best graduate student presentation (Cornell EEB research symposium)
- 2024 Whittaker award for best graduate student presentation (Cornell EEB research symposium)
- 2020 Best Oral Presentation (tied) First International Tadpole Evolution Symposium
- 2020 Dwight D. Davis Award for Best Oral Presentation, DVM (SICB)
- 2019 Best Student Presentation (HAA)
- 2019 Honorable Mention, SSAR, Seibert Award for Morphology and Physiology (JMIH)
- 2019 Honorable Mention, UConn EEB Graduate Student Teaching Excellence Award
- 2017 Honorable Mention, Best presentation in UConn EEB Undergraduate Research Symposium

Teaching Experiences

**created original teaching materials available upon request*

***took over full course instruction midway through semester (reference available)*

****online course instruction*

Primary Instructor of Record

2024 Organismal Biology Lab Course*- Utah State University

2018 Field Herpetology (summer session)*- University of Connecticut

Teaching Assistant

2026 Biology of the Vertebrates* (Lead TA)- Cornell University

2025 Herpetology**- Cornell University

2024 Intro to Evolutionary Biology- Cornell University

2022-23 Human Physiology lab***- Utah State University

2020-21 Intro Biology I*** & II***- Utah State University

2019 Herpetology*- UConn

2018 Comparative Vertebrate Anatomy*- UConn

2018 General Ecology- UConn

2017 Mammalogy*- UConn

Guest lectures

2025 Biology of the Vertebrates- Cornell University

2025 Herpetology- Cornell University**

2019 Herpetology- UConn

Undergraduate Student Mentorship

¹co-authored a scientific publication under my mentorship

²presented a poster at a scientific conference under my mentorship

³South African student mentored remotely in coordination with their advisor

UConn (2016-2019)

- Dr. Amanda Hewes¹ (now a visiting professor at Colorado College)
- Jaimie Simmons
- Emilee Wooldridge
- Andre Jang
- Elle Parks
- Gabrielle Fabian

Utah State University (2020-2024)

- Sifiso Shane Ngwenya^{1,2,3} (now pursuing a Master's degree in South Africa)
- Gary Kyle Nicolau^{1,3} (now pursuing a PhD in South Africa)
- Emily Anne Jackson^{1,3} (now working in environmental assessment across Africa)

Cornell University (2024-current)

- Saty Paynter-Tavares²
- Emma Lynn Poplyk²
- Chloe Adaggio²
- Justine Watkins

Service

- Advisory Board Member for Thompsons County Amphibian Patrol 2024-present
- Served on Cornell Graduate Recruitment Committee 2024-2025
- Co-founder of African Herpetological and Biodiversity Institute, a non-profit organization dedicated to advancing scientific opportunities for African-born herpetologists and naturalists
- Co-organized symposium on tadpole diversity for 2024 World Congress of Herpetology
- Served as committee member to organize II International Symposium for Tadpole Evolution
- Served as student representative for USU graduate programs committee 2022-2023
- Elected Academic Chair for USU Biology Graduate Student Association 2022-2023
- Volunteered to run the Herpetology Portion of the CT Science Olympiad in 2018
- Volunteered in the 2017 CT Bioblitz as a member of the Mammalogy Team
- Invited Speaker for local youth group (CT Cubscouts) to discuss science and herpetology
- Invited Speaker for The Children's Museum in West Hartford, CT, discussing herpetology

Peer review

- Integrative Comparative Biology
- Biological Journal of the Linnean Society
- PNAS (co-review)
- PeerJ
- Anatomical Record
- Journal of Experimental Biology
- Herpetological Review
- African Herp News
- African Zoology
- Asian Herpetology Research

Society membership

- Society for Integrative and Comparative Biology (SICB) 2018 – present
- Society for the Study of Amphibians and Reptiles (SSAR) 2018 – present
- Herpetological Association of Africa (HAA) 2019 – present
- Society for the Study of Evolution (SSE) 2021 – present

Photography honors and awards

- Cornell EEB Photo Contest winner (2026)
- UConn EEB Photo Contest winner (2017)
- Journal covers
 - Oikos (January 2025)
 - Integrative Comparative Biology (August 2024)

References

Dr. Molly Womack (phd advisor)

mcwomack@cornell.edu

Dr. Kurt Schwenk (MSc advisor and undergraduate honors thesis advisor)

kurt.schwenk@uconn.edu

(860) 486-0351